

Supplemental Listing Document

If you are in any doubt as to any aspect of this document, you should consult your stockbroker or other registered dealer in securities, bank manager, solicitor, accountant or other professional adviser.

Application has been made to the Singapore Exchange Securities Trading Limited (the “**SGX-ST**”) for permission to deal in and for quotation of the Certificates (as defined below). The SGX-ST 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. Admission to the Official List of the SGX-ST is not to be taken as an indication of the merits of UBS AG, acting through its London branch, the Certificates, or the Company (as defined below).

**10,000,000 European Style Cash Settled Short Certificates relating to
the ordinary shares of Hong Kong Exchanges and Clearing Limited
with a Daily Leverage of -5x**

**UBS AG
(Incorporated with limited liability in Switzerland)
acting through its London Branch**

Issue Price: S\$0.90 per Certificate

This document is published for the purpose of obtaining a listing of all the above certificates (the “**Certificates**”) to be issued by UBS AG (the “**Issuer**”) acting through its London branch, and is supplemental to and should be read in conjunction with a base listing document dated 28 June 2021 (the “**Base Listing Document**”), including its supplements and addenda as executed from time to time, for the purpose of giving information with regard to the Issuer and the Certificates. Information relating to the Company (as defined below) is contained in this document.

This document does not constitute or form part of any offer, or invitation, to subscribe for or to sell, or solicitation of any offer to subscribe for or to purchase, Certificates or other securities of the Issuer, nor is it calculated to invite, nor does it permit the making of, offers by the public to subscribe for or purchase for cash or other consideration the Certificates or other securities of the Issuer. Restrictions have been imposed on offers and sales of the Certificates and on distributions of documents relating thereto in the United States, the United Kingdom, the European Economic Area, Singapore and Hong Kong (see “Placing and Sale” contained herein).

The Certificates are complex products. You should exercise caution in relation to them. Investors are warned that the price of the Certificates may fall in value as rapidly as it may rise and holders may sustain a total loss of their investment. The price of the Certificates also depends on the supply and demand for the Certificates in the market and the price at which the Certificates is trading at any time may differ from the underlying valuation of the Certificates because of market inefficiencies. It is not possible to predict the secondary market for the Certificates. Although the Issuer and/or any of its affiliates may from time to time purchase the Certificates or sell additional

Certificates on the market, the Issuer and/or any of its affiliates are not obliged to do so. Investors should also note that there are leveraged risks because the Certificates integrate an inverse leverage mechanism and the Certificates will amplify the movements in the increase, and in the decrease, of the value of the Underlying Stock (as defined below) and if the investment results in a loss, any such loss will be increased by the leverage factor of the Certificates. As such, investors could lose more than they would if they had invested directly in the Underlying Stock.

For the purpose of section 309B(1) of the Securities and Futures Act (Chapter 289 of Singapore) (the "**SFA**"), the Issuer has determined, and hereby notifies all relevant persons (as defined in section 309A of the SFA) that the Certificates are classified as capital markets products other than prescribed capital markets products¹ and Specified Investment Products (SIPs)², and may only be sold to retail investors with enhanced safeguards, including an assessment of such investors' investment knowledge or experience.

Prospective purchasers should therefore ensure that they understand the nature of the Certificates and carefully study the risk factors set out in the Base Listing Document and pages 5 to 10 of this document before they invest in the Certificates.

Application has been made to the SGX-ST for permission to deal in and for quotation of the Certificates and the SGX-ST has agreed in principle to grant permission to deal in and for quotation of the Certificates. It is expected that dealings in the Certificates will commence on or about 21 April 2022.

As at the date hereof, the Issuer's long term credit rating by Standard & Poor's Credit Market Services Europe Limited is A+, by Moody's Deutschland GmbH is Aa3 and by Fitch Ratings Limited is AA-.

The Issuer is regulated by, among others, the Swiss Federal Banking Commission. In the United Kingdom, it is authorised by the Prudential Regulatory Authority and subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulatory Authority.

20 April 2022

¹ As defined in the Securities and Futures (Capital Markets Products) Regulations 2018.

² As defined in the MAS Notice SFA 04-N12: Notice on the Sale of Investment Products and MAS Notice FAA-N16: Notice on Recommendations on Investment Products.

Subject as set out below, the Issuer accepts full responsibility for the accuracy of the information contained in this document and the Base Listing Document in relation to itself and the Certificates. To the best of the knowledge and belief of the Issuer (which has taken all reasonable care to ensure that such is the case), the information contained in this document and the Base Listing Document for which it accepts responsibility (subject as set out below in respect of the information contained herein with regard to the Company) is in accordance with the facts and does not omit anything likely to affect the import of such information. The information with regard to the Company as set out herein is extracted from publicly available information. The Issuer accepts responsibility only for the accurate reproduction of such information. No further or other responsibility or liability in respect of such information is accepted by the Issuer.

No persons have been authorised to give any information or to make any representation save as contained in this document or otherwise authorised by the Issuer in connection with the Certificates and, if given or made, such information or representations must not be relied upon as having been authorised by the Issuer. Neither the delivery of this document nor any sale made hereunder shall under any circumstances create any implication that there has been no change in the affairs of the Issuer or its subsidiaries and associates since the date hereof.

This document does not constitute an offer or solicitation by or on behalf of the Issuer to purchase or subscribe for any of the Certificates. The distribution of this document and the offering of the Certificates may, in certain jurisdictions, be restricted by law. The Issuer requires persons into whose possession this document comes to inform themselves of and observe all such restrictions. In particular, the Certificates have not been, and will not be, registered under the United States Securities Act of 1933, as amended (the "**Securities Act**"). Subject to certain exceptions, Certificates, or interests therein, may not at any time be offered, sold, resold or delivered, directly or indirectly, in the United States or to, or for the account or benefit of, any U.S. person (as defined in Regulation S under the Securities Act) or to others for offering, sale or resale in the United States or to any such U.S. person. Offers and sales of Certificates, or interests therein, in the United States or to U.S. persons would constitute a violation of United States securities laws unless made in compliance with registration requirements of the Securities Act or pursuant to an exemption therefrom. A further description of certain restrictions on offering and sale of the Certificates and distribution of this document is given in the section headed "Placing and Sale" contained herein.

The SGX-ST has made no assessment of, nor taken any responsibility for, the financial soundness of the Issuer or the merits of investing in the Certificates, nor have they verified the accuracy or the truthfulness of statements made or opinions expressed in this document.

The Issuer and/or any of its affiliates may repurchase Certificates at any time on or after the date of issue and any Certificates so repurchased may be offered from time to time in one or more transactions in the over-the-counter market or otherwise at prevailing market prices or in negotiated transactions, at the discretion of the Issuer and/or any of its affiliates. Investors should not therefore make any assumption as to the number of Certificates in issue at any time.

References in this document to the "**Conditions**" shall mean references to the Terms and Conditions of the European Style Cash Settled Long/Short Certificates on Single Equities contained in the Base Listing Document. Terms not defined herein shall have the meanings ascribed thereto in the Conditions.

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RISK FACTORS

The following risk factors are relevant to the Certificates:-

- (a) investment in Certificates involves substantial risks including market risk, liquidity risk, and the risk that the Issuer will be unable to satisfy its obligations under the Certificates. Investors should ensure that they understand the nature of all these risks before making a decision to invest in the Certificates. You should consider carefully whether Certificates are suitable for you in light of your experience, objectives, financial position and other relevant circumstances. Certificates are not suitable for inexperienced investors;
- (b) the Certificates constitute direct, general and unsecured contractual obligations of the Issuer and if you purchase the Certificates you are relying upon the creditworthiness of the Issuer and have no rights under the Certificates against any other person. In particular, it should be noted that the Issuer issues a large number of financial instruments, including Certificates, on a global basis and, at any given time, the financial instruments outstanding may be substantial. If you purchase the Certificates you are relying upon the creditworthiness of the Issuer and have no rights under the Certificates against the Company which has issued the Underlying Stock (as defined below). The Issuer has substantially no obligation to a Certificate Holder (as defined in the Conditions) other than to pay amounts in accordance with the terms thereof as set forth herein and in the Base Listing Document. The Issuer does not in any respect underwrite or guarantee the performance of any Certificate. Any profit or loss realised by a Certificate Holder in respect of a Certificate upon exercise or otherwise due to changes in the value of such Certificate or the Underlying Stock is solely for the account of such Certificate Holder. In addition, the Issuer shall have the absolute discretion to put in place any hedging transaction or arrangement which it deems appropriate in connection with any Certificate or the Underlying Stock. A reduction in the rating, if any, accorded to outstanding debt securities of the Issuer by any one of its rating agencies could result in a reduction in the trading value of the Certificates;
- (c) since the Certificates relate to the price of the Underlying Stock, certain events relating to the Underlying Stock may cause adverse movements in the value and the price of the Underlying Stock, as a result of which, the Certificate Holders may, in extreme circumstances, sustain a significant loss of their investment if the price of the Underlying Stock has risen sharply;
- (d) due to their nature, the Certificates can be volatile instruments and may be subject to considerable fluctuations in value. The price of the Certificates may fall in value as rapidly as it may rise due to, including but not limited to, variations in the frequency and magnitude of the changes in the price of the Underlying Stock, the time remaining to expiry and the creditworthiness of the Issuer;
- (e) fluctuations in the price of the Underlying Stock will affect the price of the Certificates but not necessarily in the same magnitude and direction, therefore, prospective investors intending to purchase Certificates to hedge their market risk associated with investing in the Underlying Stock which may be specified herein, should recognise the complexities of utilising the Certificates in this manner;
- (f) a Certificate Holder must tender a specified number of Certificates at any one time in order to exercise. Thus, Certificate Holders with fewer than the specified minimum number of Certificates in a particular series will either have to sell their Certificates or purchase additional Certificates, incurring transactions costs in each case, in order to realise their investment;

- (g) if, whilst any of the Certificates remain unexercised, trading in the Underlying Stock is suspended or halted on the relevant stock exchange, trading in the Certificates may be suspended for a similar period;
- (h) investors should note that the Issuer's obligations to pay amounts in accordance with the terms thereof as set forth herein shall be discharged by delivery of the aggregate Cash Settlement Amount (if positive) to all Certificate Holders in accordance with the agreement with the Warrant Agent;
- (i) investors should note that in the event of there being a Market Disruption Event (as defined in the Conditions) determination or payment of the Cash Settlement Amount (as defined in the Conditions) may be delayed, all as more fully described in the Conditions;
- (j) certain events relating to the Underlying Stock require or, as the case may be, permit the Issuer to make certain adjustments or amendments to the Conditions;
- (k) the Certificates are only exercisable on the expiry date and may not be exercised by Certificate Holders prior to such expiry date. Accordingly, if on such expiry date the Cash Settlement Amount is zero, a Certificate Holder will lose the value of his investment;
- (l) the total return on an investment in any Certificate may be affected by the Hedging Fee Factor (as defined below), Management Fee (as defined below) and Gap Premium (as defined below);
- (m) investors holding their position overnight should note that they would be required to bear the annualised cost which consists of the Management Fee and Gap Premium, which are calculated daily and applied to the value of the Certificates, as well as certain costs embedded within the Leverage Inverse Strategy (as described below) including the Stock Borrowing Cost (as defined below) and the Rebalancing Cost (as defined below);
- (n) investors should note that there may be an exchange rate risk where the Cash Settlement Amount may be converted from a foreign currency into Singapore dollars. Exchange rates between currencies are determined by forces of supply and demand in the foreign exchange markets. These forces are, in turn, affected by factors such as international balances of payments and other economic and financial conditions, government intervention in currency markets and currency trading speculation. Fluctuations in foreign exchange rates, foreign political and economic developments, and the imposition of exchange controls or other foreign governmental laws or restrictions applicable to such investments may affect the foreign currency market price and the exchange rate-adjusted equivalent price of the Certificates. Fluctuations in the exchange rate of any one currency may be offset by fluctuations in the exchange rate of other relevant currencies;
- (o) investors should note that there are leveraged risks because the Certificates integrate an inverse leverage mechanism and the Certificates will amplify the movements in the increase, and in the decrease, of the value of the Underlying Stock and if the investment results in a loss, any such loss will be increased by the leverage factor of the Certificates. As such, investors could lose more than they would if they had invested directly in the Underlying Stock;
- (p) when held for longer than a day, the performance of the Certificates could be more or less than the leverage factor that is embedded within the Certificates. The performance of the Certificates each day is locked in, and any subsequent returns are based on what was achieved the previous day. This process, referred to as compounding, may lead to a performance difference from 5 times the inverse performance of the Underlying Stock over a

period longer than one day. This difference may be amplified in a volatile market with a sideways trend, where market movements are not clear in direction, whereby investors may sustain substantial losses;

- (q) the Air Bag Mechanism (as defined below) is triggered only when the Underlying Stock is calculated or traded, which may not be during the trading hours of the Relevant Stock Exchange for the Certificates (as defined below);
- (r) investors should note that the Air Bag Mechanism reduces the impact on the Leverage Inverse Strategy if the Underlying Stock rises further, but will also maintain a reduced exposure to the Underlying Stock in the event the Underlying Stock starts to fall after the Air Bag Mechanism is triggered, thereby reducing its ability to recoup losses;
- (s) there is no assurance that the Air Bag Mechanism will prevent investors from losing the entire value of their investment, in the event of (i) an overnight rise in the Underlying Stock, where there is a 20% or greater gap between the previous day closing price and the opening price of the Underlying Stock the following day, as the Air Bag Mechanism will only be triggered when market opens the following day or (ii) a sharp intraday rise in the Underlying Stock of 20% or greater during the observation period compared to the reference price, being: (a) if air bag event has not been previously triggered on the same day, the previous closing price of the Underlying Stock, or (b) if one or more air bag events have been previously triggered on the same day, the latest new observed price. Investors may refer to pages 42 to 43 of this document for more information;
- (t) certain events may, pursuant to the terms and conditions of the Certificates, trigger (A) the implementation of methods of adjustment or (B) the early termination of the Certificates. The Issuer will give the investors reasonable notice of any early termination. If the Issuer terminates the Certificates early, then the Issuer will, if and to the extent permitted by applicable law, pay an amount to each Certificate Holder in respect of each Certificate held by such holder equal to the fair market value of the Certificate less the cost to the Issuer of unwinding any underlying related hedging arrangements, all as determined by the Issuer in its sole and absolute discretion. The performance of this commitment shall depend on (A) general market conditions and (B) the liquidity conditions of the underlying instrument(s) and, as the case may be, of any other hedging transactions. Investors should note that the amount repaid by the Issuer may be less than the amount initially invested. Investors may refer to Condition 13 on pages 29 to 30 of this document for more information;
- (u) investors should note that it is not possible to predict the price at which the Certificates will trade in the secondary market or whether such market will be liquid or illiquid. To the extent Certificates of a particular issue are exercised, the number of Certificates of such issue outstanding will decrease, resulting in a diminished liquidity for the remaining Certificates of such issue. A decrease in the liquidity of an issue of Certificates may cause, in turn, an increase in the volatility associated with the price of such issue of Certificates. The Issuer may, but is not obligated to, at any time, purchase Certificates at any price in the open market or by tender or private agreement. Any Certificates so purchased may be held or resold or surrendered for cancellation. To the extent that an issue of Certificates becomes illiquid, an investor may have to exercise such Certificates to realise value;
- (v) two or more risk factors may simultaneously have an effect on the value of a Certificate such that the effect of any individual risk factor may not be predicted. No assurance can be given as to the effect any combination of risk factors may have on the value of a Certificate;
- (w) investors should note that they may be required to pay stamp taxes or other documentary charges in accordance with the laws and practices of the country where the Certificates are

transferred. Investors who are in any doubt as to their tax position should consult their own independent tax advisers. In addition, investors should be aware that tax regulations and their application by the relevant taxation authorities change from time to time. Accordingly, it is not possible to predict the precise tax treatment which will apply at any given time. Investors should refer to the Taxation Section in the Base Listing Document;

- (x) investors should note that the Issuer may enter into discount, commission or fee arrangements with brokers and/or any of its subsidiaries or affiliates with respect to the primary or secondary market in the Certificates. The arrangements may result in the benefit to investors in Certificates buying and selling Certificates through nominated brokers by reducing or eliminating the commission payable by such Certificate Holders. In the event that the commission payable by Certificate Holders is eliminated, fee arrangements between the Issuer and brokers and/or any of its subsidiaries or affiliates will continue to apply. Investors in the Certificates should note that any brokers with whom the Issuer has a commission arrangement does not, and cannot be expected to, deal exclusively in the Certificates, therefore any broker and/or any of its subsidiaries or affiliates may from time to time engage in transactions involving the Underlying Stock and/or structured products of other issuers over the Underlying Stock as the Certificates for their proprietary accounts and/or accounts of their clients. The fact that the same broker may deal simultaneously for different clients in competing products in the market place may affect the value of the Certificates and present certain conflicts of interests;
- (y) various potential and actual conflicts of interest may arise from the overall activities of the Issuer and any of its subsidiaries and affiliates.

The Issuer and any of its subsidiaries and affiliates are diversified financial institutions with relationships in countries around the world. These entities engage in a wide range of commercial and investment banking, brokerage, funds management, hedging transactions and investment and other activities for their own account or the account of others. In addition, the Issuer and any of its subsidiaries and affiliates, in connection with their other business activities, may possess or acquire material information about the Underlying Stock. Such activities and information may involve or otherwise affect issuers of the Underlying Stock in a manner that may cause consequences adverse to the Certificate Holders or otherwise create conflicts of interests in connection with the issue of Certificates by the Issuer. Such actions and conflicts may include, without limitation, the exercise of voting power, the purchase and sale of securities, financial advisory relationships and exercise of creditor rights. The Issuer and any of its subsidiaries and affiliates have no obligation to disclose such information about the Underlying Stock or such activities. The Issuer and any of its subsidiaries and affiliates and their officers and directors may engage in any such activities without regard to the issue of Certificates by the Issuer or the effect that such activities may directly or indirectly have on any Certificate;

- (z) in the ordinary course of their business, including without limitation in connection with the Issuer or its appointed designated market maker's market making activities, the Issuer and any of its respective subsidiaries and affiliates may effect transactions for their own account or for the account of their customers and hold long or short positions in the Underlying Stock and/or related derivatives. In addition, in connection with the offering of any Certificates, the Issuer and any of its respective subsidiaries and affiliates may enter into one or more hedging transactions with respect to the Underlying Stock and/or related derivatives. In connection with such hedging or market-making activities or with respect to proprietary or other trading activities by the Issuer and any of its respective subsidiaries and its affiliates, the Issuer and any of its respective subsidiaries and affiliates may enter into transactions in the Underlying

Stock and/or related derivatives which may affect the market price, liquidity or value of the Certificates and which may affect the interests of Certificate Holders;

- (aa) the value of the Certificates depends on the Leverage Inverse Strategy performance built in the Certificate. The Calculation Agent will make the Leverage Inverse Strategy last closing level and a calculation tool available to the investors on a website;
- (bb) certain risks relating to the Issuer's operating environment and strategy, including those as set out in Appendix 2 of the Base Listing Document, may impact the Issuer's ability to execute its strategy and directly affect its business activities, financial condition, results of operations and prospects. As a broad-based international financial services firm, the Issuer is inherently exposed to risks that become apparent only with the benefit of hindsight, risks of which it is not presently aware or which it currently does not consider to be material could also materially affect its business activities, financial condition, results of operations and prospects. The sequence in which the risk factors are set out in Appendix 2 of the Base Listing Document is not indicative of their likelihood of occurrence or the potential magnitude of their financial consequences;
- (cc) as the Certificates are represented by a global warrant certificate which will be deposited with The Central Depository (Pte) Limited ("**CDP**"):-
 - (i) investors should note that no definitive certificate will be issued in relation to the Certificates;
 - (ii) there will be no register of Certificate Holders and each person who is for the time being shown in the records maintained by CDP as entitled to a particular number of Certificates by way of interest (to the extent of such number) in the global warrant certificate in respect of those Certificates represented thereby shall be treated as the holder of such number of Certificates;
 - (iii) investors will need to rely on any statements received from their brokers/custodians as evidence of their interest in the Certificates; and
 - (iv) notices to such Certificate Holders will be published on the website of the SGX-ST. Investors will need to check the website of the SGX-ST regularly and/or rely on their brokers/custodians to obtain such notices;
- (dd) Generally, investing in the Certificates may involve risks related to the discontinuance, changes or adjustments to benchmarks generally

Discontinuance of, or changes to, benchmarks may require adjustments to the Issuer's agreements, systems and processes. The interbank offered rate(s) ("**IBOR**") and other interest rate, equity, commodity, foreign exchange and other types of indices which are deemed to be "benchmarks", are the subject of national, international and other regulatory guidance and proposals for reform. Some of these reforms are already effective whilst others are still to be or may be implemented. These reforms may cause such benchmarks to perform differently than in the past, to disappear entirely, or have other consequences which cannot be predicted. Any such consequence could have a material adverse effect on any Certificates referencing such a benchmark. Investors should consult their own independent advisers and make their own assessment about the potential risks or any of the international or national reforms in making any investment decision with respect to any Certificates referencing a benchmark; and
- (ee) Specifically, the reform of HIBOR may adversely affect the value of the Certificates

The Hong Kong Inter-bank Offered Rate (“**HIBOR**”) benchmark is referenced in the Leverage Inverse Strategy.

It is not possible to predict with certainty whether, and to what extent, HIBOR will continue to be supported going forwards. This may cause HIBOR to perform differently than they have done in the past, and may have other consequences which cannot be predicted. Such factors may have (without limitation) the following effects: (i) discouraging market participants from continuing to administer or contribute to a benchmark; (ii) triggering changes in the rules or methodologies used in the benchmark and/or (iii) leading to the disappearance of the benchmark. Any of the above changes or any other consequential changes as a result of international or national reforms or other initiatives or investigations, could have a material adverse effect on the value of and return on the Certificates.

In addition, the occurrence of a modification or cessation of HIBOR may cause adjustment of the Certificates which may include selecting one or more successor benchmarks and making related adjustments to the Certificates, including if applicable to reflect increased costs.

The Calculation Agent may make adjustments as it may determine appropriate if any of the following circumstances occurs or may occur: (1) HIBOR is materially changed or cancelled or (2)(i) the relevant authorisation, registration, recognition, endorsement, equivalence decision or approval in respect of the benchmark or the administrator or sponsor of the benchmark is not obtained, (ii) an application for authorisation, registration, recognition, endorsement, equivalence decision, approval or inclusion in any official register is rejected or (iii) any authorisation, registration, recognition, endorsement, equivalence decision or approval is suspended or inclusion in any official register is withdrawn.

Investors should consult their own independent advisers and make their own assessment about the potential risks imposed by any of the international or national reforms in making any investment decision with respect to any Certificate.

TERMS AND CONDITIONS OF THE CERTIFICATES

The following are the terms and conditions of the Certificates and should be read in conjunction with, and are qualified by reference to, the other information set out in this document and the Base Listing Document.

The Conditions are set out in the section headed “Terms and Conditions of the European Style Cash Settled Long/Short Certificates on Single Equities” in the Base Listing Document. For the purposes of the Conditions, the following terms shall have the following meanings:

Certificates:	10,000,000 European Style Cash Settled Short Certificates relating to the ordinary shares of Hong Kong Exchanges and Clearing Limited (the “ Underlying Stock ” or the “ Underlying ”)
ISIN:	CH1169123622
Company:	Hong Kong Exchanges and Clearing Limited (RIC: 0388.HK)
Underlying Price ³ and Source:	HK\$326.2 (Bloomberg)
Calculation Agent:	UBS AG acting through its London Branch
Strike Level:	Zero
Daily Leverage:	-5x (within the Leverage Inverse Strategy as described below)
Notional Amount per Certificate:	SGD 0.90
Management Fee (p.a.) ⁴ :	0.40%
Gap Premium (p.a.) ⁵ :	4.60%, is a hedging cost against extreme market movements overnight.
Stock Borrowing Cost ⁶ :	The annualised costs for borrowing stocks in order to take an inverse exposure on the Underlying Stock.
Rebalancing Cost ⁶ :	The transaction costs (if applicable), computed as a function of leverage and daily inverse performance of the Underlying Stock.
Launch Date:	12 April 2022
Closing Date:	20 April 2022

³ These figures are calculated as at, and based on information available to the Issuer on or about 20 April 2022. The Issuer is not obliged, and undertakes no responsibility to any person, to update or inform any person of any changes to the figures after 20 April 2022.

⁴ Please note that the Management Fee is calculated on a 360-day basis and may be increased up to a maximum of 3% p.a. on giving one month’s notice to investors. Any increase in the Management Fee will be announced on the SGXNET. Please refer to “Fees and Charges” below for further details of the fees and charges payable and the maximum of such fees as well as other ongoing expenses that may be borne by the Certificates.

⁵ Please note that the Gap Premium is calculated on a 360-day basis.

⁶ These costs are embedded within the Leverage Inverse Strategy. Please note that the Stock Borrowing Cost may be changed on giving 5 Business Days’ notice to investors. Any change in the Stock Borrowing Cost will be announced on the SGXNET.

Expected Listing Date:	21 April 2022
Last Trading Date:	The date falling 5 Business Days immediately preceding the Expiry Date, currently being 21 February 2025
Expiry Date:	28 February 2025 (if the Expiry Date is not a Business Day, then the Expiry Date shall fall on the preceding Business Day and subject to adjustment of the Valuation Date upon the occurrence of Market Disruption Events as set out in the Conditions of the Certificates)
Board Lot:	100 Certificates
Valuation Date:	27 February 2025 or if such day is not an Exchange Business Day, the immediately preceding Exchange Business Day.
Exercise:	The Certificates may only be exercised on the Expiry Date or if the Expiry Date is not a Business Day, the immediately preceding Business Day, in a Board Lot or integral multiples thereof. Certificate Holders shall not be required to deliver an exercise notice. Exercise of Certificates shall be determined by whether the Cash Settlement Amount (less any Exercise Expenses) is positive. If the Cash Settlement Amount (less any Exercise Expenses) is positive, all Certificates shall be deemed to have been automatically exercised at 5:00 p.m. (Singapore time) on the Expiry Date or if the Expiry Date is not a Business Day, the immediately preceding Business Day. The Cash Settlement Amount less the Exercise Expenses in respect of the Certificates shall be paid in the manner set out in Condition 4(c) of the Conditions. In the event the Cash Settlement Amount (less any Exercise Expenses) is zero, all Certificates shall be deemed to have expired at 5:00 p.m. (Singapore time) on the Expiry Date or if the Expiry Date is not a Business Day, the immediately preceding Business Day, and Certificate Holders shall not be entitled to receive any payment from the Issuer in respect of the Certificates.
Cash Settlement Amount:	In respect of each Certificate, shall be an amount (if positive) payable in the Settlement Currency equal to: Closing Level multiplied by the Notional Amount per Certificate Please refer to the "Information relating to the European Style Cash Settled Short Certificates on Single Equities" section on pages 34 to 48 of this document for examples and illustrations of the calculation of the Cash Settlement Amount.
Hedging Fee Factor:	In respect of each Certificate, shall be an amount calculated as: Product (for t from Expected Listing Date to Valuation Date) of $(1 - \text{Management Fee} \times (\text{ACT}(t-1;t) \div 360)) \times (1 - \text{Gap Premium}(t-1) \times (\text{ACT}(t-1;t) \div 360))$, where:

“**t**” refers to “**Observation Date**” which means each Underlying Stock Business Day (subject to Market Disruption Event) from (and including) the Underlying Stock Business Day immediately preceding the Expected Listing Date to the Valuation Date; and

ACT (t-1;t) means the number of calendar days between the Underlying Stock Business Day immediately preceding the Observation Date (which is “t-1”) (included) and the Observation Date (which is “t”) (excluded).

An “**Underlying Stock Business Day**” is a day on which The Stock Exchange of Hong Kong Limited (the “**HKEX**”) is open for dealings in Hong Kong during its normal trading hours and banks are open for business in Hong Kong.

Please refer to the “Information relating to the European Style Cash Settled Short Certificates on Single Equities” section on pages 34 to 48 of this document for examples and illustrations of the calculation of the Hedging Fee Factor.

Closing Level: In respect of each Certificate, shall be an amount payable in the Settlement Currency equal to:

$$\left(\frac{\text{Final Reference Level} \times \text{Final Exchange Rate}}{\text{Initial Reference Level} \times \text{Initial Exchange Rate}} - \text{Strike Level} \right) \times \text{Hedging Fee Factor}$$

Initial Reference Level: 1,000

Final Reference Level: The closing level of the Leverage Inverse Strategy (as described below) on the Valuation Date

The calculation of the closing level of the Leverage Inverse Strategy is set out in the “Specific Definitions relating to the Leverage Inverse Strategy” section on pages 16 to 20 below.

Initial Exchange Rate³: 0.1740546881

Final Exchange Rate: The rate for the conversion of HKD to SGD as at 5:00pm (Singapore Time) on the Valuation Date as shown on Reuters, provided that if the Reuters service ceases to display such information, as determined by the Issuer by reference to such source(s) as the Issuer may reasonably determine to be appropriate at such a time.

Air Bag Mechanism: The “**Air Bag Mechanism**” refers to the mechanism built in the Leverage Inverse Strategy and which is designed to reduce the Leverage Inverse Strategy exposure to the Underlying Stock during extreme market conditions. If the Underlying Stock rises by 15% or more (“**Air Bag Trigger Price**”) during the trading day (which represents approximately 75% loss after a 5 times inverse leverage), the Air Bag Mechanism is triggered and the Leverage Inverse

Strategy is adjusted intra-day. The Air Bag Mechanism reduces the impact on the Leverage Inverse Strategy if the Underlying Stock rises further, but will also maintain a reduced exposure to the Underlying Stock in the event the Underlying Stock starts to fall after the Air Bag Mechanism is triggered, thereby reducing its ability to recoup losses.

Trading of Certificates is suspended for at least 30 minutes of continuous trading after the Air Bag is triggered. The resumption of trading is subject further to SGX-ST's requirements, including at least 30 minutes from the time of publication of an announcement on the exchange in respect of the Air Bag Mechanism being triggered, and at least 15 minutes after the SGX-ST grants an approval to resume trading, whichever is later, rounded to the next quarter of an hour.

The Leverage Inverse Strategy is floored at 0 and the Certificates cannot be valued below zero.

Please refer to the "Air Bag Mechanism" section on pages 19 to 20 below and the "Description of Air Bag Mechanism" section on pages 40 to 41 of this document for further information of the Air Bag Mechanism.

Adjustments and Extraordinary Events:	The Issuer has the right to make adjustments to the terms of the Certificates if certain events, including any capitalisation issue, rights issue, extraordinary distributions, merger, delisting, insolvency (as more specifically set out in the terms and conditions of the Certificates) occur in respect of the Underlying Stock. For the avoidance of doubt, no notice will be given if the Issuer determines that adjustments will not be made.
Underlying Stock Currency:	Hong Kong Dollar (" HKD ")
Settlement Currency:	Singapore Dollar (" SGD ")
Exercise Expenses:	Certificate Holders will be required to pay all charges which are incurred in respect of the exercise of the Certificates.
Relevant Stock Exchange for the Certificates:	The Singapore Exchange Securities Trading Limited (" SGX-ST ")
Relevant Stock Exchange for the Underlying Stock:	HKEX
Business Day and Exchange Business Day:	A " Business Day " is a day (excluding Saturdays, Sundays and public holidays) on which the SGX-ST is open for dealings in Singapore during its normal trading hours and banks are open for business in Singapore.

An "**Exchange Business Day**" is a day on which the SGX-ST and

the HKEX are open for dealings in Singapore and Hong Kong respectively during its normal trading hours and banks are open for business in Singapore and Hong Kong.

Warrant Agent: The Central Depository (Pte) Limited (“**CDP**”)

Clearing System: CDP

Fees and Charges: Normal transaction and brokerage fees shall apply to the trading of the Certificates on the SGX-ST. Investors should note that they may be required to pay stamp taxes or other documentary charges in accordance with the laws and practices of the country where the Certificates are transferred. Investors who are in any doubt as to their tax position should consult their own independent tax advisers. In addition, investors should be aware that tax regulations and their application by the relevant taxation authorities change from time to time. Accordingly, it is not possible to predict the precise tax treatment which will apply at any given time.

Investors holding position overnight would also be required to bear the Management Fee and Gap Premium, which are calculated daily and applied to the value of the Certificates, as well as certain costs embedded within the Leverage Inverse Strategy including the Stock Borrowing Cost and the Rebalancing Cost. The Management Fee may be increased up to a maximum of 3% p.a. on giving one month’s notice to investors in accordance with the terms and conditions of the Certificates. Any increase in the Management Fee will be announced on the SGXNET.

Further Information: Please refer to the website at <http://dlc.ubs.com> for more information on the theoretical closing price of the Certificates on the previous trading day, the closing price of the Underlying Stock on the previous trading day, the Air Bag Trigger Price for each trading day and the Management Fee and Gap Premium.

In addition, the Conditions have been modified as follows:

1. Condition 1(a)(i) is deleted and replaced with the following:
 - “(i) a master instrument by way of deed poll (the “**Master Instrument**”) dated 7 January 2022, made by UBS AG (the “**Issuer**”) acting through its London Branch; and”
2. All references to “Instrument” appearing therein are deleted and substituted with the word “Master Instrument”.

Specific Definitions relating to the Leverage Inverse Strategy

Description of the Leverage Inverse Strategy

The Leverage Inverse Strategy is designed to track a 5 times daily leveraged inverse exposure to the Underlying Stock.

At the end of each trading day of the Underlying Stock, the exposure of the Leverage Inverse Strategy to the Underlying Stock is reset within the Leverage Inverse Strategy in order to retain a daily leverage of 5 times the inverse performance of the Underlying Stock (excluding costs) regardless of the performance of the Underlying Stock on the preceding day. This mechanism is referred to as the Daily Reset.

The Leverage Inverse Strategy incorporates an air bag mechanism which is designed to reduce exposure to the Underlying Stock during extreme market conditions, as further described below.

Leverage Inverse Strategy Formula

LSL_t means the Leverage Inverse Strategy Level as of the Leverage Reset Time (t), calculated in accordance with the following formulae:

On Leverage Reset Time(1):

$$LSL_1 = 1000$$

On each subsequent Leverage Reset Time(t):

$$LSL_t = \text{Max}\left[LSL_{r(t)} \times \left(1 + LR_{r(t),t} - FC_{r(t),t} - SB_{r(t),t} - RC_{r(t),t}\right), 0\right]$$

Leverage Reset Time (t) means

1) the scheduled closing time for the Relevant Stock Exchange for the Underlying Stock (or any successor thereto) on any Observation Date; and

2) end of any Intraday Restrike Event Observation Period.

Leverage Reset Time (1) is the scheduled close for the Relevant Stock Exchange for the Underlying Stock on Issue Date.

Leverage Reset Time r(t) means the Leverage Reset Time immediately preceding the Leverage Reset Time (t).

LR_{r(t),t} means the Leveraged Return of the Underlying Stock between Leverage Reset Time r(t) and Leverage Reset Time (t), calculated as follows:

$$LR_{r(t),t} = \text{Leverage} \times \left(\frac{S_t}{S_{r(t)} \times Rfactor_t} - 1 \right)$$

FC_{r(t),t} means, the Funding Cost between the Leverage Reset Time r(t) (included) and the Leverage Reset Time (t) (excluded) calculated as follows:

If the Leverage Reset Time r(t) is at the scheduled closing time for the Relevant Stock Exchange for the Underlying Stock (or any successor thereto) on any Observation Date,

$$FC_{r(t),t} = (\text{Leverage} - 1) \times \frac{\text{Rate}_{r(t)} \times \text{ACT}(r(t), t)}{\text{DayCountBasisRate}}$$

	Otherwise, $FC_{r(t),t} = 0$
SB_{r(t),t}	<p>means the Stock Borrowing Cost between the Leverage Reset Time r(t) (included) and the Leverage Reset Time (t) (excluded) calculated as follows:</p> <p>If the Leverage Reset Time r(t) is at the scheduled closing time for the Relevant Stock Exchange for the Underlying Stock (or any successor thereto) on any Observation Date,</p> $SB_{r(t),t} = -\text{Leverage} \times \frac{CB \times \text{ACT}(r(t), t)}{\text{DayCountBasisRate}}$ <p>Otherwise, $SB_{r(t),t} = 0$</p>
CB	means the Cost of Borrowing applicable that is equal to: 2.00%
RC_{r(t),t}	<p>means the Rebalancing Cost of the Leverage Inverse Strategy as at Leverage Reset Time (t), calculated as follows :</p> $RC_{r(t),t} = \text{Leverage} \times (\text{Leverage} - 1) \times \left(\left \frac{S_t}{S_{r(t)} \times Rfactor_t} - 1 \right \right) \times TC$
TC	<p>means the Transaction Costs applicable as determined by the Calculation Agent (including Stamp Duty and any other applicable taxes, levies and costs which may be levied on the stock transactions on the Relevant Stock Exchange for the Underlying Stock by the applicable regulatory authorities from time to time) that are currently equal to :</p> <p>0.13%</p> <p>“Stamp Duty” refers to the applicable rate of stamp duty on the stock transactions in the jurisdiction of the Relevant Stock Exchange for the Underlying Stock, which may be changed by the applicable regulatory authorities from time to time.</p>
Leverage	-5
S_t	<p>means the Underlying Stock Price as of Leverage Reset Time (t) computed as follows, subject to the adjustments and provisions of the Conditions:</p> <p>If the Leverage Reset Time (t) is at the scheduled closing time for the Relevant Stock Exchange for the Underlying Stock (or any successor thereto) on any Observation Date,</p> <p>S_t is the Closing Price of the Underlying Stock as of such Observation Date.</p> <p>Otherwise,</p> <p>S_t is the highest price of the Underlying Stock during the respective Intraday Restrike Observation Period.</p>
Rfactor_t	<p>means an amount determined by the Calculation Agent, according to the following formula, subject to the adjustments and provisions of the Conditions:</p> <p>If in respect of the Leverage Reset Time (t), the immediately preceding Leverage Reset Time r(t) is at the scheduled closing time for the Relevant Stock Exchange for the Underlying Stock (or any successor</p>

thereto) on any Observation Date,

$$Rfactor_t = 1 - \frac{Div_t}{S_{r(t)}}$$

Otherwise,

$$Rfactor_t = 1$$

where

Div_t is the dividend to be paid out in respect of the Underlying Stock on the Observation Date of the Leverage Reset Time (t) if such Observation Date is an ex-dividend date, otherwise is zero. The dividend shall be considered gross of any applicable withholding taxes.

Rate_t

means, in respect of the Observation Date of Leverage Reset Time (t), the Overnight HKD Hong Kong Interbank Offered Rate (HIBOR) Fixing, as published on Reuters RIC HIKHDOND= or any successor page, being the rate as of day (t), provided that if such rate is not available, then the rate shall be determined by reference to the latest available rate that was published on the relevant Reuters page. Upon the occurrence or likely occurrence, as determined by the Calculation Agent, of a Benchmark Event, the Calculation Agent may make adjustments as it may determine appropriate to account for the relevant event or circumstance, including but not limited to using any alternative rates from such date, with or without retroactive effect as the Calculation Agent may in its sole and absolute discretion determine.

Benchmark Event

means:

- (a) the relevant reference rate has ceased to be published on the relevant screen page as a result of such benchmark ceasing to be calculated or administered; or
- (b) a public statement by the administrator of the relevant reference rate that (in circumstances where no successor administrator has been or will be appointed that will continue publication of such reference rate) it has ceased publishing such reference rate permanently or indefinitely or that it will cease to do so by a specified future date (the "**Specified Future Date**"); or
- (c) a public statement by the supervisor of the administrator of the relevant reference rate that such reference rate has been or will, by a specified future date (the "**Specified Future Date**"), be permanently or indefinitely discontinued; or
- (d) a public statement by the supervisor of the administrator of the relevant reference rate as a consequence of which Reference Rate will, by a specified future date (the "**Specified Future Date**"), be prohibited from being used, or that its use will be subject to restrictions or adverse consequences, either generally or in respect of the Certificates; or
- (e) a public statement by the supervisor of the administrator of the

relevant reference rate that, in the view of such supervisor, such reference rate is or will, by a specified future date (the "**Specified Future Date**"), be no longer representative of an underlying market or the methodology to calculate such reference rate has materially changed; or

- (f) it has or will, by a specified date within the following six months, become unlawful for the Calculation Agent or the Issuer to calculate any payments due to be made to any holder of the Certificates using the relevant reference rate (including, without limitation, under the Benchmarks Regulation (EU) 2016/1011, if applicable).

Notwithstanding the subparagraphs above, where the relevant Benchmark Event is a public statement within subparagraphs (b), (c), (d) or (e) above and the Specified Future Date in the public statement is more than six months after the date of that public statement, the Benchmark Event shall not be deemed occur until the date falling six months prior to such Specified Future Date.

ACT(r(t),t) ACT (r(t),t) means the number of calendar days between the Observation Date of the Leverage Reset Time r(t) (included) and the Observation Date of the Leverage Reset Time (t) (excluded).

DayCountBasisRate 365

Air Bag Mechanism

Intraday Restrike Event means in respect of an Observation Date, the increase at any Calculation Time of the Underlying Stock price by 15% or more compared with the amount of $S_{r(t)} \times Rfactor_t$ where r(t) means the immediately preceding Leverage Reset Time prior to such Calculation Time.

Calculation Time means any time between the TimeReferenceOpening and the TimeReferenceClosing, provided that the relevant data is available to enable the Calculation Agent to determine the Leverage Inverse Strategy Level.

TimeReferenceOpening means the scheduled opening time (including pre-opening session) for the Relevant Stock Exchange for the Underlying Stock (or any successor thereto).

TimeReferenceClosing means the scheduled closing time (including closing auction session) for the Relevant Stock Exchange for the Underlying Stock (or any successor thereto).

Intraday Restrike Event Observation Period means in respect of an Intraday Restrike Event, the period starting on and excluding the Intraday Restrike Event Time and finishing on and including the sooner between (1) the time falling 15 minutes of continuous trading after the Intraday Restrike Event Time and (2) the TimeReferenceClosing.

Where, during such period, the Calculation Agent determines that (1) the trading in the Underlying Stock is disrupted or subject to suspension or limitation or (2) the Relevant Stock Exchange for the Underlying Stock is not open for continuous trading, the Intraday Restrike Event Observation Period will be extended to the extent necessary until (1) the trading in the

Underlying Stock is no longer disrupted, suspended or limited and (2) the Relevant Stock Exchange for the Underlying Stock is open for continuous trading.

Intraday Restrike Event Time means in respect of an Intraday Restrike Event, the Calculation Time on which such event occurs.

The Conditions set out in the section headed "Terms and Conditions of the European Style Cash Settled Long/Short Certificates on Single Equities" in the Base Listing Document are set out below. This section is qualified in its entirety by reference to the detailed information appearing elsewhere in this document which shall, to the extent so specified or to the extent inconsistent with the relevant Conditions set out below, replace or modify the relevant Conditions for the purpose of the Certificates.

TERMS AND CONDITIONS OF THE EUROPEAN STYLE CASH SETTLED LONG/SHORT CERTIFICATES ON SINGLE EQUITIES

1. Form, Status, Transfer and Title

- (a) *Form.* The Certificates (which expression shall, unless the context otherwise requires, include any further certificates issued pursuant to Condition 11) are issued subject to and with the benefit of:-
- (i) an instrument by way of deed poll (the "**Instrument**") dated the Closing Date, made by UBS AG (the "**Issuer**") acting through its London Branch; and
 - (ii) a warrant agent agreement (the "**Master Warrant Agent Agreement**" or "**Warrant Agent Agreement**") dated any time on or before the Closing Date, made between the Issuer and the Warrant Agent for the Certificates.

Copies of the Instrument and the Master Warrant Agent Agreement or Warrant Agent Agreement are available for inspection at the specified office of the Warrant Agent.

The Certificate Holders (as defined below) are entitled to the benefit of, are bound by and are deemed to have notice of all the provisions of the Instrument and the Master Warrant Agent Agreement or Warrant Agent Agreement.

- (b) *Status.* The Certificates constitute direct, general and unsecured contractual obligations of the Issuer and rank, and will rank, equally among themselves and *pari passu* with all other present and future unsecured and unsubordinated obligations of the Issuer (save for statutorily preferred exceptions). The Certificates provide for cash settlement on exercise and, in particular, the Certificates will not be secured by any underlying assets. The Certificates do not entitle Certificate Holders to the delivery of any Underlying Stock, are not secured by the Underlying Stock and do not entitle Certificate Holders to any interest in any Underlying Stock.
- (c) *Transfer.* The Certificates are represented by a global warrant certificate ("**Global Warrant**") which will be deposited with The Central Depository (Pte) Limited ("**CDP**"). Certificates in definitive form will not be issued. Transfers of Certificates may be effected only in Board Lots or integral multiples thereof. All transactions in (including transfers of) Certificates, in the open market or otherwise, must be effected through a securities account with CDP. Title will pass upon registration of the transfer in the records maintained by CDP.
- (d) *Title.* Each person who is for the time being shown in the records maintained by CDP as entitled to a particular number of Certificates shall be treated by the Issuer and the Warrant Agent as the holder and absolute owner of such number of Certificates, notwithstanding any notice to the contrary. The expression "**Certificate Holder**" shall be construed accordingly.

2. Certificate Rights and Exercise Expenses

- (a) *Certificate Rights.* Every Certificate entitles each Certificate Holder, upon due exercise and on compliance with Condition 4, to payment by the Issuer of the Cash Settlement Amount (as defined below) (if any) in the manner set out in Condition 4.

The "**Cash Settlement Amount**", in respect of each Certificate, shall be an amount (if positive) payable in the Settlement Currency equal to the Closing Level multiplied by the Notional Amount per Certificate.

The "**Closing Level**", in respect of each Certificate, shall be an amount payable in the Settlement Currency equal to:

$$\left(\frac{\text{Final Reference Level} \times \text{Final Exchange Rate}}{\text{Initial Reference Level} \times \text{Initial Exchange Rate}} - \text{Strike Level} \right) \times \text{Hedging Fee Factor}$$

If the Issuer determines, in its sole discretion, that on the Valuation Date or any Observation Date a Market Disruption Event has occurred, then that Valuation Date or Observation Date shall be postponed until the first succeeding Exchange Business Day or Underlying Stock Business Day, as the case may be, on which there is no Market Disruption Event, unless there is a Market Disruption Event on each of the five Exchange Business Days or Underlying Stock Business Days, as the case may be, immediately following the original date that, but for the Market Disruption Event, would have been a Valuation Date or an Observation Date. In that case:-

- (i) that fifth Exchange Business Day or Underlying Stock Business Day, as the case may be, shall be deemed to be the Valuation Date or the Observation Date notwithstanding the Market Disruption Event; and
- (ii) the Issuer shall determine the Final Reference Level or the relevant closing level on the basis of its good faith estimate of the Final Reference Level or the relevant closing level that would have prevailed on that fifth Exchange Business Day or Underlying Stock Business Day, as the case may be, but for the Market Disruption Event provided that the Issuer, if applicable, may, but shall not be obliged to, determine such Final Reference Level or the relevant closing level by having regard to the manner in which futures contracts relating to the Underlying Stock are calculated.

"**Market Disruption Event**" means the occurrence or existence of (i) any suspension of trading on the Relevant Stock Exchange of the Underlying Stock requested by the Company if that suspension is, in the determination of the Issuer, material, (ii) any suspension of or limitation imposed on trading (including but not limited to unforeseen circumstances such as by reason of movements in price exceeding limits permitted by the Relevant Stock Exchange or any act of God, war, riot, public disorder, explosion, terrorism or otherwise) on the Relevant Stock Exchange in the Underlying Stock if that suspension or limitation is, in the determination of the Issuer, material, or (iii) the closing of the Relevant Stock Exchange or a disruption to trading on the Relevant Stock Exchange, if that disruption is, in the determination of the Issuer, material as a result of the occurrence of any act of God, war, riot, public disorder, explosion or terrorism.

- (b) *Exercise Expenses.* Certificate Holders will be required to pay all charges which are incurred in respect of the exercise of the Certificates (the "**Exercise Expenses**"). An amount equivalent to the Exercise Expenses will be deducted by the Issuer from the

Cash Settlement Amount in accordance with Condition 4. Notwithstanding the foregoing, the Certificate Holders shall account to the Issuer on demand for any Exercise Expenses to the extent that they were not or could not be deducted from the Cash Settlement Amount prior to the date of payment of the Cash Settlement Amount to the Certificate Holders in accordance with Condition 4.

- (c) **No Rights.** The purchase of Certificates does not confer on the Certificate Holders any right (whether in respect of voting, dividend or other distributions in respect of the Underlying Stock or otherwise) which the holder of an Underlying Stock may have.

3. Expiry Date

Unless automatically exercised in accordance with Condition 4(b), the Certificates shall be deemed to expire at 5:00 p.m. (Singapore time) on the Expiry Date or if the Expiry Date is not a Business Day (as defined below), the immediately preceding Business Day.

4. Exercise of Certificates

- (a) **Exercise.** Certificates may only be exercised on the Expiry Date or if the Expiry Date is not a Business Day, the immediately preceding Business Day, in accordance with Condition 4(b).
- (b) **Automatic Exercise.** Certificate Holders shall not be required to deliver an exercise notice. Exercise of Certificates shall be determined by whether the Cash Settlement Amount (less any Exercise Expenses) is positive. If the Cash Settlement Amount (less any Exercise Expenses) is positive, all Certificates shall be deemed to have been automatically exercised at 5:00 p.m. (Singapore time) on the Expiry Date or if the Expiry Date is not a Business Day, the immediately preceding Business Day. The Cash Settlement Amount less the Exercise Expenses in respect of the Certificates shall be paid in the manner set out in Condition 4(c) below. In the event the Cash Settlement Amount (less any Exercise Expenses) is zero, all Certificates shall be deemed to have expired at 5:00 p.m. (Singapore time) on the Expiry Date or if the Expiry Date is not a Business Day, the immediately preceding Business Day, and Certificate Holders shall not be entitled to receive any payment from the Issuer in respect of the Certificates.
- (c) **Settlement.** In respect of Certificates which are automatically exercised in accordance with Condition 4(b), the Issuer will pay to the Warrant Agent who will then pay to the relevant Certificate Holder the Cash Settlement Amount (if any) in the Settlement Currency. The aggregate Cash Settlement Amount (less any Exercise Expenses) shall be dispatched by the Warrant Agent as soon as practicable and no later than five Business Days following the Expiry Date (subject to extension upon the occurrence of a Market Disruption Event (as defined above) by way of crossed cheque or other payment in immediately available funds drawn in favour of the Certificate Holder only (or, in the case of joint Certificate Holders, the first-named Certificate Holder) appearing in the records maintained by CDP. Any payment made pursuant to this Condition 4(c) shall be delivered at the risk and expense of the Certificate Holder and posted to the Certificate Holder's address appearing in the records maintained by CDP (or, in the case of joint Certificate Holders, to the address of the first-named Certificate Holder appearing in the records maintained by CDP). If the Cash Settlement Amount is equal to or less than the determined Exercise Expenses, no amount is payable.

The Issuer's obligations to pay the Cash Settlement Amount shall be discharged by payment to the Warrant Agent in accordance with the Master Warrant Agent Agreement or Warrant Agent Agreement.

- (d) *CDP not liable.* CDP shall not be liable to any Certificate Holder with respect to any action taken or omitted to be taken by the Issuer or the Warrant Agent in connection with the exercise of the Certificates or otherwise pursuant to or in connection with these Conditions.
- (e) *Business Day.* In these Conditions, a "**Business Day**" shall be a day (excluding Saturdays, Sundays and public holidays) on which the SGX-ST is open for dealings in Singapore during its normal trading hours and banks are open for business in Singapore.

5. Warrant Agent

- (a) *Warrant Agent.* The Issuer reserves the right, subject to the appointment of a successor, at any time to vary or terminate the appointment of the Warrant Agent and to appoint another Warrant Agent provided that it will at all times maintain a Warrant Agent which, so long as the Certificates are listed on the SGX-ST, shall be in Singapore. Notice of any such termination or appointment and of any change in the specified office of the Warrant Agent will be given to the Certificate Holders in accordance with Condition 9.
- (b) *Agent of Issuer.* The Warrant Agent will be acting as agent of the Issuer and will not assume any obligation or duty to or any relationship of agency or trust for the Certificate Holders. All determinations and calculations by the Warrant Agent under these Conditions shall (save in the case of manifest error) be final and binding on the Issuer and the Certificate Holders.

6. Adjustments

- (a) *Potential Adjustment Event.* Following the declaration by a Company of the terms of any Potential Adjustment Event (as defined below), the Issuer will determine whether such Potential Adjustment Event has a dilutive or concentrative or other effect on the theoretical value of the Underlying Stock and, if so, will (i) make the corresponding adjustment, if any, to any one or more of the Conditions as the Issuer determines appropriate to account for that dilutive or concentrative or other effect, and (ii) determine the effective date of that adjustment. The Issuer may, but need not, determine the appropriate adjustment by reference to the adjustment in respect of such Potential Adjustment Event made by an exchange on which options or futures contracts on the Underlying Stock are traded.
- (b) *Definitions.* "*Potential Adjustment Event*" means any of the following:
 - (i) a subdivision, consolidation, reclassification or other restructuring of the Underlying Stock (excluding a Merger Event) or a free distribution or dividend of any such Underlying Stock to existing holders by way of bonus, capitalisation or similar issue;
 - (ii) a distribution or dividend to existing holders of the Underlying Stock of (1) such Underlying Stock, or (2) other share capital or securities granting the right to payment of dividends and/or the proceeds of liquidation of the Company equally or proportionately with such payments to holders of such Underlying Stock, or (3) share capital or other securities of another issuer

acquired by the Company as a result of a “spin-off” or other similar transaction, or (4) any other type of securities, rights or warrants or other assets, in any case for payment (in cash or otherwise) at less than the prevailing market price as determined by the Issuer;

- (iii) an extraordinary dividend;
 - (iv) a call by the Company in respect of the Underlying Stock that is not fully paid;
 - (v) a repurchase by the Company of the Underlying Stock whether out of profits or capital and whether the consideration for such repurchase is cash, securities or otherwise;
 - (vi) with respect to a Company an event that results in any shareholder rights pursuant to a shareholder rights agreement or other plan or arrangement of the type commonly referred to as a “poison pill” being distributed, or becoming separated from shares of common stock or other shares of the capital stock of such Company (provided that any adjustment effected as a result of such an event shall be readjusted upon any redemption of such rights); or
 - (vii) any other event that may have, in the opinion of the Issuer, a dilutive or concentrative or other effect on the theoretical value of the Underlying Stock.
- (c) *Merger Event, Tender Offer, Nationalisation and Insolvency.* If a Merger Event, Tender Offer, Nationalisation or Insolvency occurs in relation to the Underlying Stock, the Issuer may take any action described below:
- (i) determine the appropriate adjustment, if any, to be made to any one or more of the Conditions to account for the Merger Event, Tender Offer, Nationalisation or Insolvency, as the case may be, and determine the effective date of that adjustment. The Issuer may, but need not, determine the appropriate adjustment by reference to the adjustment in respect of the Merger Event, Tender Offer, Nationalisation or Insolvency made by an options exchange to options on the Underlying Stock traded on that options exchange;
 - (ii) cancel the Certificates by giving notice to the Certificate Holders in accordance with Condition 9. If the Certificates are so cancelled, the Issuer will pay an amount to each Certificate Holder in respect of each Certificate held by such Certificate Holder which amount shall be the fair market value of a Certificate taking into account the Merger Event, Tender Offer, Nationalisation or Insolvency, as the case may be, less the cost to the Issuer and/or any of its affiliates of unwinding any underlying related hedging arrangements, all as determined by the Issuer in its reasonable discretion. Payment will be made in such manner as shall be notified to the Certificate Holders in accordance with Condition 9; or
 - (iii) following any adjustment to the settlement terms of options on the Underlying Stock on such exchange(s) or trading system(s) or quotation system(s) as the Issuer in its reasonable discretion shall select (the “**Option Reference Source**”) make a corresponding adjustment to any one or more of the Conditions, which adjustment will be effective as of the date determined by the Issuer to be the effective date of the corresponding adjustment made by the Option Reference Source. If options on the Underlying Stock are not traded on the Option Reference Source, the Issuer will make such adjustment, if any, to any one or

more of the Conditions as the Issuer determines appropriate, with reference to the rules and precedents (if any) set by the Option Reference Source, to account for the Merger Event, Tender Offer, Nationalisation or Insolvency, as the case may be, that in the determination of the Issuer would have given rise to an adjustment by the Option Reference Source if such options were so traded.

Once the Issuer determines that its proposed course of action in connection with a Merger Event, Tender Offer, Nationalisation or Insolvency, it shall give notice to the Certificate Holders in accordance with Condition 9 stating the occurrence of the Merger Event, Tender Offer, Nationalisation or Insolvency, as the case may be, giving details thereof and the action proposed to be taken in relation thereto. Certificate Holders should be aware that due to the nature of such events, the Issuer will not make an immediate determination of its proposed course of action or adjustment upon the announcement or occurrence of a Merger Event, Tender Offer, Nationalisation or Insolvency.

- (d) *Definitions.* “**Insolvency**” means that by reason of the voluntary or involuntary liquidation, bankruptcy, insolvency, dissolution or winding-up of or any analogous proceeding affecting a Company (i) all the Underlying Stock of that Company is required to be transferred to a trustee, liquidator or other similar official or (ii) holders of the Underlying Stock of that Company become legally prohibited from transferring them. “**Merger Date**” means the closing date of a Merger Event or, where a closing date cannot be determined under the local law applicable to such Merger Event, such other date as determined by the Issuer. “**Merger Event**” means, in respect of the Underlying Stock, any (i) reclassification or change of such Underlying Stock that results in a transfer of or an irrevocable commitment to transfer all of such Underlying Stock outstanding to another entity or person, (ii) consolidation, amalgamation, merger or binding share exchange of a Company with or into another entity or person (other than a consolidation, amalgamation, merger or binding share exchange in which such Company is the continuing entity and which does not result in reclassification or change of all of such Underlying Stock outstanding), (iii) takeover offer, exchange offer, solicitation, proposal or other event by any entity or person to purchase or otherwise obtain 100 per cent. of the outstanding Underlying Stock of the Company that results in a transfer of or an irrevocable commitment to transfer all such Underlying Stock (other than such Underlying Stock owned or controlled by such other entity or person), or (iv) consolidation, amalgamation, merger or binding share exchange of the Company or its subsidiaries with or into another entity in which the Company is the continuing entity and which does not result in a reclassification or change of all such Underlying Stock outstanding but results in the outstanding Underlying Stock (other than Underlying Stock owned or controlled by such other entity) immediately prior to such event collectively representing less than 50 per cent. of the outstanding Underlying Stock immediately following such event, in each case if the Merger Date is on or before the Valuation Date. “**Nationalisation**” means that all the Underlying Stock or all or substantially all of the assets of a Company are nationalised, expropriated or are otherwise required to be transferred to any governmental agency, authority, entity or instrumentality thereof. “**Tender Offer**” means a takeover offer, tender offer, exchange offer, solicitation, proposal or other event by any entity or person that results in such entity or person purchasing, or otherwise obtaining or having the right to obtain, by conversion or other means, greater than 10 per cent. and less than 100 per cent. of the outstanding voting shares of the Company, as determined by the Issuer, based upon the making of filings with governmental or self-regulatory agencies or such other information as the Issuer deems relevant.

- (e) *Subdivision or Consolidation of the Certificates.* The Issuer reserves the right to subdivide or consolidate the Certificates, provided that such adjustment is considered by the Issuer not to be materially prejudicial to the Certificate Holders generally (without considering the circumstances of any individual Certificate Holder or the tax or other consequences of such adjustment or amendment in any particular jurisdiction).
- (f) *Other Adjustments.* Except as provided in this Condition 6 and Conditions 10 and 12, adjustments will not be made in any other circumstances, subject to the right reserved by the Issuer (such right to be exercised in the Issuer's sole and unfettered discretion and without any obligation whatsoever) to make such adjustments and amendments as it believes appropriate in circumstances where an event or events (including the events as contemplated in Conditions 6(a) to 6(e)) occur which it believes in its sole discretion (and notwithstanding any prior adjustment made pursuant to the above) and irrespective of, in substitution for, or in addition to the provisions contemplated in Conditions 6(a) to 6(e) should, in the context of the issue of the Certificates and the obligations of the Issuer, give rise to such adjustment or as the case may be, amendment provided that such adjustment or as the case may be, amendment is considered by the Issuer not to be materially prejudicial to the Certificate Holders generally (without considering the circumstances of any individual Certificate Holder or the tax or other consequences of such adjustment or amendment in any particular jurisdiction).
- (g) *Notice of Adjustments.* All determinations made by the Issuer pursuant hereto will be conclusive and binding on the Certificate Holders. The Issuer will give, or procure that there is given notice as soon as practicable of any adjustment and of the date from which such adjustment is effective in accordance with Condition 9. For the avoidance of doubt, no notice will be given if the Issuer determines that adjustments will not be made.

7. Purchases

The Issuer or its related corporations may at any time purchase Certificates at any price in the open market or by tender or by private treaty. Any Certificates so purchased may be held or resold or surrendered for cancellation.

8. Meetings of Certificate Holders; Modification

- (a) *Meetings of Certificate Holders.* The Master Warrant Agent Agreement or Warrant Agent Agreement contains provisions for convening meetings of the Certificate Holders to consider any matter affecting their interests, including the sanctioning by Extraordinary Resolution (as defined in the Master Warrant Agent Agreement or Warrant Agent Agreement) of a modification of the provisions of the Certificates or of the Master Warrant Agent Agreement or Warrant Agent Agreement.

At least 21 days' notice (exclusive of the day on which the notice is given and of the day on which the meeting is held) specifying the date, time and place of the meeting shall be given to the Certificate Holders.

Such a meeting may be convened by the Issuer or by Certificate Holders holding not less than ten per cent. of the Certificates for the time being remaining unexercised. The quorum at any such meeting for passing an Extraordinary Resolution will be two or more persons holding or representing not less than 25 per cent. of the Certificates for the time being remaining unexercised, or at any adjourned meeting two or more

persons being or representing Certificate Holders whatever the number of Certificates so held or represented.

A resolution will be an Extraordinary Resolution when it has been passed at a duly convened meeting by not less than three-quarters of the votes cast by such Certificate Holders who, being entitled to do so, vote in person or by proxy.

An Extraordinary Resolution passed at any meeting of the Certificate Holders shall be binding on all the Certificate Holders whether or not they are present at the meeting. Resolutions can be passed in writing if passed unanimously.

- (b) *Modification.* The Issuer may, without the consent of the Certificate Holders, effect (i) any modification of the provisions of the Certificates or the Instrument which is not materially prejudicial to the interests of the Certificate Holders or (ii) any modification of the provisions of the Certificates or the Instrument which is of a formal, minor or technical nature, which is made to correct an obvious error or which is necessary in order to comply with mandatory provisions of Singapore law. Any such modification shall be binding on the Certificate Holders and shall be notified to them by the Warrant Agent before the date such modification becomes effective or as soon as practicable thereafter in accordance with Condition 9.

9. Notices

- (a) *Documents.* All cheques and other documents required or permitted by these Conditions to be sent to a Certificate Holder or to which a Certificate Holder is entitled or which the Issuer shall have agreed to deliver to a Certificate Holder may be delivered by hand or sent by post addressed to the Certificate Holder at his address appearing in the records maintained by CDP or, in the case of joint Certificate Holders, addressed to the joint holder first named at his address appearing in the records maintained by CDP, and airmail post shall be used if that address is not in Singapore. All documents delivered or sent in accordance with this paragraph shall be delivered or sent at the risk of the relevant Certificate Holder.
- (b) *Notices.* All notices to Certificate Holders will be validly given if published in English on the website of the SGX-ST. Such notices shall be deemed to have been given on the date of the first such publication. If publication on the website of the SGX-ST is not practicable, notice will be given in such other manner as the Issuer may determine. The Issuer shall, at least one month prior to the expiry of any Certificate, give notice of the date of expiry of such Certificate in the manner prescribed above.

10. Liquidation

In the event of a liquidation or dissolution of the Company or the appointment of a liquidator (including a provisional liquidator) or receiver or judicial manager or trustee or administrator or analogous person under Singapore or other applicable law in respect of the whole or substantially the whole of its undertaking, property or assets, all unexercised Certificates will lapse and shall cease to be valid for any purpose, in the case of voluntary liquidation, on the effective date of the relevant resolution and, in the case of an involuntary liquidation or dissolution, on the date of the relevant court order or, in the case of the appointment of a liquidator (including a provisional liquidator) or receiver or judicial manager or trustee or administrator or analogous person under Singapore or other applicable law in respect of the whole or substantially the whole of its undertaking, property or assets, on the date when such appointment is effective but subject (in any such case) to any contrary mandatory requirement of law. In the event of the voluntary liquidation of the Company, the Issuer shall make such adjustments or amendments as it reasonably believes are appropriate in the circumstances.

11. Further Issues

The Issuer shall be at liberty from time to time, without the consent of the Certificate Holders, to create and issue further certificates so as to form a single series with the Certificates.

12. Delisting

- (a) *Delisting.* If at any time, the Underlying Stock ceases to be listed on the Relevant Stock Exchange, the Issuer shall give effect to these Conditions in such manner and make such adjustments and amendments to the rights attaching to the Certificates as it shall, in its absolute discretion, consider appropriate to ensure, so far as it is reasonably able to do so, that the interests of the Certificate Holders generally are not materially prejudiced as a consequence of such delisting (without considering the individual circumstances of any Certificate Holder or the tax or other consequences that may result in any particular jurisdiction).
- (b) *Issuer's Determination.* The Issuer shall determine, in its absolute discretion, any adjustment or amendment and its determination shall be conclusive and binding on the Certificate Holders save in the case of manifest error. Notice of any adjustments or amendments shall be given to the Certificate Holders in accordance with Condition 9 as soon as practicable after they are determined.

13. Early Termination

- (a) *Early Termination for Illegality etc.* The Issuer shall have the right to terminate the Certificates if it shall have determined in its absolute discretion that a Regulatory Event (as defined below) has occurred and, for reasons beyond its control its performance thereunder shall have become unlawful in whole or in part under any applicable present or future law, rule, regulation, judgment, order or directive of any governmental, administrative, legislative or judicial authority or power ("**Applicable Law**").

For the purposes of this Condition:

"**Regulatory Event**" means, following the occurrence of a Change in Law (as defined below) with respect to the Issuer and/or any of its affiliates involved in the issue of the Certificates (hereafter the "**Relevant Affiliates**" and each of the Issuer and the Relevant Affiliates, a "**Relevant Entity**") that, after the Certificates have been issued, (i) any Relevant Entity would incur a materially increased (as compared with circumstances existing prior to such event) amount of tax, duty, liability, penalty, expense, fee, cost or regulatory capital charge however defined or collateral requirements for performing its obligations under the Certificates or hedging the Issuer's obligations under the Certificates, including, without limitation, due to clearing requirements of, or the absence of, clearing of the transactions entered into in connection with the issue of, or hedging the Issuer's obligation under, the Certificates, (ii) it is or will become for any Relevant Entity impracticable, impossible (in each case, after using commercially reasonable efforts), unlawful, illegal or otherwise prohibited or contrary, in whole or in part, under any law, regulation, rule, judgement, order or directive of any governmental, administrative or judicial authority, or power, applicable to such Relevant Entity (a) to hold, acquire, issue, reissue, substitute, maintain, settle, or as the case may be, guarantee, the Certificates, (b) to acquire, hold, sponsor or dispose of any asset(s) (or any interest thereof) of any other transaction(s) such Relevant Entity may use in connection with the issue of the Certificates or to hedge the Issuer's obligations under the Certificates, (c) to perform obligations in connection with, the Certificates or any contractual arrangement entered into between the Issuer and any Relevant Affiliate (including without limitation to hedge

the Issuer's obligations under the Certificates) or (d) to hold, acquire, maintain, increase, substitute or redeem all or a substantial part of its direct or indirect shareholding in the Issuer's capital or the capital of any Relevant Affiliate or to directly or indirectly sponsor the Issuer or any Relevant Affiliate, or (iii) there is or may be a material adverse effect on a Relevant Entity in connection with the issue of the Certificates.

"Change in Law" means (i) the adoption, enactment, promulgation, execution or ratification of any applicable new law, regulation or rule (including, without limitation, any applicable tax law, regulation or rule) after the Certificates have been issued, (ii) the implementation or application of any applicable law, regulation or rule (including, without limitation, any applicable tax law, regulation or rule) already in force when the Certificates have been issued but in respect of which the manner of its implementation or application was not known or unclear at the time, or (iii) the change of any applicable law, regulation or rule existing when the Certificates are issued, or the change in the interpretation or application or practice relating thereto, existing when the Certificates are issued of any applicable law, regulation or rule, by any competent court, tribunal, regulatory authority or any other entity exercising executive, legislative, judicial, taxing, regulatory or administrative powers or functions of or pertaining to government (including any additional or alternative court, tribunal, authority or entity, to that existing when the Certificates are issued).

- (b) *Early Termination for other reasons.* The Issuer reserves the right (such right to be exercised in the Issuer's sole and unfettered discretion and without any obligation whatsoever) to terminate the Certificates in accordance with Condition 13(c) where an event or events occur which it believes in its sole discretion should, in the context of the issue of the Certificates and the obligations of the Issuer, give rise to such termination provided that such termination is considered by the Issuer not to be materially prejudicial to the interests of Certificate Holders generally (without considering the circumstances of any individual Certificate Holder or the tax or other consequences of such termination in any particular jurisdiction).
- (c) *Termination.* If the Issuer terminates the Certificates early, then the Issuer will give notice to the Certificate Holders in accordance with Condition 9. The Issuer will, if and to the extent permitted by the Applicable Law, pay to each Certificate Holder in respect of each Certificate held by such Certificate Holder an amount calculated by it as the fair market value of the Certificate immediately prior to such termination (ignoring such illegality) less the cost to the Issuer of unwinding any related hedging arrangements. Payment will be made to the Certificate Holder in such manner as shall be notified to the Certificate Holder in accordance with Condition 9.

14. Governing Law

The Certificates, the Instrument and the Master Warrant Agent Agreement or Warrant Agent Agreement will be governed by and construed in accordance with Singapore law. The Issuer and each Certificate Holder (by its purchase of the Certificates) shall be deemed to have submitted for all purposes in connection with the Certificates, the Instrument and the Master Warrant Agent Agreement or Warrant Agent Agreement to the non-exclusive jurisdiction of the courts of Singapore.

15. Prescription

Claims against the Issuer for payment of any amount in respect of the Certificates will become void unless made within six years of the Expiry Date and, thereafter, any sums payable in respect of such Certificates shall be forfeited and shall revert to the Issuer.

16. Contracts (Rights of Third Parties) Act, Chapter 53B of Singapore

Unless otherwise expressly provided in the Global Warrant, the Instrument and the Master Warrant Agent Agreement or Warrant Agent Agreement, a person who is not a party to any contracts made pursuant to the Global Warrant, the Instrument and the Master Warrant Agent Agreement or Warrant Agent Agreement has no rights under the Contracts (Rights of Third Parties) Act, Chapter 53B of Singapore to enforce any terms of such contracts. Except as expressly provided herein, the consent of any third party is not required for any subsequent agreement by the parties hereto to amend or vary (including any release or compromise of any liability) or terminate such contracts.

SUMMARY OF THE ISSUE

The following is a summary of the issue and should be read in conjunction with, and is qualified by reference to, the other information set out in this document and the Base Listing Document. Terms used in this Summary are defined in the Conditions.

Issuer:	UBS AG acting through its London Branch
Company:	Hong Kong Exchanges and Clearing Limited
The Certificates:	European Style Cash Settled Short Certificates relating to the Underlying Stock
Number:	10,000,000 Certificates
Form:	The Certificates will be issued subject to, and with the benefit of, a master instrument by way of deed poll dated 7 January 2022 (the “ Master Instrument ”) and executed by the Issuer and a master warrant agent agreement dated 27 February 2008 (the “ Master Warrant Agent Agreement ”) and made between the Issuer and the Warrant Agent.
Cash Settlement Amount:	In respect of each Certificate, is the amount (if positive) equal to: Notional Amount per Certificate x Closing Level
Denominations:	Certificates are represented by a global warrant in respect of all the Certificates.
Exercise:	The Certificates may only be exercised on the Expiry Date or if the Expiry Date is not a Business Day, the immediately preceding Business Day, in a Board Lot or integral multiples thereof. Certificate Holders will not be required to deliver an exercise notice. If the Cash Settlement Amount (less any Exercise Expenses) is positive, all Certificates will be deemed to have been automatically exercised at 5:00 p.m. (Singapore time) on the Expiry Date or if the Expiry Date is not a Business Day, the immediately preceding Business Day. The Cash Settlement Amount less the Exercise Expenses in respect of the Certificates shall be paid in the manner set out in Condition 4(c) of the Conditions. In the event the Cash Settlement Amount (less any Exercise Expenses) is zero, all Certificates shall be deemed to have expired at 5:00 p.m. (Singapore time) on the Expiry Date or if the Expiry Date is not a Business Day, the immediately preceding Business Day, and Certificate Holders shall not be entitled to receive any payment from the Issuer in respect of the Certificates.
Exercise and Trading Currency:	SGD
Board Lot:	100 Certificates

- Transfers of Certificates: Certificates may only be transferred in Board Lots (or integral multiples thereof). All transfers in Certificates, in the open market or otherwise, must be effected through a securities account with CDP. Title will pass upon registration of the transfer in the records of CDP.
- Listing: Application has been made to the SGX-ST for permission to deal in and for quotation of the Certificates and the SGX-ST has agreed in principle to grant permission to deal in and for quotation of the Certificates. Issue of the Certificates is conditional on such listing being granted. It is expected that dealings in the Certificates on the SGX-ST will commence on or about 21 April 2022.
- Governing Law: The laws of Singapore
- Warrant Agent: The Central Depository (Pte) Limited
11 North Buona Vista Drive
#06-07 The Metropolis Tower 2
Singapore 138589
- Further Issues: Further issues which will form a single series with the Certificates will be permitted.

The above summary is qualified in its entirety by reference to the detailed information appearing elsewhere in this document and the Base Listing Document.

INFORMATION RELATING TO
THE EUROPEAN STYLE CASH SETTLED SHORT CERTIFICATES ON SINGLE EQUITIES

What are European Style Cash Settled Short Certificates on Single Equities?

European style cash settled short certificates on single equities (the “**Certificates**”) are structured products relating to the Underlying Stock and the return on a Certificate is linked to the performance of the Leverage Inverse Strategy.

A) Cash Settlement Amount Payable upon the Exercise of the Certificates at Expiry

Upon the exercise of the Certificates at expiry, the Certificate Holders would be paid a Cash Settlement Amount in respect of each Certificate.

The Cash Settlement Amount, in respect of each Certificate, shall be an amount payable in the Settlement Currency equal to the Closing Level multiplied by the Notional Amount per Certificate.

The Closing Level, in respect of each Certificate, shall be an amount payable in the Settlement Currency equal to (1) divided by (2) less (3) subject to any adjustments such as (4), where:

(1) is the Final Reference Level multiplied by the Final Exchange Rate;

(2) is the Initial Reference Level multiplied by the Initial Exchange Rate;

(3) is the Strike Level; and

(4) is the Hedging Fee Factor.

If the Cash Settlement Amount (less any Exercise Expenses) is positive, all Certificates shall be deemed to have been automatically exercised and investors will receive a Cash Settlement Amount. If the Cash Settlement Amount (less any Exercise Expenses) is zero, all Certificates shall be deemed to have expired. Please refer to the section headed “Terms and Conditions of the European Style Cash Settled Long/Short Certificates on Single Equities” for further details on the calculation of the Cash Settlement Amount.

The Certificates are only suitable for investors who believe that the price of the Underlying Stock will decrease and are seeking short-term leveraged inverse exposure to the Underlying Stock.

B) Trading the Certificates before Expiry

If the Certificate Holders want to cash out their investments in the Certificates before the expiry of the Certificates, they may sell the Certificates in the secondary market during the life of the Certificates, and would be subject to the following fees and charges:

- (i) For Certificate Holders who trade the Certificates intraday: shall pay normal transaction and brokerage fees for the trading of the Certificates on the SGX-ST, and may be required to pay stamp taxes or other documentary charges in accordance with the laws and practices of the country where the Certificates are transferred; and
- (ii) For Certificate Holders who hold the Certificates overnight: in addition to the normal transaction and brokerage fees and applicable stamp taxes, would also be required to bear the Management Fee and Gap Premium as well as certain costs embedded within the Leverage Inverse Strategy including the Stock Borrowing Cost and the Rebalancing Cost.

Illustration of the Calculation of Hedging Fee Factor

Hedging Fee Factor	=	Product of the Daily Fees
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Daily Fees	=	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">Daily Management Fee Adjustment</td> </tr> <tr> <td style="text-align: center;">1 – Management Fee x ACT (t-1;t) / 360</td> </tr> </table>	Daily Management Fee Adjustment	1 – Management Fee x ACT (t-1;t) / 360
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1 – Management Fee x ACT (t-1;t) / 360				
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Daily Gap Premium Adjustment				
1 – Gap Premium (t-1) x ACT (t-1;t) / 360				

Illustration of the Calculation of Cash Settlement Amount

Cash Settlement Amount = Final Value of Certificates – Strike Level (zero)

Value of Certificates	=	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">t=0</td> </tr> <tr> <td style="text-align: center;">Notional Amount</td> </tr> </table>	t=0	Notional Amount	x	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">t=1</td> </tr> <tr> <td style="text-align: center;">Leverage Inverse Strategy daily performance⁸ x Daily Fees</td> </tr> </table>	t=1	Leverage Inverse Strategy daily performance ⁸ x Daily Fees	x	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">t=2</td> </tr> <tr> <td style="text-align: center;">Leverage Inverse Strategy daily performance x Daily Fees</td> </tr> </table>	t=2	Leverage Inverse Strategy daily performance x Daily Fees	x ...	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">t=i</td> </tr> <tr> <td style="text-align: center;">Leverage Inverse Strategy Daily performance x Daily Fees</td> </tr> </table>	t=i	Leverage Inverse Strategy Daily performance x Daily Fees
		t=0														
Notional Amount																
t=1																
Leverage Inverse Strategy daily performance ⁸ x Daily Fees																
t=2																
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Value of Certificates	=	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">t=0</td> </tr> <tr> <td style="text-align: center;">Notional Amount</td> </tr> </table>	t=0	Notional Amount	x	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">Product of the daily Leverage Inverse Strategy Performance</td> </tr> <tr> <td style="text-align: center;">Leverage Inverse Strategy daily performance x Leverage Inverse Strategy daily performance</td> </tr> </table>	Product of the daily Leverage Inverse Strategy Performance	Leverage Inverse Strategy daily performance x Leverage Inverse Strategy daily performance	x	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">Product of the Daily Fees (Hedging Fee Factor)</td> </tr> <tr> <td style="text-align: center;">Daily Fees x Daily Fees</td> </tr> </table>	Product of the Daily Fees (Hedging Fee Factor)	Daily Fees x Daily Fees
		t=0										
Notional Amount												
Product of the daily Leverage Inverse Strategy Performance												
Leverage Inverse Strategy daily performance x Leverage Inverse Strategy daily performance												
Product of the Daily Fees (Hedging Fee Factor)												
Daily Fees x Daily Fees												

Final Value of Certificates	=	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">t=0</td> </tr> <tr> <td style="text-align: center;">Notional Amount</td> </tr> </table>	t=0	Notional Amount	x	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">Final Reference Level x Final Exchange Rate</td> </tr> <tr> <td style="text-align: center;">÷</td> </tr> <tr> <td style="text-align: center;">Initial Reference Level x Initial Exchange Rate</td> </tr> </table>	Final Reference Level x Final Exchange Rate	÷	Initial Reference Level x Initial Exchange Rate	x	<table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">Hedging Fee Factor</td> </tr> </table>	Hedging Fee Factor
		t=0										
Notional Amount												
Final Reference Level x Final Exchange Rate												
÷												
Initial Reference Level x Initial Exchange Rate												
Hedging Fee Factor												

Illustration of the applicable fees and charges for an intraday trading scenario

Hedging Fee is implemented overnight in the price of the Certificate. As a consequence, when trading intraday, investors will not bear any Hedging Fee.

Investors will only support bid/ask costs, which are the difference between the price at which the Designated Market Maker purchases (bid) and sells (ask) the Certificate at any point of time.

⁷ "t" refers to "Observation Date" which means each Underlying Stock Business Day (subject to Market Disruption Event) from (and including) the Underlying Stock Business Day immediately preceding the Expected Listing Date to the Valuation Date.

⁸ Leverage Inverse Strategy daily performance is computed as the Leverage Inverse Strategy Level on Business Day (t) divided by the Leverage Inverse Strategy Level on Business Day (t-1).

Example of Calculation of Hedging Fee Factor and Cash Settlement Amount

The example is purely hypothetical. We include the example to illustrate how the Certificates work, and you MUST NOT rely on them as any indication of the actual return or what the payout on the Certificates might actually be. The example also assumes a product which expires 16 days after listing date, to illustrate the daily calculation of price, costs and fees from listing date to expiry date.

Assuming an investor purchases the following Certificates at the Issue Price:

Underlying Stock:	Ordinary shares of Hong Kong Exchanges and Clearing Limited
Expected Listing Date:	01/02/2021
Expiry Date:	16/02/2021
Initial Reference Level:	1,000
Initial Exchange Rate:	1
Final Reference Level:	1,200
Final Exchange Rate:	1
Issue Price:	0.90 SGD
Notional Amount per Certificate:	0.90 SGD
Management Fee (p.a.):	0.40%
Gap Premium (p.a.):	4.60%
Strike Level:	Zero

Hedging Fee Factor

Hedging Fee Factor on the n^{th} Underlying Stock Business Day after issuance of Certificate ("HFF (n)") is calculated as follows:

$$\text{HFF}(0) = 100\%$$

On Next Calendar Day (assuming it is an Underlying Stock Business Day):

$$\text{HFF}(1) = \text{HFF}(0) \times \left(1 - \text{Management Fee} \times \frac{\text{ACT}(t-1; t)}{360}\right) \times \left(1 - \text{Gap Premium} \times \frac{\text{ACT}(t-1; t)}{360}\right)$$

$$\text{HFF}(1) = 100\% \times \left(1 - 0.40\% \times \frac{1}{360}\right) \times \left(1 - 4.60\% \times \frac{1}{360}\right)$$

$$\text{HFF}(1) = 100\% \times 99.9989\% \times 99.9872\% \approx 99.9861\%$$

Assuming 2nd Underlying Stock Business Day falls 3 Calendar Days after 1st Underlying Stock Business Day:

$$\text{HFF (2)} = \text{HFF (1)} \times \left(1 - \text{Management Fee} \times \frac{\text{ACT}(t-1; t)}{360}\right) \times \left(1 - \text{Gap Premium} \times \frac{\text{ACT}(t-1; t)}{360}\right)$$

$$\text{HFF (2)} = 99.9861\% \times \left(1 - 0.40\% \times \frac{3}{360}\right) \times \left(1 - 4.60\% \times \frac{3}{360}\right)$$

$$\text{HFF (2)} = 99.9861\% \times 99.9967\% \times 99.9617\% \approx 99.9445\%$$

The same principle applies to the following Underlying Stock Business Days:

$$\text{HFF (n)} = \text{HFF (n-1)} \times \left(1 - \text{Management Fee} \times \frac{\text{ACT}(t-1; t)}{360}\right) \times \left(1 - \text{Gap Premium} \times \frac{\text{ACT}(t-1; t)}{360}\right)$$

In this example, the Hedging Fee Factor as of the Valuation Date would be equal to 99.7919% as illustrated below:

Date	HFF
2/1/2021	100.0000%
2/2/2021	99.9861%
2/3/2021	99.9722%
2/4/2021	99.9583%
2/5/2021	99.9445%
2/8/2021	99.9028%
2/9/2021	99.8889%
2/10/2021	99.8751%
2/11/2021	99.8612%
2/12/2021	99.8473%
2/15/2021	99.8057%
2/16/2021	99.7919%

Cash Settlement Amount

In this example, the Closing Level and the Cash Settlement Amount would be computed as follows:

Closing Level = [(Final Reference Level x Final Exchange Rate) / (Initial Reference Level x Initial Exchange Rate) – Strike Level] x Hedging Fee Factor

$$= [(1200 \times 1) / (1000 \times 1) - 0] \times 99.7919\%$$

$$= 119.75\%$$

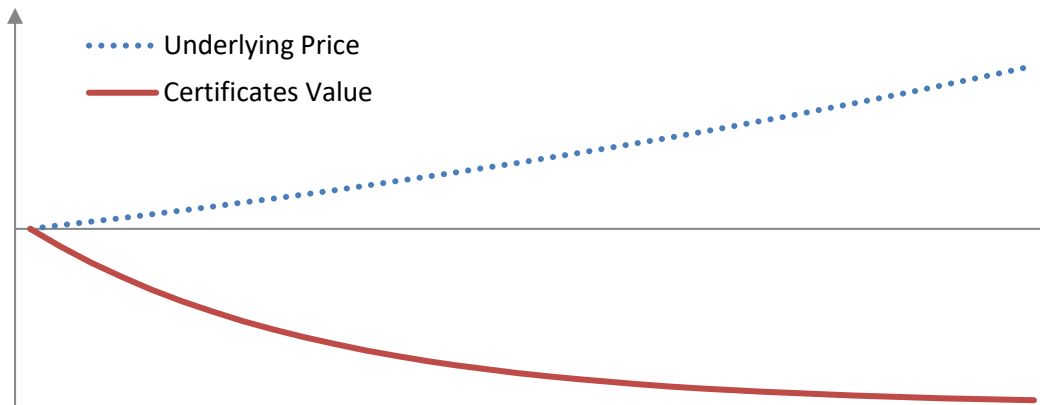
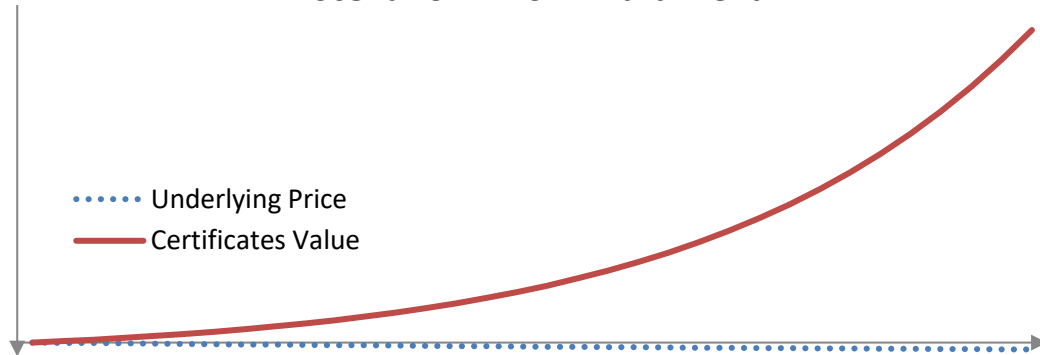
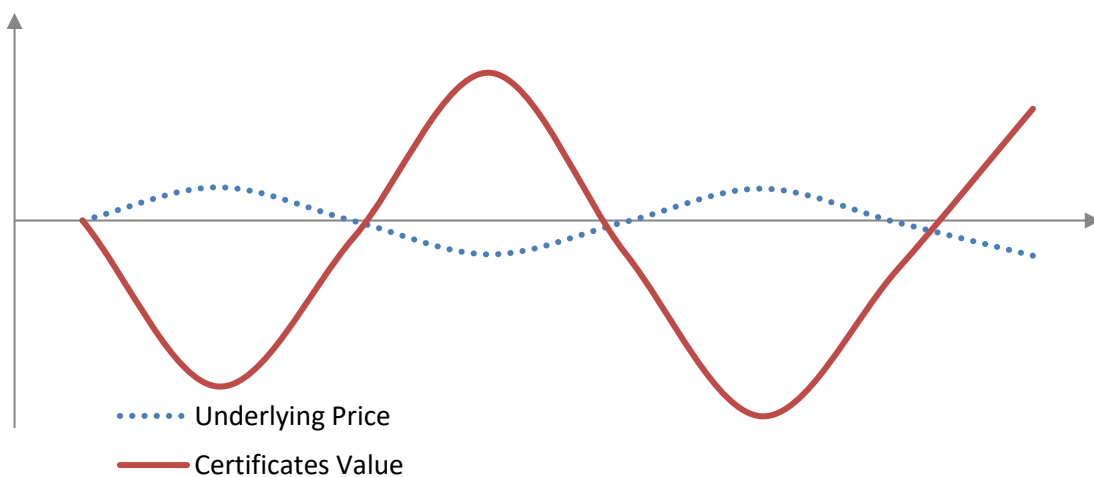
Cash Settlement Amount = Closing Level x Notional Amount per Certificate

$$= 119.75\% \times 0.90 \text{ SGD}$$

$$= 1.078 \text{ SGD}$$

Illustration on how returns and losses can occur under different scenarios

The examples are purely hypothetical and do not take fees and charges payable by investors into consideration. The examples highlight the effect of the Underlying Stock performance on the value of the Certificates and do not take into account the possible influence of fees, exchange rates, dividends, or any other market parameters.

1. Illustrative examples**Scenario 1 - Upward Trend****Scenario 2 - Downward Trend****Scenario 3 - Volatile Market**

2. Numerical Examples

Scenario 1 – Upward Trend

		Underlying				
	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5
Daily Return		2.00%	2.00%	2.00%	2.00%	2.00%
Value at end of day	10,000.00	10,200.00	10,404.00	10,612.08	10,824.32	11,040.81
Accumulated Return		2.00%	4.04%	6.12%	8.24%	10.41%

		Value of the Certificates				
	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5
Daily Return		-10.00%	-10.00%	-10.00%	-10.00%	-10.00%
Price at end of day	0.90	0.81	0.73	0.66	0.59	0.53
Accumulated Return		-10.00%	-19.00%	-27.10%	-34.39%	-40.95%

Scenario 2 – Downward Trend

		Underlying				
	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5
Daily Return		-2.00%	-2.00%	-2.00%	-2.00%	-2.00%
Value at end of day	10,000.00	9,800.00	9,604.00	9,411.92	9,223.68	9,039.21
Accumulated Return		-2.00%	-3.96%	-5.88%	-7.76%	-9.61%

		Value of the Certificates				
	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5
Daily Return		10.00%	10.00%	10.00%	10.00%	10.00%
Price at end of day	0.90	0.99	1.09	1.20	1.32	1.45
Accumulated Return		10.00%	21.00%	33.10%	46.41%	61.05%

Scenario 3 – Volatile Market

		Underlying				
	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5
Daily Return		2.00%	-2.00%	-2.00%	2.00%	2.00%
Value at end of day	10,000.00	10,200.00	9,996.00	9,796.08	9,992.00	10,191.84
Accumulated Return		2.00%	-0.04%	-2.04%	-0.08%	1.92%

		Value of the Certificates				
	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5
Daily Return		-10.00%	10.00%	10.00%	-10.00%	-10.00%
Price at end of day	0.90	0.81	0.89	0.98	0.88	0.79
Accumulated Return		-10.00%	-1.00%	8.90%	-1.99%	-11.79%

Description of Air Bag Mechanism

The Certificates integrate an “Air Bag Mechanism” which is designed to reduce exposure to the Underlying Stock during extreme market conditions.

In accordance with the Air Bag Mechanism timeline below, when the Air Bag triggers, the following typically occurs:

- Observation Period : the price of the Underlying Stock is observed and its maximum price is recorded (i) during 15 minutes of continuous trading after the Air Bag is triggered, or (ii) until Market Close if there is 15 minutes (or less) of continuous trading until Market Close when the Air Bag is triggered; and
- Reset Period: thereafter, the Leverage Inverse Strategy is reset using the maximum price of the Underlying Stock during the Observation Period as the New Observed Price. The New Observed Price replaces the last closing price of the Underlying Stock in order to compute the performance of the Leverage Inverse Strategy.

During the Observation Period and Reset Period, trading of Certificates is suspended for **at least** 30 minutes of continuous trading after the Air Bag is triggered. Investors cannot sell or purchase any Certificates during this period. The Reset Period (and consequently the resumption of trading) is subject further to SGX-ST’s requirements, including at least 30 minutes from the time of publication of an announcement on the exchange in respect of the Air Bag Mechanism being triggered, and at least 15 minutes after the SGX-ST grants an approval to resume trading, whichever is later, rounded to the next quarter of an hour.

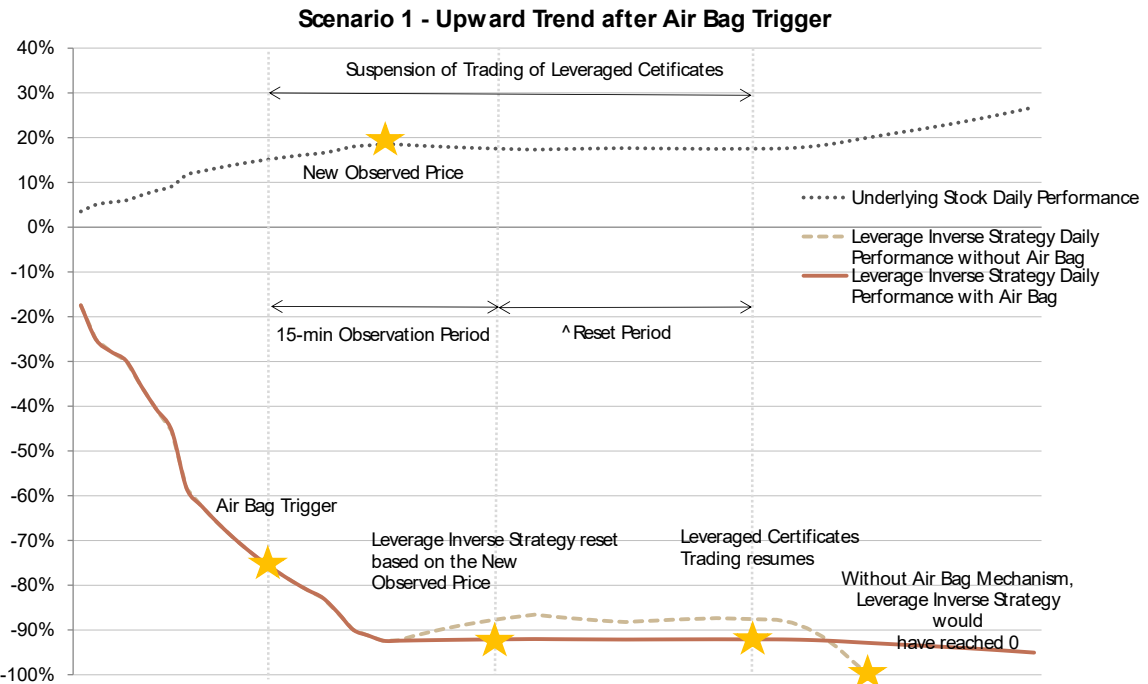
The performance of the Leverage Inverse Strategy will be the inverse of the Underlying Stock.

For the avoidance of doubt, if the Air Bag Mechanism was triggered with more than 60 minutes of continuous trading before Market Close, trading of Certificates will resume the same trading day after the Reset Period has elapsed, subject to the SGX-ST’s approval to resume trading. If the Air Bag Mechanism was triggered between 45 minutes and 60 minutes of continuous trading before Market Close, trading of Certificates may or may not resume the same trading day after the Reset Period has elapsed. If the Air Bag Mechanism was triggered with only 45 minutes (or less) of continuous trading before Market Close, trading of Certificates resumes on the next trading day.

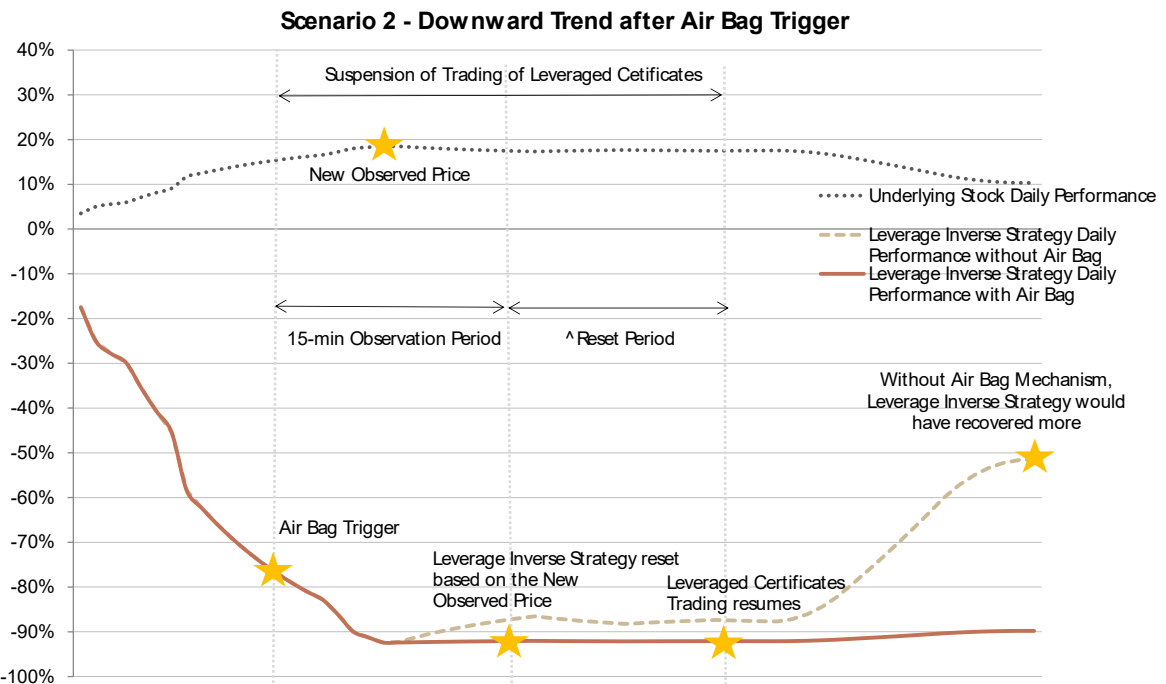
With **Market Close** defined as:

- Underlying Stock closing time with respect to the Observation Period including the closing auction session
- The sooner between Underlying Stock closing time of continuous trading and SGX-ST closing time of continuous trading with respect to the resumption of trading

Illustrative examples of the Air Bag Mechanism⁹



^ The Reset Period (and consequently the resumption of trading) is subject further to SGX-ST's requirements, including at least 30 minutes from the time of publication of an announcement on the exchange in respect of the Air Bag Mechanism being triggered, and at least 15 minutes after the SGX-ST grants an approval to resume trading, whichever is later, rounded to the next quarter of an hour.



^ The Reset Period (and consequently the resumption of trading) is subject further to SGX-ST's requirements, including at least 30 minutes from the time of publication of an announcement on the exchange in respect of the Air Bag Mechanism being triggered, and at least 15 minutes after the SGX-ST grants an approval to resume trading, whichever is later, rounded to the next quarter of an hour.

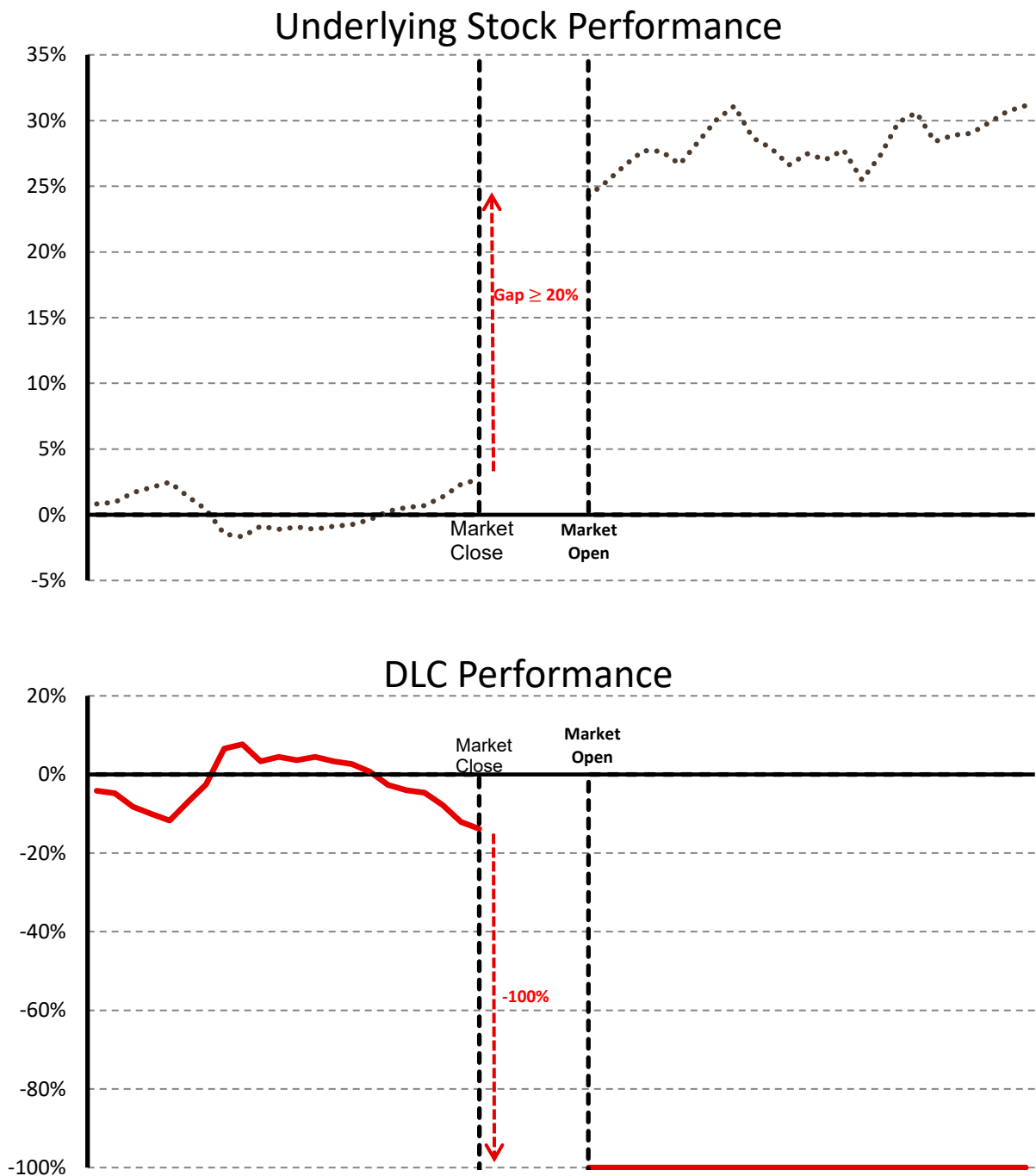
⁹ The illustrative examples are not exhaustive.

Scenarios where the investor may lose the entire value of the investment

The scenarios below are purely hypothetical and do not take fees and charges payable by investors into consideration. The scenarios highlight cases where the Certificates may lose 100% of their value.

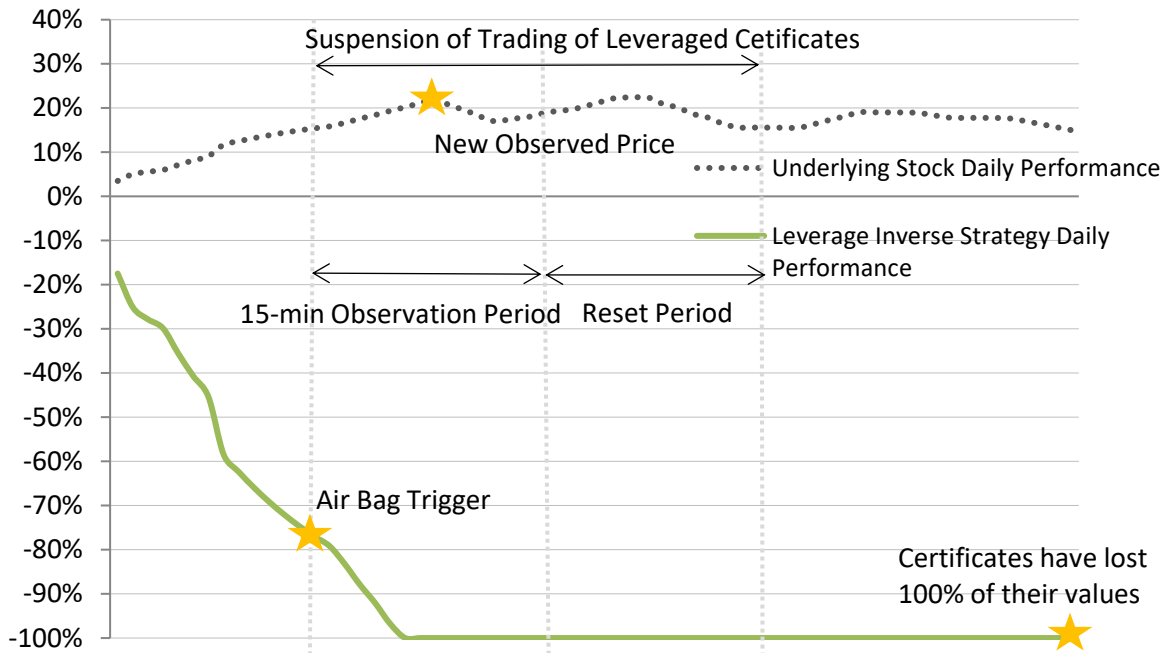
Scenario 1 – Overnight rise of the Underlying Stock

On any business day, the opening price of the Underlying Stock may be higher or lower than the closing price on the previous day. The difference between the previous closing price and the opening price of the Underlying Stock is termed a “gap”. If the opening price of the Underlying Stock is 20% or more above the previous day closing price, the Air Bag Mechanism would only be triggered when the market opens the following day, and the Certificates would lose their entire value in such event.



Scenario 2 – Sharp intraday rise of the Underlying Stock

Although the Air Bag Mechanism is designed to reduce the exposure to the Underlying Stock during extreme market conditions, the Certificate can lose 100% of its value in the event the price of the Underlying Stock rises by 20% or more within the 15 minutes Observation Period compared to the reference price, being: (i) if air bag event has not been previously triggered on the same day, the previous closing price of the Underlying Stock, or (ii) if one or more air bag events have been previously triggered on the same day, the latest New Observed Price. The Certificates would lose their entire value in such event.



Examples and illustrations of adjustments due to certain corporate actions

The examples are purely hypothetical and do not take fees and charges payable by investors into consideration. The examples highlight the effect of corporate actions on the value of the Certificates and do not take into account the possible influence of fees, exchange rates, or any other market parameters.

In the case of any corporate action on the Underlying Stock, the Calculation Agent will, as soon as reasonably practical after it becomes aware of such event, determine whether such corporate action has a dilutive or concentrative effect on the theoretical value of the Underlying Stock, and if so, will (a) calculate the corresponding adjustment, if any, to be made to the elements relating to the Underlying Stock which are used to determine any settlement or payment terms under the Certificates and/or adjust at its discretion any other terms of the Certificates as it determines appropriate to preserve the economic equivalent of the obligations of the Issuer under the Certificates and (b) determine the effective date of such adjustment.

Notwithstanding the foregoing, in the event the Observation Date of the Leverage Reset Time(t) is an ex-date with respect to a corporate action related to the Underlying Stock, and the immediately preceding Leverage Reset Time r(t) is at the scheduled closing time for the Relevant Stock Exchange for the Underlying Stock (or any successor thereto), the Calculation Agent may, in its sole and absolute discretion, replace the $Rfactor_t$ with respect to such Leverage Reset Time (t) by an amount computed according to the following generic formula :

$$Rfactor_t = \left[1 - \frac{Div_t + DivExc_t - M \times R}{S_{r(t)}} \right] \times \frac{1}{1 + M}$$

This formula is provided for indicative purposes and the Calculation Agent may determine that this formula is not appropriate for certain corporate actions and may apply a different formula instead.

Such adjustment of $Rfactor_t$ would affect the Leveraged Return, the Rebalancing Cost, and the Underlying Reference Price used to determine the Intraday Restrike Event. The Air Bag mechanism would not be triggered if the stock price rises by 15% exclusively because of the dilutive effect of a corporate action.

Where:

$DivExc_t$ is the amount received as an Extraordinary Dividend by a holder of existing Shares for each Share held prior to the Extraordinary Dividend, net of any applicable withholding taxes.

M is the number of new Share(s) (whether a whole or a fraction) per existing Share each holder thereof is entitled to subscribe or to receive (positive amount) or the number of existing Shares redeemed or canceled per existing Share (negative amount), as the case may be, resulting from the corporate action.

R is the subscription price per Share (positive amount) or the redemption price per Share (negative amount) including any dividends or other benefits forgone to be subscribe to or to receive (as applicable), or to redeem a Share.

1. Stock split

Assuming the Underlying Stock is subject to a 1 to 2 stock split (i.e. 1 new Share for every 1 existing share):

$$S_{r(t)} = \$100$$

$$S_t = \$51$$

$$\text{Div}_t = \$0$$

$$\text{DivExc}_t = \$0$$

M = 1 (i.e. 1 new Shares for 1 existing Share)

R = \$0 (no subscription price / redemption price)

$$Rfactor_t = \left[1 - \frac{0 + 0 - 2 \times 0}{100} \right] \times \frac{1}{1 + 1} = 50\%$$

As a consequence:

$$\text{LR}_{r(t),t} = \text{Leverage} \times \left(\frac{S_t}{S_{r(t)} \times Rfactor_t} - 1 \right) = -5 \times \left(\frac{51}{100 \times 50\%} - 1 \right) = -10\%$$

$S_{r(t)}$	$S_{r(t)} \times Rfactor_t$	S_t	Adjusted Underlying Stock Performance
100	50	51	2%

Value of the Certificate r(t)	Value of the Certificate (t)	Certificates' performance (excluding any cost and fees)
0.90	0.81	-10%

In such case an Intraday Restrike Event would occur if the Underlying Stock price rises to \$57.5, which is 15% above \$50, the Underlying Stock Reference Price.

2. Share Consolidation

Assuming the Underlying Stock is subject to a 2 to 1 share consolidation (i.e. 1 Share canceled for every 2 existing Shares):

$$S_{r(t)} = \$100$$

$$S_t = \$202$$

$$\text{Div}_t = \$0$$

$$\text{DivExc}_t = \$0$$

M = -0.5 (i.e. 0.5 Shares canceled for each 1 existing Share)

R = \$0 (no subscription price / redemption price)

$$Rfactor_t = \left[1 - \frac{0 + 0 - (-0.5) \times 0}{100} \right] \times \frac{1}{1 + (-0.5)} = 200\%$$

As a consequence:

$$\text{LR}_{r(t),t} = \text{Leverage} \times \left(\frac{S_t}{S_{r(t)} \times Rfactor_t} - 1 \right) = -5 \times \left(\frac{202}{100 \times 200\%} - 1 \right) = -5\%$$

$S_{r(t)}$	$S_{r(t)} \times Rfactor_t$	S_t	Adjusted Underlying Stock Performance
100	200	202	1%

Value of the Certificate r(t)	Value of the Certificate (t)	Certificates' performance (excluding any cost and fees)
0.90	0.855	-5%

In such case an Intraday Restrike Event would occur if the Underlying Stock price rises to \$230, which is 15% above \$200, the Underlying Stock Reference Price.

3. Rights Issues

Assuming there is a rights issue with respect to the Underlying Stock, with a right to receive 1 new Share for every 2 existing Shares, for a subscription price of \$40.

$$S_{r(t)} = \$100$$

$$S_t = \$84$$

$$Div_t = \$0$$

$$DivExc_t = \$0$$

$$R = \$40 \text{ (i.e. subscription price of \$40)}$$

$$M = 0.5 \text{ (i.e. 1 new share for every 2 existing shares)}$$

$$Rfactor_t = \left[1 - \frac{0 + 0 - 0.5 \times 40}{100} \right] \times \frac{1}{1 + 0.5} = 80\%$$

As a consequence:

$$LR_{r(t),t} = \text{Leverage} \times \left(\frac{S_t}{S_{r(t)} \times Rfactor_t} - 1 \right) = -5 \times \left(\frac{84}{100 \times 80\%} - 1 \right) = -25\%$$

$S_{r(t)}$	$S_{r(t)} \times Rfactor_t$	S_t	Adjusted Underlying Stock Performance
100	80	84	5%

Value of the Certificate r(t)	Value of the Certificate (t)	Certificates' performance (excluding any cost and fees)
0.90	0.675	-25%

In such case an Intraday Restrike Event would occur if the Underlying Stock price rises to \$92, which is 15% above \$80, the Underlying Stock Reference Price.

4. Bonus Issues

Assuming there is a bonus issue with respect to the Underlying Stock, where shareholders receive 1 bonus share for 5 existing shares:

$$S_{r(t)} = \$100$$

$$S_t = \$85$$

$$\text{Div}_t = \$0$$

$$\text{DivExc}_t = \$0$$

$$R = \$0$$

$M = 0.2$ (i.e. 1 new share for 5 existing shares)

$$Rfactor_t = \left[1 - \frac{0 + 0 - 0.2 \times 0}{100} \right] \times \frac{1}{1 + 0.2} = 83.33\%$$

As a consequence:

$$LR_{r(t),t} = \text{Leverage} \times \left(\frac{S_t}{S_{r(t)} \times Rfactor_t} - 1 \right) = -5 \times \left(\frac{85}{100 \times 83.33\%} - 1 \right) = -10\%$$

$S_{r(t)}$	$S_{r(t)} \times Rfactor_t$	S_t	Adjusted Underlying Stock Performance
100	83.33	85	2%

Value of the Certificate r(t)	Value of the Certificate (t)	Certificates' performance (excluding any cost and fees)
0.90	0.81	-10%

In such case an Intraday Restrike Event would occur if the Underlying Stock price rises to \$95.83, which is 15% above \$83.33, the Underlying Stock Reference Price.

5. Extraordinary Dividend

Assuming there is an extraordinary dividend of \$20 (net of taxes) paid in respect of each stock.

$$S_{r(t)} = \$100$$

$$S_t = \$84$$

$$\text{Div}_t = \$0$$

$$\text{DivExc}_t = \$20$$

$$R = \$0$$

$M = 0$

$$Rfactor_t = \left[1 - \frac{0 + 20 - 0 \times 0}{100} \right] \times \frac{1}{1 + 0} = 80\%$$

As a consequence:

$$LR_{r(t),t} = \text{Leverage} \times \left(\frac{S_t}{S_{r(t)} \times Rfactor_t} - 1 \right) = -5 \times \left(\frac{84}{100 \times 80\%} - 1 \right) = -25\%$$

$S_{r(t)}$	$S_{r(t)} \times Rfactor_t$	S_t	Adjusted Underlying Stock Performance
100	80	84	5%

Value of the Certificate r(t)	Value of the Certificate (t)	Certificates' performance (excluding any cost and fees)
0.90	0.675	-25%

In such case an Intraday Restrike Event would occur if the Underlying Stock price rises to \$92, which is 15% above \$80, the Underlying Stock Reference Price.

INFORMATION RELATING TO THE COMPANY

All information contained in this document regarding the Company, including, without limitation, its financial information, is derived from publicly available information which appears on the web-site of Hong Kong Exchanges and Clearing Limited (the “HKExCL”) at <http://www.hkex.com.hk>. The Issuer has not independently verified any of such information.

Hong Kong Exchanges and Clearing Limited (the “**Company**”) is principally engaged in the operation of stock exchanges. The Company operates through five business segments. The Cash segment includes various equity products traded on the Cash Market platforms, the Shanghai Stock Exchange and the Shenzhen Stock Exchange. The Equity and Financial Derivatives segment includes derivatives products traded on Hong Kong Futures Exchange Limited (HKFE) and the Stock Exchange of Hong Kong Limited (SEHK) and other related activities. The Commodities segment includes the operations of the London Metal Exchange (LME). The Clearing segment includes the operations of various clearing houses, such as Hong Kong Securities Clearing Company Limited, the SEHK Options Clearing House Limited, HKFE Clearing Corporation Limited, over the counter (OTC) Clearing Hong Kong Limited and LME Clear Limited. The Platform and Infrastructure segment provides users with access to the platform and infrastructure of the Company.

The information set out in Appendix I of this document relates to the audited consolidated financial statements of the Company and its subsidiaries for the year ended 31 December 2021 and has been extracted and reproduced from an announcement by the Company released on 14 March 2022 in relation to the same. Further information relating to the Company may be located on the web-site of the HKExCL at <http://www.hkex.com.hk>.

INFORMATION RELATING TO THE DESIGNATED MARKET MAKER

UBS AG, acting through its London Branch, has been appointed the designated market maker (“DMM”) for the Certificates. The DMM will provide competitive buy and sell quotes for the Certificates continuously during the trading hours of the SGX-ST on the following basis:

- (a) Maximum bid and offer spread : (i) when the best bid price of the Certificate is S\$10 and below: 10 ticks or S\$0.20 whichever is greater; and
(ii) when the best bid price of the Certificate is above S\$10: 5% of the best bid price of the Certificate.
- (b) Minimum quantity subject to bid and offer spread : 10,000 Certificates
- (c) Last Trading Day for Market Making : The date falling 5 Exchange Business Days immediately preceding the Expiry Date

In addition, the DMM may not provide a quotation in the following circumstances:

- (i) during the pre-market opening and five minutes following the opening of the SGX-ST on any trading day;
- (ii) if the Certificates are valueless (where the Issuer’s bid price is below the minimum bid size for such securities as prescribed by the SGX-ST);
- (iii) before the Relevant Stock Exchange for the Underlying Stock has opened and after the Relevant Stock Exchange for the Underlying Stock has closed on any trading day;
- (iv) when trading in the Underlying Stock is suspended or limited in a material way for any reason, for the avoidance of doubt, the DMM is not obliged to provide quotations for the Certificates at any time when the Underlying Stock is not negotiated/traded for any reason;
- (v) where the Certificates are suspended from trading for any reason;
- (vi) market disruption events, including, without limitation, any suspension of or limitation imposed on trading (including but not limited to unforeseen circumstances such as by reason of movements in price exceeding limits permitted by the SGX-ST or any act of God, war, riot, public disorder, explosion, terrorism or otherwise) in the Underlying Stock;
- (vii) where the Issuer or the DMM faces technical problems affecting the ability of the DMM to provide bids and offer quotations;
- (viii) where the ability of the Issuer to source a hedge or unwind an existing hedge, as determined by the Issuer in good faith, is materially affected by the prevailing market conditions, and the Issuer informs the SGX-ST of its inability to do so as soon as practicable;
- (ix) in cases where the Issuer has no Certificates to sell, then the DMM will only provide the bid price;
- (x) if the stock market experiences exceptional price movement and volatility;

- (xi) when it is a public holiday in Singapore and/or Hong Kong and/or the SGX-ST and/or the HKEX is not open for dealings; and
- (xii) during the suspension of trading of Certificates after an Air Bag Mechanism has been triggered.

The last trading day on which the DMM will provide competitive quotations for the Certificates would be the fifth Exchange Business Day immediately preceding the Expiry Date.

PLACING AND SALE

General

No action has been or will be taken by the Issuer that would permit a public offering of the Certificates or possession or distribution of any offering material in relation to the Certificates in any jurisdiction where action for that purpose is required. No offers, sales or deliveries of any Certificates, or distribution of any offering material relating to the Certificates may be made in or from any jurisdiction except in circumstances which will result in compliance with any applicable laws or regulations and will not impose any obligation on the Issuer. In the event that the Issuer contemplates a placing, placing fees may be payable in connection with the issue and the Issuer may at its discretion allow discounts to placees.

United Kingdom

In relation to each tranche of Certificates, the Issuer has represented, warranted and agreed that:

(a) No deposit-taking: in relation to any Certificates having a maturity of less than one year:

(i) it is a person whose ordinary activities involve it in acquiring, holding, managing or disposing of investments (as principal or agent) for the purposes of its business; and

(ii) it has not offered or sold and will not offer or sell any Certificates other than to persons:

(A) whose ordinary activities involve them in acquiring, holding, managing or disposing of investments (as principal or agent) for the purposes of their businesses; or

(B) who it is reasonable to expect will acquire, hold, manage or dispose of investments (as principal or agent) for the purposes of their businesses,

where the issue of the Certificates would otherwise constitute a contravention of section 19 of the Financial Services and Markets Act 2000 (the "**FSMA**") by the Issuer;

(b) Financial Promotion: it has only communicated or caused to be communicated and will only communicate or cause to be communicated any invitation or inducement to engage in investment activity (within the meaning of section 21 of the FSMA) received by it in connection with the issue or sale of any Certificates in circumstances in which section 21(1) of the FSMA does not or would not, if the Issuer was not an authorised person, apply to the Issuer; and

(c) General Compliance: it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to any Certificates in, from or otherwise involving the United Kingdom.

If the applicable Supplemental Listing Document in respect of any Certificates specifies the "Prohibition of Sales to European Economic Area Retail Investors" as "Not Applicable", the Issuer has represented and agreed that it has not offered, sold or otherwise made available such Certificates to any retail investor in the United Kingdom. For the purposes of this provision:

(a) the expression "**retail investor**" means a person who is one (or more) of the following:

(i) a retail client, as defined in point (8) of Article 2 of Regulation (EU) No 2017/565 as it forms part of domestic law by virtue of the European Union (Withdrawal) Act 2018 ("**EUWA**"); or

- (ii) a customer within the meaning of the provisions of the FSMA and any rules or regulations made under the FSMA which were relied on immediately before exit day to implement Directive (EU) 2016/97, where that customer would not qualify as a professional client, as defined in point (8) of Article 2(1) of Regulation (EU) No 600/2014 as it forms part of domestic law by virtue of the EUWA; or
 - (iii) not a qualified investor as defined in Article 2 of Regulation (EU) 2017/1129 as it forms part of domestic law by virtue of the EUWA; and
- (b) the expression an "**offer**" includes the communication in any form and by any means of sufficient information on the terms of the offer and the Certificates to be offered so as to enable an investor to decide to purchase or subscribe for the Certificates.

If the applicable Supplemental Listing Document in respect of any Certificates specifies the "Prohibition of Sales to European Economic Area Retail Investors" as "Not Applicable", the Issuer has represented and agreed that it has not made and will not make an offer of Certificates which are the subject of the offering contemplated by the Base Listing Document as completed by this Supplemental Listing Document to the public in the United Kingdom except that it may make an offer of such Certificates to the public in the United Kingdom:

- a) if the Supplemental Listing Document in relation to the Certificates specifies an offer of those Certificates may be made other than pursuant to Article 1(4) of the UK Prospectus Regulation in the United Kingdom (a "**Public Offer**"), following the date of publication of a prospectus in relation to such Certificates which either (i) has been approved by the UK Financial Conduct Authority ("**FCA**"), or (ii) is to be treated as if it had been approved by the FCA in accordance with the transitional provision in Regulation 74 of the Prospectus (Amendment etc.) (EU Exit) Regulations 2019, provided that any such prospectus has subsequently been completed by final terms contemplating such Public Offer, in the period beginning and ending on the dates specified in such prospectus or final terms, as applicable, and the Issuer has consented in writing to its use for the purpose of that Public Offer;
- b) at any time to any legal entity which is a qualified investor as defined in Article 2 of the UK Prospectus Regulation;
- c) at any time to fewer than 150 natural or legal persons (other than qualified investors as defined in Article 2 of the UK Prospectus Regulation); or
- d) at any time in any other circumstances falling within section 86 of the FSMA, provided that no such offer of Certificates to the public referred to in (a) to (c) above shall require the publication of a prospectus pursuant to section 85 of the FSMA or supplement a prospectus pursuant to Article 23 of the UK Prospectus Regulation,

provided that no such offer of Certificates referred to in (b) to (d) above shall require the Issuer to publish a prospectus pursuant to section 85 of the FSMA or supplement a prospectus pursuant to Article 23 of the UK Prospectus Regulation.

For the purposes of this provision, the expression "an offer of Certificates to the public" in relation to any products in the United Kingdom means the communication in any form and by any means of sufficient information on the terms of the offer and the Certificates to be offered so as to enable an investor to decide to purchase or subscribe the Certificates, and the expression "**UK Prospectus Regulation**" means Regulation (EU) 2017/1129 as it forms part of domestic law by virtue of the EUWA.

United States of America

The Certificates have not been, and will not be, registered under the Securities Act. Subject to certain exceptions, Certificates, or interests therein, may not at any time be offered, sold, resold or delivered, directly or indirectly, in the United States or to, or for the account or benefit of, any U.S. person or to others for offering, sale or resale in the United States or to any such U.S. person. Offers and sales of Certificates, or interests therein, in the United States or to U.S. persons would constitute a violation of United States securities laws unless made in compliance with registration requirements of the Securities Act or pursuant to an exemption therefrom. The Certificates will not be offered, sold or delivered within the United States or to U.S. persons. As used herein, “**United States**” means the United States of America (including the States and the District of Columbia), its territories, its possessions and other areas subject to its jurisdiction; and “**U.S. person**” means (i) any citizen or resident of the United States, including any corporation, partnership or other entity created or organised in or under the laws of the United States or of any political subdivision thereof, (ii) any estate or trust the income of which is subject to United States income taxation regardless of its source, (iii) “U.S. person” as such term is defined in (a) Regulation S under the Securities Act or (b) the Interpretive Guidance and Policy Statement Regarding Compliance with Certain Swap Regulations promulgated by the U.S. Commodity Futures Trading Commission (“**CFTC**”) pursuant to the U.S. Commodity Exchange Act of 1936, as amended, or (iv) a person other than a “Non-United States Person” as defined in CFTC Rule 4.7, in each case, as such definition is amended, modified or supplemented from time to time.

Prohibition of Sales to European Economic Area

If the applicable Supplemental Listing Document in respect of any Certificates specifies the “Prohibition of Sales to European Economic Area Retail Investors” as “Not Applicable”, the Issuer has represented and agreed that it has not offered, sold or otherwise made available and will not offer, sell or otherwise make available any Certificates which are the subject of the offering contemplated by the Base Listing Document as completed by this Supplemental Listing Document to any retail investor in the European Economic Area. For the purposes of this provision:

(a) the expression “retail investor” means a person who is one (or more) of the following:

(i) a retail client as defined in point (11) of Article 4(1) of Directive 2014/65/EU (as amended, “**MiFID II**”);

(ii) a customer within the meaning of Directive 2016/97 (as amended), where that customer would not qualify as a professional client as defined in point (10) of Article 4(1) of MiFID II; or

(iii) not a qualified investor as defined in Regulation (EU) 2017/1129 (as amended, the “**Prospectus Regulation**”); and

(b) the expression an “offer” includes the communication in any form and by any means of sufficient information on the terms of the offer and the Certificates to be offered so as to enable an investor to decide to purchase or subscribe the Certificates.

PUBLIC OFFER SELLING RESTRICTION UNDER THE PROSPECTUS REGULATION

If the Supplemental Listing Document specifies "Prohibition of Sales to European Economic Area Retail Investors" as "Not Applicable", in relation to each member state of the European Economic Area (each, a "**Relevant State**"), the Issuer has represented, warranted and agreed that it has not made and will not make an offer of Certificates which are the subject of the offering contemplated by the Base Listing Document as completed by this Supplemental Listing Document to the public in that Relevant State except that it may make an offer of such Certificates to the public in that Relevant State:

(a) Approved listing document: if the Supplemental Listing Document in relation to the Certificates specifies that an offer of those Certificates may be made other than pursuant to Article 1(4) of the Prospectus Regulation in that Relevant State (a "**Non-exempt Offer**"), following the date of publication of a listing document in relation to such Certificates which has been approved by the competent authority in that Relevant State or, where appropriate, approved in another Relevant State and notified to the competent authority in that Relevant State, provided that any such listing document has subsequently been completed by the Supplemental Listing Document contemplating such Non-exempt Offer, in accordance with the Prospectus Regulation, in the period beginning and ending on the dates specified in such listing document or Supplemental Listing Document, as applicable and the Issuer has consented in writing to its use for the purpose of that Non-exempt Offer;

(b) Qualified investors: at any time to any legal entity which is a qualified investor as defined in the Prospectus Regulation;

(c) Fewer than 150 offered: at any time to fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Regulation), subject to obtaining the prior consent of the Issuer for any such offer; or

(d) Other exempt offers: at any time in any other circumstances falling within Article 3(2) of the Prospectus Regulation,

provided that no such offer of Certificates referred to in (b) to (d) above shall require the Issuer to publish a listing document pursuant to Article 3 of the Prospectus Regulation or supplement a listing document pursuant to Article 23 of the Prospectus Regulation.

For the purposes of this provision, the expression an "**offer of Certificates to the public**" in relation to any Certificates in any Relevant State means the communication in any form and by any means of sufficient information on the terms of the offer and the Certificates to be offered so as to enable an investor to decide to purchase or subscribe for the Certificates, as the same may be varied in that Relevant State by any measure implementing the Prospectus Regulation in that Relevant State.

Singapore

This document has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this document and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of Certificates may not be circulated or distributed, nor may Certificates be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than pursuant to, and in accordance with the conditions of, any applicable provision of the Securities and Futures Act, Chapter 289 of Singapore.

Hong Kong

No person, other than a person permitted to do so under the securities laws of Hong Kong, has issued, or had in its possession for the purposes of issue, or will issue, or have in its possession for the purposes of issue any advertisement, invitation or document relating to the Certificates, whether in Hong Kong or elsewhere, which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong other than with respect to Certificates which are or are intended to be disposed of only to persons outside Hong Kong or only to “professional investors” within the meaning of the Securities and Futures Ordinance (Cap. 571) of the Laws of Hong Kong and any rules made thereunder.

SUPPLEMENTAL INFORMATION RELATING TO THE ISSUER

The information set out in Appendix II of this document relates to the recent developments in the Issuer's business.

The information set out in Appendix III of this document is an extract of the audited consolidated financial statements of UBS AG and its subsidiaries for the full year ended 31 December 2021.

For more information on the Issuer, please see <http://www.ubs.com/>.

Queries regarding the Certificates may be directed to +852 2971 6668 or OL-HKWarrants@ubs.com.

SUPPLEMENTAL GENERAL INFORMATION

The information set out herein is supplemental to, and should be read in conjunction with, the information set out on page 281 of the Base Listing Document.

1. Save as disclosed in the Base Listing Document and herein, there is no litigation, arbitration or administrative proceedings relating to claims or amounts which are material in the context of the issue of the Certificates to which the Issuer is a party nor, to the best of its knowledge and belief, is there any threatened litigation, arbitration or administrative proceedings relating to claims or amounts which are material in the context of the issue of the Certificates which would in either case jeopardise its ability to discharge its obligations in respect of the Certificates.
 2. UBS AG, Singapore Branch at 9 Penang Road, Singapore 238459, has been authorised to accept, on behalf of the Issuer, service of process and any other notices required to be served on the Issuer. Any notices required to be served on the Issuer should be sent to UBS AG, Singapore Branch at the above address for the attention of Han-Kiat Tan, Legal & Compliance.
 3. Settlement of trades done on a normal “ready basis” on the SGX-ST generally take place on the second Business Day following the transaction. Dealing in the Certificates will take place in board lots of 100 Certificates in Singapore dollars. For further details on the transfer of Certificates and their exercise, please refer to the section headed “Summary of the Issue” above.
 4. It is not the current intention of the Issuer to apply for a listing of the Certificates on any stock exchange other than the SGX-ST.
 5. There has been no adverse change, material in the context of the issue of the Certificates, in the financial position of the Issuer since 31 December 2021.
 6. The following contracts, relating to the issue of the Certificates, have been or will be entered into by the Issuer and may be material to the issue of the Certificates:
 - (a) the Master Instrument; and
 - (b) the Master Warrant Agent Agreement.
- None of the directors of the Issuer has any direct or indirect interest in any of the above contracts.
7. The Issuer has appropriate risk management capabilities to manage the issue of the Certificates.
 8. Copies of the following documents may be inspected during usual business hours on any weekday (Saturdays, Sundays and holidays excepted) at the office of Allen & Gledhill LLP at One Marina Boulevard #28-00, Singapore 018989, during the period of 14 days from the date of this document:

- (a) the articles of association of the Issuer;
- (b) the latest financial reports (including the notes thereto) of the Issuer;
- (c) the Base Listing Document; and
- (d) this document.

APPENDIX I

**REPRODUCTION OF THE AUDITED CONSOLIDATED FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 DECEMBER 2021
OF HONG KONG EXCHANGES AND CLEARING LIMITED AND ITS SUBSIDIARIES**

Auditor's Report

Independent Auditor's Report to the Members of Hong Kong Exchanges and Clearing Limited

(incorporated in Hong Kong with limited liability)

Opinion

What we have audited

The consolidated financial statements of Hong Kong Exchanges and Clearing Limited (the "Company") and its subsidiaries (together, the "Group"), which are set out on pages 126 to 214, comprise:

- the consolidated statement of financial position as at 31 December 2021;
- the consolidated income statement for the year then ended;
- the consolidated statement of comprehensive income for the year then ended;
- the consolidated statement of changes in equity for the year then ended;
- the consolidated statement of cash flows for the year then ended; and
- the notes to the consolidated financial statements, which include significant accounting policies and other explanatory information.

Our opinion

In our opinion, the consolidated financial statements give a true and fair view of the consolidated financial position of the Group as at 31 December 2021, and of its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with Hong Kong Financial Reporting Standards ("HKFRSs") issued by the Hong Kong Institute of Certified Public Accountants ("HKICPA") and have been properly prepared in compliance with the Hong Kong Companies Ordinance.

Basis for Opinion

We conducted our audit in accordance with Hong Kong Standards on Auditing ("HSAs") issued by the HKICPA. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Consolidated Financial Statements section of our report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Independence

We are independent of the Group in accordance with the HKICPA's Code of Ethics for Professional Accountants ("the Code"), and we have fulfilled our other ethical responsibilities in accordance with the Code.

Key Audit Matters

Key audit matters are those matters that, in our professional judgement, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Key audit matters identified in our audit are summarised as follows:

- Goodwill impairment assessment
- IT systems and controls over financial accounting and reporting

Key Audit Matters (Continued)

Goodwill impairment assessment

Nature of the Key Audit Matter

As at 31 December 2021, the Group has goodwill of HK\$13,241 million arising from the acquisition of LME Holdings Limited and its subsidiaries (collectively “LME Group”) in 2012. Goodwill was allocated to groups of Cash Generating Units (“CGUs”) within the “Commodities” segment, HK\$10,368 million, and the “Post Trade” segment, HK\$2,873 million and is monitored by management at the operating segment level.

Management has performed an impairment assessment over the goodwill allocated to the Commodities and Post Trade segments at the operating segment level by:

1. calculating the “value-in-use” for groups of CGUs within each operating segment using discounted cash flow models. These models use future cash flow projections (revenue, expenses and capital expenditure) for each group of CGUs over a five-year period, with a terminal growth rate applied to the period beyond the fifth year. These cash flows are discounted to net present value using the weighted average cost of capital (“WACC”) of groups of CGUs; and
2. comparing the resulting value-in-use of each group of CGUs to their respective book values.

We focus on goodwill due to the size of the balance and significant judgement applied by management in the value-in-use assessments.

Significant judgement was involved on the key assumptions underlying the future cash flow projections for the LME Group, including expected trade volume and pricing within the CGUs in each of the operating segments. Other assumptions involved are the discount rates applied and growth rates applied to the period beyond the fifth year (“terminal growth rate”) to those future cash flow projections.

Management has also assessed and monitored the budgeted future cash flow projections used in calculating the value-in-use for each group of CGUs against the actual performance.

Management has concluded that there is no impairment in respect of the goodwill allocated to the groups of CGUs within the respective Commodities and Post Trade segments using the value-in-use model.

Refer to note 3 for critical accounting estimates and assumptions and note 29 for the goodwill disclosure relating to the impairment assessment.

How our audit addressed the Key Audit Matter

We have obtained an understanding of management’s internal control and the process of goodwill impairment assessment and assessed the inherent risk of material misstatement by considering the degree of estimation uncertainty and other inherent risk factors.

Our work included testing management’s key controls over the goodwill impairment assessment including:

1. controls exercised by management over the development of future cash flow projections used in the budget;
2. approval by the board of directors over the budget developed by management; and
3. control processes performed by management to monitor the actual performance against the budget approved by the board of directors.

Our audit procedures also included the following:

1. We have assessed the discounted cash flow model used by management to estimate the value-in-use of the respective groups of CGUs within the Commodities and Post Trade segments.
2. We have assessed the reasonableness of the WACCs used and the terminal growth rates applied to the period beyond the fifth year by reviewing management’s assumptions underlying the cash flow projections from the commodities and post trade business and comparing them to independent market data, industry forecasts and historical average daily volume growth for trading and clearing;
3. We have evaluated the reasonableness of management’s key assumptions used in the underlying cash flow projections for the five-year period, by comparing historical budgets and achievements and the reasons for any deviations. We have also agreed the cash flow projections against the latest budgets approved by the board of directors;
4. We have obtained and have evaluated management’s sensitivity analyses to assess the impact of reasonably possible changes to the key assumptions (cash flow projections, WACCs and growth rates). We have also performed our own independent sensitivity analyses on these key assumptions, including those applied to the period beyond the fifth year, and evaluated the impact that such possible changes have on the recoverable amount of the goodwill allocated to each group of CGUs at the financial year end;
5. We have reviewed the appropriateness of the goodwill impairment assessment disclosure.

Based on the above, we considered that management’s judgements and assumptions applied in the goodwill impairment assessment were supportable by the evidence obtained and procedures performed.

Key Audit Matters (Continued)

IT systems and controls over financial accounting and reporting

Nature of the Key Audit Matter

The Group operates securities and derivatives trading, clearing and settlement systems, which process significant volumes of daily transactions and market data. The trading, clearing and settlement fees generated from the transactions processed are the key drivers of the Group's revenue. The revenue recognition of these fees rely heavily on the Information Technology ("IT") systems processing those transactions and data.

Our audit effort focused on the key IT systems and related controls we planned to rely on over the revenue recognition and financial reporting processes. This focus includes (1) the core trading, clearing and settlement systems that process transactions for revenue recognition of these fees, (2) the financial accounting and reporting system that generates financial information utilised in the preparation of the Group's financial statements and (3) the interfaces between the core systems and the financial accounting and reporting system ("key IT systems").

We focused on these areas as the Group's revenue recognition and financial reporting processes are highly dependent on automated controls, system generated information and system interfaces, which are underpinned by the design and operating effectiveness of the IT general controls over the key IT systems and the automated application controls over the processes. The Group relied on the key IT systems and controls to ensure the accuracy and completeness of the revenue recognition during the financial accounting and reporting processes.

How our audit addressed the Key Audit Matter

As part of our audit, we obtained a front-to-end understanding of the revenue recognition and financial reporting processes and identified the automated controls we planned to rely on and the corresponding key IT systems that support the processes.

Our audit procedures over the relevant IT systems and related controls included the following:

1. We have assessed the IT control environment, examined the IT governance framework and tested the IT general controls of the key IT systems that support the revenue recognition and financial reporting processes to evaluate whether the system functionality, data and controls could be relied on throughout the period. Our testing of IT general controls covered access to programs and data, program changes, computer operations and program development.
2. We have tested the identified automated application controls, which are critical to the revenue recognition and financial reporting processes. Our testing procedures included the testing of system logical access, system automated calculations and validations, testing of system generated information, system interfaces and reconciliations.
3. We have placed certain reliance on the work of HKEX's internal audit function over the testing of automated calculations and system interfaces. In order to rely on their work, we have evaluated the objectivity and competence of the internal audit function and determined the nature and extent of work that can be relied on by us. Additionally, we have independently performed audit procedures to evaluate the results of the work of the internal audit function.

Based on the above audit procedures, no material exceptions that would impact our level of reliance on the key IT systems and the related controls for the purpose of our audit were noted.

Other Information

The directors of the Company are responsible for the other information. The other information comprises the section Overview, Organisation, Management Discussion and Analysis, Governance, Shareholder Information and Glossary included in the annual report other than the consolidated financial statements and our auditor's report thereon.

Our opinion on the consolidated financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of Directors for the Consolidated Financial Statements

The directors of the Company are responsible for the preparation of the consolidated financial statements that give a true and fair view in accordance with HKFRSs issued by the HKICPA and the Hong Kong Companies Ordinance, and for such internal control as the directors determine is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the directors are responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the Group or to cease operations, or have no realistic alternative but to do so.

The Audit Committee of the Group assists the directors in discharging their responsibilities for overseeing the Group's financial reporting process.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. We report our opinion solely to you, as a body, in accordance with Section 405 of the Hong Kong Companies Ordinance and for no other purpose. We do not assume responsibility towards or accept liability to any other person for the contents of this report. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with HKSA's will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements (Continued)

As part of an audit in accordance with HKSAAs, we exercise professional judgement and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the directors.
- Conclude on the appropriateness of the directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with the Audit Committee regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the Audit Committee with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, actions taken to eliminate threats or safeguards applied.

From the matters communicated with the Audit Committee, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

The engagement partner on the audit resulting in this independent auditor's report is Colin Stuart Shaftesley.

PricewaterhouseCoopers

Certified Public Accountants

Hong Kong, 24 February 2022

Consolidated Income Statement

For the year ended 31 December 2021

	Note	2021 \$m	2020 \$m
Trading fees and trading tariffs	5(a)	7,931	6,959
Clearing and settlement fees		5,214	4,355
Stock Exchange listing fees	5(b)	2,185	1,899
Depository, custody and nominee services fees		1,543	1,264
Market data fees		1,034	953
Other revenue	5(c)	1,564	1,405
Revenue	5	19,471	16,835
Investment income		1,351	2,577
Interest rebates to Participants		(47)	(349)
Net investment income	6	1,304	2,228
HKEX Foundation donation income	7	139	106
Sundry income	8	36	21
Revenue and other income		20,950	19,190
Less: Transaction-related expenses	9	(152)	(110)
Revenue and other income less transaction-related expenses		20,798	19,080
Operating expenses			
Staff costs and related expenses	10	(2,948)	(2,967)
Information technology and computer maintenance expenses	11	(715)	(635)
Premises expenses		(117)	(119)
Product marketing and promotion expenses		(116)	(81)
Professional fees		(157)	(151)
HKEX Foundation charitable donations		(105)	(112)
Other operating expenses	12	(371)	(374)
		(4,529)	(4,439)
EBITDA		16,269	14,641
Depreciation and amortisation		(1,354)	(1,197)
Operating profit	13	14,915	13,444
Finance costs	14	(154)	(181)
Share of profits less losses of joint ventures		80	69
Profit before taxation		14,841	13,332
Taxation	17	(2,343)	(1,845)
Profit for the year		12,498	11,487
Profit/(loss) attributable to:			
Shareholders of HKEX	46	12,535	11,505
Non-controlling interests	27(a)(i)	(37)	(18)
Profit for the year		12,498	11,487
Basic earnings per share	18(a)	\$9.91	\$9.11
Diluted earnings per share	18(b)	\$9.89	\$9.09

The notes on pages 131 to 214 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 2021

	Note	2021 \$m	2020 \$m
Profit for the year		12,498	11,487
Other comprehensive income			
Items that may be reclassified subsequently to profit or loss:			
Currency translation differences of foreign subsidiaries	2(e)(iii)	104	(29)
Cash flow hedges	44(a)	(2)	(6)
Changes in fair value of financial assets measured at fair value through other comprehensive income, net of tax	44(b)	(8)	28
Other comprehensive income/(loss)		94	(7)
Total comprehensive income		12,592	11,480
Total comprehensive income/(loss) attributable to:			
Shareholders of HKEX		12,626	11,490
Non-controlling interests		(34)	(10)
Total comprehensive income		12,592	11,480

The notes on pages 131 to 214 are an integral part of these consolidated financial statements.

Consolidated Statement of Financial Position

At 31 December 2021

	Note	At 31 Dec 2021			At 31 Dec 2020		
		Current \$m	Non-current \$m	Total \$m	Current \$m	Non-current \$m	Total \$m
Assets							
Cash and cash equivalents	20,21	181,361	-	181,361	157,996	-	157,996
Financial assets measured at fair value through profit or loss	20,22	99,915	946	100,861	100,081	516	100,597
Financial assets measured at fair value through other comprehensive income	20,23	9,755	-	9,755	7,942	-	7,942
Financial assets measured at amortised cost	20,24	51,302	526	51,828	62,589	99	62,688
Accounts receivable, prepayments and deposits	26	32,717	21	32,738	47,059	21	47,080
Tax recoverable		19	-	19	26	-	26
Interests in joint ventures	28	-	244	244	-	164	164
Goodwill and other intangible assets	29	-	18,972	18,972	-	18,737	18,737
Fixed assets	30	-	1,605	1,605	-	1,657	1,657
Right-of-use assets	31	-	1,896	1,896	-	2,193	2,193
Deferred tax assets	41(c)	-	25	25	-	26	26
Total assets		375,069	24,235	399,304	375,693	23,413	399,106
Liabilities and equity							
Liabilities							
Financial liabilities at fair value through profit or loss	32	91,424	-	91,424	92,884	-	92,884
Margin deposits, Mainland security and settlement deposits, and cash collateral from Clearing Participants	20,33	203,536	-	203,536	187,008	-	187,008
Accounts payable, accruals and other liabilities	34	28,335	-	28,335	42,974	-	42,974
Deferred revenue	35	1,100	354	1,454	1,049	371	1,420
Taxation payable		1,153	-	1,153	1,174	-	1,174
Other financial liabilities	36	513	-	513	48	-	48
Participants' contributions to Clearing House Funds	20,37	19,182	-	19,182	20,439	-	20,439
Lease liabilities	38	299	1,760	2,059	304	2,054	2,358
Borrowings	39	340	86	426	340	83	423
Provisions	40	82	98	180	114	98	212
Deferred tax liabilities	41(c)	-	1,132	1,132	-	930	930
Total liabilities		345,964	3,430	349,394	346,334	3,536	349,870
Equity							
Share capital	42			31,896			31,891
Shares held for Share Award Scheme	42			(901)			(485)
Employee share-based compensation reserve	43			306			232
Hedging and revaluation reserves	44			15			25
Exchange reserve	2(e)(iii)			(117)			(218)
Designated reserves	45			623			628
Reserve relating to written put options to non-controlling interests				(369)			(369)
Retained earnings	46			18,173			17,214
Equity attributable to shareholders of HKEX				49,626			48,918
Non-controlling interests	27(a)(i)			284			318
Total equity				49,910			49,236
Total liabilities and equity				399,304			399,106
Net current assets				29,105			29,359

The notes on pages 131 to 214 are an integral part of these consolidated financial statements.

Approved by the Board of Directors on 24 February 2022

Laura M CHA

Director

Alejandro Nicolas AGUZIN

Director

Consolidated Statement of Changes in Equity

For the year ended 31 December 2021

	Attributable to shareholders of HKEX									
	Share capital and shares held for Share Award Scheme (note 42) \$m	Employee share-based compensation reserve (note 43) \$m	Hedging and revaluation reserves (note 44) \$m	Exchange reserve \$m	Designated reserves (note 45) \$m	Reserve relating to written put options to non-controlling interests \$m	Retained earnings (note 46) \$m	Total \$m	Non-controlling interests \$m	Total equity \$m
At 1 Jan 2020	29,679	250	3	(181)	587	(369)	14,204	44,173	328	44,501
Profit for the year	-	-	-	-	-	-	11,505	11,505	(18)	11,487
Other comprehensive income	-	-	22	(37)	-	-	-	(15)	8	(7)
Total comprehensive income	-	-	22	(37)	-	-	11,505	11,490	(10)	11,480
Total transactions with shareholders of HKEX, recognised directly in equity:										
- 2019 second interim dividend at \$2.99 per share	-	-	-	-	-	-	(3,761)	(3,761)	-	(3,761)
- 2020 first interim dividend at \$3.71 per share	-	-	-	-	-	-	(4,692)	(4,692)	-	(4,692)
- Unclaimed HKEX dividends forfeited (note 34(a))	-	-	-	-	-	-	21	21	-	21
- Shares issued in lieu of cash dividends	1,428	-	-	-	-	-	-	1,428	-	1,428
- Shares purchased for Share Award Scheme	(31)	-	-	-	-	-	-	(31)	-	(31)
- Vesting of shares of Share Award Scheme	330	(299)	-	-	-	-	(31)	-	-	-
- Employee share-based compensation benefits	-	281	-	-	-	-	-	281	-	281
- UK tax relating to Share Award Scheme	-	-	-	-	-	-	9	9	-	9
- Transfer of reserves	-	-	-	-	41	-	(41)	-	-	-
	1,727	(18)	-	-	41	-	(8,495)	(6,745)	-	(6,745)
At 31 Dec 2020	31,406	232	25	(218)	628	(369)	17,214	48,918	318	49,236
At 1 Jan 2021	31,406	232	25	(218)	628	(369)	17,214	48,918	318	49,236
Profit for the year	-	-	-	-	-	-	12,535	12,535	(37)	12,498
Other comprehensive income	-	-	(10)	101	-	-	-	91	3	94
Total comprehensive income	-	-	(10)	101	-	-	12,535	12,626	(34)	12,592
Total transactions with shareholders of HKEX, recognised directly in equity:										
- 2020 second interim dividend at \$4.46 per share	-	-	-	-	-	-	(5,646)	(5,646)	-	(5,646)
- 2021 first interim dividend at \$4.69 per share	-	-	-	-	-	-	(5,934)	(5,934)	-	(5,934)
- Unclaimed HKEX dividends forfeited (note 34(a))	-	-	-	-	-	-	12	12	-	12
- Shares purchased for Share Award Scheme	(681)	-	-	-	-	-	-	(681)	-	(681)
- Vesting of shares of Share Award Scheme	270	(250)	-	-	-	-	(20)	-	-	-
- Employee share-based compensation benefits	-	324	-	-	-	-	-	324	-	324
- UK tax relating to Share Award Scheme	-	-	-	-	-	-	7	7	-	7
- Transfer of reserves	-	-	-	-	(5)	-	5	-	-	-
	(411)	74	-	-	(5)	-	(11,576)	(11,918)	-	(11,918)
At 31 Dec 2021	30,995	306	15	(117)	623	(369)	18,173	49,626	284	49,910

The notes on pages 131 to 214 are an integral part of these consolidated financial statements.

Consolidated Statement of Cash Flows

For the year ended 31 December 2021

	Note	2021 \$m	2020 \$m
Cash flows from principal operating activities			
Net cash inflow from principal operating activities	47(a)	13,897	11,956
Cash flows from other operating activities			
Net (payments to)/redemption from external fund managers for (purchases)/sales of financial assets measured at fair value through profit or loss		(1,557)	2,813
Net cash inflow from operating activities		12,340	14,769
Cash flows from investing activities			
Payments for purchases of fixed assets and intangible assets		(1,070)	(1,351)
Net decrease/(increase) in financial assets of Corporate Funds:			
Decrease/(increase) in time deposits with original maturities more than three months		3,276	(5,850)
Proceeds received upon maturity of financial assets measured at amortised cost (excluding time deposits)		810	207
Payments for purchases of financial assets measured at amortised cost (excluding time deposits)		(429)	(384)
Payments for financial assets measured at fair value through profit or loss		(349)	(160)
Interest received from financial assets measured at fair value through other comprehensive income		38	56
Net cash inflow/(outflow) from investing activities		2,276	(7,482)
Cash flows from financing activities			
Purchases of shares for Share Award Scheme		(681)	(31)
Payments of other finance costs		(72)	(87)
Dividends paid to shareholders of HKEX		(11,527)	(6,983)
Lease payments	47(b), 47(c)		
– Capital elements		(310)	(284)
– Interest elements		(79)	(89)
Net cash outflow from financing activities		(12,669)	(7,474)
Net increase/(decrease) in cash and cash equivalents			
Cash and cash equivalents at 1 Jan		10,442	10,603
Exchange differences on cash and cash equivalents		9	26
Cash and cash equivalents at 31 Dec		12,398	10,442
Analysis of cash and cash equivalents			
Cash on hand and balances and deposits with banks and short-term investments of Corporate Funds	21	12,900	10,753
Less: Cash reserved for supporting Skin-in-the-Game and default fund credits of clearing houses	21(b)	(502)	(311)
		12,398	10,442

The notes on pages 131 to 214 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

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, ferrous and precious 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 24 February 2022.

2. Principal Accounting Policies

Apart from the accounting policies presented within the corresponding notes to the consolidated financial statements, other principal accounting policies applied in the preparation of these consolidated financial statements are set out below. These 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 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.

Adoption of new/revised HKFRSs

In 2021, the Group has adopted the following amendment to HKFRSs which is pertinent to the Group's operations:

Amendments to HKFRS 16 Leases: COVID-19-Related Rent Concessions¹

¹ Effective for accounting periods beginning on or after 1 June 2020

The adoption of the amendment did not have any financial impact on the Group.

2. Principal Accounting Policies (continued)

(b) Basis of preparation (continued)

New/revised HKFRSs issued before 31 December 2021 but not yet effective and not early adopted

The Group has not applied the following amendments to HKFRSs which were issued before 31 December 2021 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 ³
Amendments to HKAS 1	Presentation of Financial Statements: Disclosure of Accounting Policies ³
Amendments to HKAS 8	Accounting Policies, Changes in Accounting Estimates and Errors: Definition of Accounting Estimates ³
Amendments to HKAS 12	Income Taxes: Deferred Tax related to Assets and Liabilities arising from a Single Transaction ³
Amendments to HKAS 16	Property, Plant and Equipment: Proceeds before Intended Use ²
Amendments to HKAS 37	Provisions, Contingent Liabilities and Contingent Assets: Onerous Contracts – Cost of Fulfilling a Contract ²
Amendments to HKFRS 3	Business combinations: Reference to the Conceptual Framework ²
Amendments to HKFRS 16	Leases: COVID-19-Related Rent Concessions beyond 30 June 2021 ¹
Annual Improvements to HKFRSs 2018-2020:	
Amendments to HKFRS 9	Financial Instruments: Fees in the “10 per cent” Test for Derecognition of Financial Liabilities ²
Amendments to Illustrative Examples accompanying HKFRS 16	Leases: Lease Incentives ²

¹ Effective for accounting periods beginning on or after 1 April 2021

² Effective for accounting periods beginning on or after 1 January 2022

³ Effective for accounting periods beginning on or after 1 January 2023

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.

(c) Basis of consolidation

Subsidiaries are entities (including structured entities) over which the Group has control. Subsidiaries are fully consolidated from the date on which control is transferred to the Group. They are deconsolidated from the date that control ceases. All material intra-group transactions and balances have been eliminated on consolidation.

Accounting policies of subsidiaries have been aligned on consolidation to ensure consistency with the policies adopted by the Group.

2. Principal Accounting Policies (continued)

(d) 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.

(e) Foreign currency translation

(i) Functional and presentation currency

Items included in the financial statements of each of the Group's entities are measured using the currency of the primary economic environment in which the entity operates (the functional currency). The consolidated financial statements are presented in Hong Kong Dollar (HKD), which is the Company's functional and presentation currency.

(ii) Transactions and balances

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of transactions. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in the consolidated income statement. They are deferred in hedging reserve under equity if they relate to qualifying cash flow hedges (note 44(a)).

Translation differences on non-monetary financial assets that are classified as financial assets measured at fair value through profit or loss are reported as part of the fair value gain or loss.

(iii) Group companies

The results and financial position of each of the Group's entities that have a non-HKD functional currency are translated into HKD as follows:

- assets and liabilities (including goodwill and fair value adjustments arising on the acquisition of foreign subsidiaries) for each statement of financial position presented are translated at the closing rate at the end of the reporting period;
- income and expenses for each income statement are translated at the exchange rates approximating the foreign exchange rates ruling at the dates of the transactions; and
- all resulting currency translation differences are recognised in other comprehensive income in the exchange reserve under equity.

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 29.

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 29. 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.

(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 collective investment schemes.

At 31 December 2021, the financial assets that were not classified as Level 1 investments (excluding the base, ferrous and precious metals futures and options contracts cleared through LME Clear Limited (LME Clear) that did not qualify for netting under the current accounting standards) under HKFRS 13 amounted to \$9,762 million (31 December 2020: \$9,085 million) which mainly comprised \$7,063 million (31 December 2020: \$6,362 million) of investments under collective investment schemes.

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 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.

If the actual taxation charge differs by 5 per cent from management's estimates, the Group's profit will be affected by \$117 million (2020: \$92 million).

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.

The Group has five reportable segments ("Corporate Items" is not a reportable segment). The segments are managed separately as each segment offers different products and services and requires different information technology systems and marketing strategies.

The operations in each of the Group's reportable segments 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), the Shanghai Stock Exchange and the Shenzhen Stock Exchange through Shanghai-Hong Kong Stock Connect and Shenzhen-Hong Kong Stock Connect (Stock Connect), sales of market data relating to these products and other related activities. The major sources of revenue of the segment are trading fees, trading tariffs, listing fees of equity products and market data fees.

The **Equity and Financial Derivatives** segment refers to derivatives products traded on the Stock Exchange and Hong Kong Futures Exchange Limited (Futures Exchange) and other related activities. These include the provision and maintenance of trading 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 (CBBs) and warrants, and sales of related market data. The major sources of revenue are trading fees, trading tariffs, listing fees of derivatives products and market data fees.

The **Commodities** segment refers to the operations of The London Metal Exchange (LME), which operates an exchange in the UK for the trading of base, ferrous and precious metals futures and options contracts, and the operations of Qianhai Mercantile Exchange Co., Ltd. (QME), the commodity trading platform in the Mainland. It also covers the commodities contracts traded on the Futures Exchange. The major sources of revenue of the segment are trading fees of commodity products, commodity market data fees and fees from ancillary operations.

The **Post Trade** segment refers to the operations of the five clearing houses, which are responsible for clearing, settlement and custodian activities of the exchanges of the Group and Northbound trades under Stock Connect, and clearing and settlement of over-the-counter derivatives contracts. Its principal sources of revenue are derived from providing clearing, settlement, depository, custody and nominee services and net investment income earned on the Margin Funds and Clearing House Funds.

The **Technology** segment refers to 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 network, terminal user, data line and software sub-license fees and hosting services fees.

4. Operating Segments (continued)

Central income (including net investment income of Corporate Funds and HKEX Foundation donation income) 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 segment) are included as “Corporate Items”.

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:

	2021						
	Cash \$m	Equity and Financial Derivatives \$m	Commodities \$m	Post Trade \$m	Technology \$m	Corporate Items \$m	Group \$m
Timing of revenue recognition:							
Point in time	4,494	2,030	1,176	6,656	86	3	14,445
Over time	1,636	1,405	288	731	960	6	5,026
Revenue	6,130	3,435	1,464	7,387	1,046	9	19,471
Net investment income	-	-	-	596	-	708	1,304
HKEX Foundation donation income	-	-	-	-	-	139	139
Sundry income	1	1	14	12	4	4	36
Revenue and other income	6,131	3,436	1,478	7,995	1,050	860	20,950
Less: Transaction-related expenses	-	(126)	-	(26)	-	-	(152)
Revenue and other income less transaction-related expenses	6,131	3,310	1,478	7,969	1,050	860	20,798
Operating expenses	(614)	(665)	(695)	(844)	(305)	(1,406)	(4,529)
Reportable segment EBITDA	5,517	2,645	783	7,125	745	(546)	16,269
Depreciation and amortisation	(169)	(142)	(346)	(358)	(72)	(267)	(1,354)
Finance costs	(12)	(12)	(8)	(66)	(2)	(54)	(154)
Share of profits less losses of joint ventures	80	-	-	-	-	-	80
Reportable segment profit before taxation	5,416	2,491	429	6,701	671	(867)	14,841
Other segment information:							
Interest income	-	-	-	639	-	174	813
Interest rebates to Participants	-	-	-	(47)	-	-	(47)
Other material non-cash item:							
Employee share-based compensation expenses	(50)	(41)	(36)	(41)	(6)	(150)	(324)

4. Operating Segments (continued)

	2020						
	Cash \$m	Equity and Financial Derivatives \$m	Commodities \$m	Post Trade \$m	Technology \$m	Corporate Items \$m	Group \$m
Timing of revenue recognition:							
Point in time	3,460	2,079	1,171	5,667	62	1	12,440
Over time	1,531	1,162	278	575	844	5	4,395
Revenue	4,991	3,241	1,449	6,242	906	6	16,835
Net investment income	-	-	-	1,386	-	842	2,228
HKEX Foundation donation income	-	-	-	-	-	106	106
Sundry income	-	-	5	9	4	3	21
Revenue and other income	4,991	3,241	1,454	7,637	910	957	19,190
Less: Transaction-related expenses	-	(85)	-	(25)	-	-	(110)
Revenue and other income less transaction-related expenses	4,991	3,156	1,454	7,612	910	957	19,080
Operating expenses	(595)	(607)	(692)	(860)	(304)	(1,381)	(4,439)
Reportable segment EBITDA	4,396	2,549	762	6,752	606	(424)	14,641
Depreciation and amortisation	(133)	(114)	(340)	(322)	(38)	(250)	(1,197)
Finance costs	(13)	(13)	(8)	(84)	(2)	(61)	(181)
Share of profits less losses of joint ventures	68	1	-	-	-	-	69
Reportable segment profit before taxation	4,318	2,423	414	6,346	566	(735)	13,332
Other segment information:							
Interest income	-	-	-	1,738	-	384	2,122
Interest rebates to Participants	-	-	-	(349)	-	-	(349)
Other material non-cash item:							
Employee share-based compensation expenses	(40)	(40)	(42)	(46)	(7)	(106)	(281)

(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	
	2021 \$m	2020 \$m	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Hong Kong (place of domicile)	17,220	14,641	5,307	5,374
United Kingdom	2,179	2,124	17,137	17,096
Mainland China	72	70	294	302
	19,471	16,835	22,738	22,772

(b) Information about major customers

In 2021 and 2020, 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, ferrous and precious 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 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

	2021 \$m	2020 \$m
Equity securities traded on the Stock Exchange and through Stock Connect	4,468	3,409
DWs, CBBCs and warrants traded on the Stock Exchange	782	699
Futures and options contracts traded on the Stock Exchange and the Futures Exchange	1,613	1,764
Base, ferrous and precious metals futures and options contracts traded on the LME and QME	1,068	1,087
	7,931	6,959

5. Revenue (continued)

(b) Stock Exchange Listing Fees

	2021				2020			
	Equity		CBBCs, DWs & others	Total	Equity		CBBCs, DWs & others	Total
	Main Board	GEM			Main Board	GEM		
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
Annual listing fees	718	50	3	771	713	52	3	768
Initial and subsequent issue listing fees	168	11	1,229	1,408	130	14	979	1,123
Other listing fees	5	1	-	6	7	1	-	8
	891	62	1,232	2,185	850	67	982	1,899

(c) Other Revenue

	2021 \$m	2020 \$m
Network, terminal user, data line and software sub-license fees	720	610
Hosting services fees	257	230
Commodities stock levies and warehouse listing fees	78	67
Participants' subscription and application fees	87	112
Accommodation income (note (i))	201	160
Sales of Trading Rights	22	24
LME financial over-the-counter booking fees	53	49
BayConnect sales and service revenue	69	66
Brokerage on IPO direct allotments	5	26
Miscellaneous revenue	72	61
	1,564	1,405

(i) Accommodation income mainly comprises income from Participants on securities deposited as alternatives to cash deposits of Margin Funds, or depositing currencies whose relevant bank deposit rates are negative, and interest shortfall collected from LME Clear Participants on 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 2021 that was included in the deferred revenue balance at the beginning of the year amounted to \$1,049 million (2020: \$1,033 million).

6. Net Investment Income

Accounting Policy

Interest income on investments and interest rebates 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 financial liabilities at fair value through profit or loss are included under net investment income in the consolidated income statement.

	2021 \$m	2020 \$m
Gross interest income from financial assets measured at amortised cost	775	2,066
Gross interest income from financial assets measured at fair value through other comprehensive income	38	56
Interest rebates to Participants	(47)	(349)
Net interest income	766	1,773
Net gains on financial assets mandatorily measured at fair value through profit or loss and financial liabilities at fair value through profit or loss		
– collective investment schemes	364	487
– other investments	121	–
	485	487
Others	53	(32)
Net investment income	1,304	2,228

7. HKEX Foundation Donation Income

Accounting Policy

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

	2021 \$m	2020 \$m
Stock Code Balloting Scheme	138	105
Others	1	1
	139	106

8. Sundry Income

	2021 \$m	2020 \$m
Forfeiture of unclaimed dividends (note (a))	12	9
Others	24	12
	36	21

- (a) In accordance with CCASS Rule 1109, the Group exercised its forfeiture right to appropriate cash dividends of \$12 million (2020: \$9 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 \$218 million at 31 December 2021 (31 December 2020: \$206 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

	2021 \$m	2020 \$m
Salaries and other short-term employee benefits	2,425	2,487
Employee share-based compensation benefits of Share Award Scheme (note 43)	324	281
Termination benefits	20	20
Retirement benefit costs (note (a)):		
– ORSO Plan	137	142
– MPF Scheme	4	5
– LME Pension Scheme	29	28
– PRC Retirement Schemes	9	4
	2,948	2,967

- (a) Retirement Benefit Costs

Accounting Policy

Contribution to the defined contribution plans are expensed as incurred.

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 Pension Scheme). 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 Pension Scheme. For employees who joined the LME and LME Clear on or after 1 May 2014, they are automatically enrolled into the LME Pension Scheme 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 opt-out of the scheme if they wish. There are no forfeited contributions for the LME Pension Scheme 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 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 organisations. Upon retirement, the local government labour and security authorities are responsible for the payment of the retirement benefits to the retired employees.

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

11. Information Technology and Computer Maintenance Expenses

	2021 \$m	2020 \$m
Costs of services and goods:		
– consumed by the Group	634	551
– directly consumed by Participants	81	84
	715	635

12. Other Operating Expenses

	2021 \$m	2020 \$m
Bank charges	15	14
Communication expenses	11	13
Custodian and fund management related fees	37	28
Financial data subscription fees	52	49
Insurance	12	10
Non-executive directors' fees	22	21
Office demolition and relocation expenses	11	9
Provision for impairment losses of receivables	7	12
Repairs and maintenance expenses	62	69
Security expenses	21	23
Travel expenses	16	19
UK regulatory fees	22	18
Other miscellaneous expenses	83	89
	371	374

13. Operating Profit

	2021 \$m	2020 \$m
Operating profit is stated after charging/(crediting):		
Auditor's remuneration		
– audit fees	18	19
– other non-audit fees	2	3
Lease rentals for land and buildings (note (a))	1	4
Provision for impairment losses of receivables	7	12
Net foreign exchange (gains)/losses on financial assets and liabilities (excluding financial assets and financial liabilities measured at fair value through profit or loss)	(53)	32

(a) The amounts represent lease rentals relating to short-term leases under HKFRS 16.

14. Finance Costs

Accounting Policy

Interest expenses (other than interest on lease liabilities) are charged to the consolidated income statement and recognised on a time apportionment basis, taking into account the principal and the applicable interest rates using the effective interest method.

Interest on lease liabilities is charged to the consolidated income statement over the lease periods so as to produce a constant periodic rate of interest on the remaining balance of the lease liabilities (note 38) for each period.

Other finance costs, which represent banking facility commitment fees that relate to liquidity support provided to the Group's clearing houses, are recognised in the consolidated income statement in the period in which they are incurred.

	2021 \$m	2020 \$m
Interest on borrowings	3	5
Interest on lease liabilities (note 38)	79	89
Banking facility commitment fees	54	53
Negative interest on Euro and Japanese Yen deposits	18	34
	154	181

15. Directors' Emoluments and Interests of Directors

All Directors, including Executive Directors (HKEX's Chief Executive Officer and ex-HKEX's Interim Chief Executive), received emoluments during the years ended 31 December 2021 and 31 December 2020. The aggregate emoluments paid and payable to the Directors during the year were as follows:

	2021 \$'000	2020 \$'000
Executive Directors:		
Salaries and other short-term employee benefits	8,987	14,684
Performance cash incentive	19,438	80,700
Retirement benefit costs	1,100	1,333
	29,525	96,717
Employee share-based compensation benefits (note (a))	50,405	23,773
	79,930	120,490
Non-executive Directors:		
Fees	22,079	21,327
Other benefits	12	37
	22,091	21,364
	102,021	141,854

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

Name of Director	2021							
	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	4,949	-	12	-	-	4,961	-	4,961
Alejandro N Aguzin (note (iii))	-	6,048	157	16,500	756	23,461	47,762	71,223
Calvin C K Tai (note (iv))	-	2,750	32	2,938	344	6,064	2,643	8,707
Nicholas C Allen (note (v))	878	-	-	-	-	878	-	878
Apurv Bagri	1,130	-	-	-	-	1,130	-	1,130
T C Chan (note (vii))	356	-	-	-	-	356	-	356
C H Cheah	1,596	-	-	-	-	1,596	-	1,596
Anna M Cheung (note (v))	998	-	-	-	-	998	-	998
Susan M F Chow Woo	1,598	-	-	-	-	1,598	-	1,598
Anita Y M Fung (note (vii))	304	-	-	-	-	304	-	304
Rafael Gil-Tienda	1,970	-	-	-	-	1,970	-	1,970
Fred Z Hu (note (vii))	340	-	-	-	-	340	-	340
Benjamin P C Hung	1,170	-	-	-	-	1,170	-	1,170
Nisa B W Y Leung (note (vi))	878	-	-	-	-	878	-	878
Hugo P H Leung	1,577	-	-	-	-	1,577	-	1,577
John M Williamson (note (viii))	451	-	-	-	-	451	-	451
Stephen K W Yiu	3,006	-	-	-	-	3,006	-	3,006
Y Zhang (note (v))	878	-	-	-	-	878	-	878
Total	22,079	8,798	201	19,438	1,100	51,616	50,405	102,021

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

(b) (continued)

Name of Director	2020							Total \$'000
	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	
Laura M Cha	4,894	-	37	-	-	4,931	-	4,931
Charles X Li (note (viii))	-	9,315	5,369	80,700	1,333	96,717	23,773	120,490
Apurv Bagri	1,010	-	-	-	-	1,010	-	1,010
T C Chan	1,354	-	-	-	-	1,354	-	1,354
C H Cheah	1,580	-	-	-	-	1,580	-	1,580
Susan M F Chow Woo (note (ix))	788	-	-	-	-	788	-	788
Anita Y M Fung	1,182	-	-	-	-	1,182	-	1,182
Rafael Gil-Tienda	1,945	-	-	-	-	1,945	-	1,945
Fred Z Hu	1,277	-	-	-	-	1,277	-	1,277
Benjamin P C Hung	1,125	-	-	-	-	1,125	-	1,125
Hugo P H Leung	1,536	-	-	-	-	1,536	-	1,536
John M Williamson	1,755	-	-	-	-	1,755	-	1,755
Stephen K W Yiu	2,881	-	-	-	-	2,881	-	2,881
Total	21,327	9,315	5,406	80,700	1,333	118,081	23,773	141,854

Notes:

- (i) Other benefits included leave pay, insurance premium, club membership and relocation allowance.
- (ii) Retirement benefit costs include employer's contributions to provident fund and long service payment. 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) Appointment effective 24 May 2021
- (iv) Mr. Tai served as Interim Chief Executive and Executive Director of HKEX from 1 January 2021 to 23 May 2021, and continues in his roles as Chief Operating Officer and Co-President (up to 31 July 2021)/President (since 1 August 2021) of HKEX. The amounts disclosed above represent his remuneration from 1 January 2021 to 23 May 2021, which are calculated on a pro rata basis with reference to his actual remuneration for the year ended 31 December 2021.
- (v) Elected on 28 April 2021
- (vi) Appointment effective 28 April 2021
- (vii) Retired on 28 April 2021
- (viii) Mr. Li retired on 31 December 2020. His performance cash incentive in 2020 included a special cash incentive payment of \$30 million approved by the Board.
- (ix) Appointment effective 7 May 2020

(c) Directors' material interests in transactions, arrangement 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 (2020: one) of the five top-paid employees was the Chief Executive Officer whose emoluments are disclosed in note 15. Details of the emoluments of the other four (2020: four) top-paid employees, which included the emoluments payable to HKEX's ex-Interim Chief Executive served as Executive Director (note 15) were as follows:

	2021 \$'000	2020 \$'000
Salaries and other short-term employee benefits	26,966	17,681
Inducement fees	3,614	–
Performance cash incentive	17,167	19,716
Retirement benefit costs	2,398	1,654
	50,145	39,051
Employee share-based compensation benefits (note (a))	27,844	21,554
	77,989	60,605

- (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 (2020: four) employees, including share-based compensation benefits, were within the following bands:

	2021 Number of employees	2020 Number of employees
\$12,500,001-\$13,000,000	–	1
\$14,500,001-\$15,000,000	–	1
\$15,000,001-\$15,500,000	1	1
\$17,500,001-\$18,000,000	1	1
\$22,000,001-\$22,500,000	1	–
\$22,500,001-\$23,000,000	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

Tax charge for the period comprises current and deferred tax. Tax is recognised in the consolidated income statement, except to the extent that it relates to items recognised directly in equity, in which case, the tax is also recognised directly in equity.

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.

The Group's accounting policy for recognition of deferred tax is described in note 41.

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

	2021 \$m	2020 \$m
Current tax - Hong Kong Profits Tax		
– Provision for the year	1,969	1,537
– Over provision in respect of prior years	–	(2)
	1,969	1,535
Current tax - Overseas Tax		
– Provision for the year	174	177
– Under provision in respect of prior years	2	1
	176	178
Total current tax (note (i))	2,145	1,713
Deferred tax		
– Provision for temporary differences	38	71
– Impact of changes in UK Corporate Tax rate (note (ii))	160	61
Total deferred tax (note 41(a))	198	132
Taxation charge	2,343	1,845

- (i) Hong Kong Profits Tax has been provided at the rate of 16.5 per cent (2020: 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 19 per cent (2020: 19 per cent).
- (ii) Through the enactment of the Finance Act 2021 in June 2021, the UK Corporate Tax rate would increase from 19 per cent to 25 per cent from 1 April 2023. As a result, a one-off deferred tax charge on acquired LME intangible assets of \$160 million was recognised during the year ended 31 December 2021 (2020: \$61 million deferred tax charge was recognised as the UK Corporate Tax rate remained at 19 per cent from 1 April 2020 instead of reducing to 17 per cent as previously enacted).

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:

	2021 \$m	2020 \$m
Profit before taxation	14,841	13,332
Tax calculated at domestic tax rates applicable to profits in the respective countries (note (i))	2,441	2,188
Income not subject to taxation	(410)	(510)
Expenses not deductible for taxation purposes	96	59
Remeasurement of deferred tax assets and liabilities arising from changes in UK Corporate Tax rate	160	61
Change in deferred tax arising from unrecognised tax losses and other deferred tax adjustments	54	48
Under/(over) provision in respect of prior years	2	(1)
Taxation charge	2,343	1,845

- (i) The weighted average applicable tax rate was 16.4 per cent (2020: 16.4 per cent).

18. Earnings Per Share

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

- (a) Basic earnings per share

	2021	2020
Profit attributable to shareholders (\$m)	12,535	11,505
Weighted average number of shares in issue less shares held for Share Award Scheme (in '000)	1,265,431	1,262,746
Basic earnings per share (\$)	9.91	9.11

- (b) Diluted earnings per share

	2021	2020
Profit attributable to shareholders (\$m)	12,535	11,505
Weighted average number of shares in issue less shares held for Share Award Scheme (in '000)	1,265,431	1,262,746
Effect of Awarded Shares (in '000)	2,140	3,057
Weighted average number of shares for the purpose of calculating diluted earnings per share (in '000)	1,267,571	1,265,803
Diluted earnings per share (\$)	9.89	9.09

19. Dividends

Accounting Policy

Dividends declared are recognised as liabilities in the consolidated financial statements in the period in which the dividends are approved by shareholders or directors, where appropriate.

	2021 \$m	2020 \$m
First interim dividend paid: \$4.69 (2020: \$3.71) per share	5,946	4,704
Less: Dividend for shares held by Share Award Scheme (note (a))	(12)	(12)
	5,934	4,692
Second interim dividend declared (note (b)): \$4.18 (2020: \$4.46) per share based on issued share capital at 31 Dec	5,300	5,655
Less: Dividend for shares held by Share Award Scheme at 31 Dec (note (a))	(10)	(9)
	5,290	5,646
	11,224	10,338

- (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.

The Group reclassifies debt investments when and only when its business model for managing those assets changes.

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 collective investment schemes 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.

Financial assets are derecognised when the rights to receive cash flows from the assets have expired or have been transferred and the Group has transferred substantially all the risks and rewards of ownership of the assets.

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), 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 2021				
	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	7,372	11,443	54,546	6,884	80,245
Unlisted debt securities	-	-	-	75	75
Reverse repurchase investments	-	1,457	91,040	8,544	101,041
	7,372	12,900	145,586	15,503	181,361

	At 31 Dec 2020				
	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	6,212	9,824	48,673	5,044	69,753
Unlisted debt securities	-	-	-	3,262	3,262
Reverse repurchase investments	-	929	73,511	10,541	84,981
	6,212	10,753	122,184	18,847	157,996

- (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 2021, cash and cash equivalents of Corporate Funds of \$502 million (31 December 2020: \$311 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. Derivative financial instruments (see below) are classified as financial assets measured at fair value through profit or loss when their fair values are positive.

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 collective investment schemes 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 other instruments that are substantially the same and discounted cash flow analysis.

Derivative financial instruments

Derivative financial instruments include outstanding derivatives contracts of LME Clear, which acts as a central counterparty to the base, ferrous and precious metals futures and options contracts traded on the LME, and forward foreign exchange contracts. 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, derivatives are categorised as held for trading with changes in fair value recognised in the consolidated income statement.

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

	At 31 Dec 2021		
	Corporate Funds (note 25) \$m	Metals derivatives contracts (note (a)) \$m	Total \$m
<u>Mandatorily measured at fair value</u>			
Collective investment schemes:			
– listed outside Hong Kong	1,680	–	1,680
– unlisted	7,063	–	7,063
	8,743	–	8,743
Unlisted equity securities	694	–	694
Derivative financial instruments:			
– base, ferrous and precious metals futures and options contracts cleared through LME Clear (note (a))	–	91,424	91,424
	9,437	91,424	100,861
The expected recovery dates of the financial assets are analysed as follows:			
Within twelve months	8,491	91,424	99,915
More than twelve months	946	–	946
	9,437	91,424	100,861
<hr/>			
	At 31 Dec 2020		
	Corporate Funds (note 25) \$m	Metals derivatives contracts (note (a)) \$m	Total \$m
<u>Mandatorily measured at fair value</u>			
Collective investment schemes:			
– listed outside Hong Kong	1,131	–	1,131
– unlisted	6,362	–	6,362
	7,493	–	7,493
Unlisted equity securities	220	–	220
Derivative financial instruments:			
– base, ferrous and precious metals futures and options contracts cleared through LME Clear (note (a))	–	92,884	92,884
	7,713	92,884	100,597
The expected recovery dates of the financial assets are analysed as follows:			
Within twelve months	7,197	92,884	100,081
More than twelve months	516	–	516
	7,713	92,884	100,597

- (a) Metals derivatives contracts represent the fair value of the outstanding base, ferrous and precious 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. A corresponding amount has been recognised under financial liabilities at fair value through profit or loss (note 32).

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.

The nature of any derivatives embedded in the debt instruments is considered in determining whether the cash flows are solely payment of principal and interest on the principal outstanding and are not accounted for separately. If the combined cash flows of the debt instruments and embedded derivatives are considered not satisfying the “solely payments of principal and interest” condition, the financial assets are classified as financial assets measured at fair value through profit or loss (note 22).

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).

In measuring expected credit losses, the Group takes into account reasonable and supportable information that is available without undue cost or effort. This includes information about past events, current conditions and forecasts of future economic conditions.

Expected credit losses are measured on either of the following bases:

- 12-month expected credit losses: these are losses that are expected to result from possible default events within the 12 months after the reporting date; and
- Lifetime expected credit losses: these are losses that are expected to result from all possible default events over the expected lives of the items to which the expected credit loss model applies.

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 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 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 2021		
	Margin Funds (note 33) \$m	Clearing House Funds (note 37) \$m	Total \$m
	Listed debt securities (note (a))	467	-
Unlisted debt securities (note (a))	4,816	4,472	9,288
	5,283	4,472	9,755
The expected recovery dates of the financial assets are analysed as follows:			
Within twelve months (note (b))	5,283	4,472	9,755

	At 31 Dec 2020		
	Margin Funds (note 33) \$m	Clearing House Funds (note 37) \$m	Total \$m
	Unlisted debt securities (note (a))	5,538	2,404
The expected recovery dates of the financial assets are analysed as follows:			
Within twelve months (note (b))	5,538	2,404	7,942

- (a) No provision for impairment loss was made at 31 December 2021 and 31 December 2020 as the financial assets were considered to be of low credit risk and the expected credit loss was minimal. The investments in debt securities held were of investment grade and had a weighted average credit rating of Aa2 (Moody) (31 December 2020: Aa2 (Moody)) with no history of default and there was no unfavourable current conditions and forecast of future economic conditions at the reporting dates.
- (b) Includes financial assets maturing after twelve months of \$3,879 million (31 December 2020: \$3,435 million) attributable to Margin Funds that could readily be liquidated to meet liquidity requirements of the Fund (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.

The nature of any derivatives embedded in the financial assets is considered in determining whether the cash flows are solely payment of principal and interest on the principal outstanding and are not accounted for separately. If the combined cash flows of the financial assets and embedded derivatives are considered not satisfying the “solely payments of principal and interest” condition, the financial assets are classified as financial assets measured at fair value through profit or loss (note 22).

Accounts receivable and other deposits are also classified under this category (note 26).

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 (2014): Financial Instruments, which requires expected lifetime losses (note 23) 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 (refer to note 23 for details of assessment of credit risk) 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 (note 23). 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 2021		
	Corporate Funds (notes (b) and 25) \$m	Margin Funds (note 33) \$m	Total \$m
Debt securities	1,194	-	1,194
Time deposits with original maturities over three months	10,166	40,371	50,537
Other financial assets	97	-	97
	11,457	40,371	51,828
The expected recovery dates of the financial assets are analysed as follows:			
Within twelve months	10,931	40,371	51,302
More than twelve months	526	-	526
	11,457	40,371	51,828
	At 31 Dec 2020		
	Corporate Funds (notes (b) and 25) \$m	Margin Funds (note 33) \$m	Total \$m
Debt securities	1,740	-	1,740
Time deposits with original maturities over three months	13,442	47,407	60,849
Other financial assets	99	-	99
	15,281	47,407	62,688
The expected recovery dates of the financial assets are analysed as follows:			
Within twelve months	15,182	47,407	62,589
More than twelve months	99	-	99
	15,281	47,407	62,688

- (a) No provision for impairment loss for these financial assets was made at 31 December 2021 and 31 December 2020 as the financial assets were considered to be of low credit risk and the expected credit loss of these financial assets was minimal. Debt securities held were of investment grade and had a weighted average credit rating of Aa2 (Moody) (31 December 2020: 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 was no unfavourable current conditions and forecast of future economic conditions at the reporting dates.
- (b) At 31 December 2021, debt securities of Corporate Funds of \$765 million (31 December 2020: \$930 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 2021 \$m	At 31 Dec 2020 \$m
Corporate Funds comprised the following instruments:		
Cash and cash equivalents (notes (b) and 21)	12,900	10,753
Financial assets measured at fair value through profit or loss (note 22)	9,437	7,713
Financial assets measured at amortised cost (notes (b) and 24)	11,457	15,281
	33,794	33,747

- (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 base, ferrous and precious metals derivatives contracts).
- (b) At 31 December 2021, cash and cash equivalents of Corporate Funds of \$502 million (31 December 2020: \$311 million) and financial assets measured at amortised cost of Corporate Funds of \$765 million (31 December 2020: \$930 million) were solely used to support Skin-in-the-Game and default fund credits of Clearing House Funds (note 37(a)).

26. Accounts Receivable, Prepayments and Deposits

Accounting Policy

Accounts receivable and other deposits are financial assets measured at amortised cost less impairment. The accounting policy for financial assets measured at amortised cost is described in note 24.

	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Receivable from ChinaClear, and Exchange and Clearing Participants:		
– CNS money obligations receivable (note (a))	17,921	32,910
– transaction levy, stamp duty and fees receivable	950	1,321
– Settlement Reserve Fund and Settlement Guarantee Fund held by ChinaClear (note 33)	12,757	11,862
– others	23	17
Receivables for collective investment schemes sold before 31 Dec	98	28
Payment in advance for collective investment schemes traded after 31 Dec	97	–
Other receivables, prepayments and deposits	942	984
Less: Provision for impairment losses of receivables (notes (b) and (c))	(50)	(42)
	32,738	47,080

26. Accounts Receivable, Prepayments and Deposits (continued)

- (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) 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 2021 and 31 December 2020 was determined as follows:

	At 31 Dec 2021			Total
	Current or within 30 days past due	31 to 180 days past due	More than 180 days past due	
Expected loss rate	3%	10%	100%	
Gross carrying amount – accounts receivable subject to expected credit loss provision (\$m)	545	21	29	595
Loss allowance (\$m)	19	2	29	50
	At 31 Dec 2020			Total
	Current or within 30 days past due	31 to 180 days past due	More than 180 days past due	
Expected loss rate	2%	9%	100%	
Gross carrying amount – accounts receivable subject to expected credit loss provision (\$m)	581	53	26	660
Loss allowance (\$m)	11	5	26	42

For the remaining receivables and other deposits (excluding prepayments) amounting to \$31,964 million as of 31 December 2021 (31 December 2020: \$46,266 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.

26. Accounts Receivable, Prepayments and Deposits (continued)

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

	2021 \$m	2020 \$m
At 1 Jan	42	29
Provision for loss allowance for receivables under other operating expenses	7	12
Exchange differences	1	1
At 31 Dec	50	42

(d) 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. 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.

27. 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.

The Group considers all of its investments in collective investment schemes to be investments in unconsolidated structured entities, which are classified as financial assets measured at fair value through profit or loss (note 22).

27. Principal Subsidiaries and Controlled Structured Entities (continued)

(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 2021	At 31 Dec 2020
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 in Hong Kong, Shanghai Stock Exchange and Shenzhen Stock Exchange in Mainland China 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	11,187 ordinary shares (\$921,206,421) 3,541 non-voting ordinary shares (\$433,291,660)	Operates a clearing house for over-the-counter derivatives	76%	76%
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%
Indirect principal subsidiaries:					
The London Metal Exchange	United Kingdom	100 ordinary shares of £ 1 each	Operates an exchange for the trading of base, ferrous and precious 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, ferrous and precious 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 assets of the Group.

27. Principal Subsidiaries and Controlled Structured Entities (continued)

(a) Principal subsidiaries (continued)

(i) Subsidiaries with non-controlling interests

At 31 December 2021, the Group held 76 per cent (31 December 2020: 76 per cent) interest in OTC Clear, while the remaining 24 per cent (31 December 2020: 24 per cent) interest was held by non-controlling interests. The non-controlling interests do not have voting rights at general meetings of OTC Clear.

QME is a limited company established in Mainland China. At 31 December 2021, the Group held 90 per cent (31 December 2020: 90 per cent) interest in QME, while the remaining 10 per cent (31 December 2020: 10 per cent) interest was held by non-controlling interests.

BayConnect is a limited company established in Mainland China. At 31 December 2021, the Group held 51 per cent (31 December 2020: 51 per cent) interest in BayConnect, while the remaining 49 per cent (31 December 2020: 49 per cent) interest was held by non-controlling interests.

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

	OTC Clear		QME		BayConnect	
	2021 \$m	2020 \$m	2021 \$m	2020 \$m	2021 \$m	2020 \$m
Amounts allocated to non-controlling interests:						
(Loss)/profit for the year	(13)	9	(15)	(13)	(9)	(14)
Other comprehensive (loss)/income	-	-	(1)	(2)	4	10
Total comprehensive (loss)/income	(13)	9	(16)	(15)	(5)	(4)
	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Accumulated non-controlling interests	182	195	(44)	(28)	146	151

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 2021 was \$290 million (31 December 2020: \$327 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.

28. Interests in Joint Ventures

Accounting Policy

Interests in joint ventures are accounted for in the consolidated financial statements under the equity method. The entire carrying amount of each investment is tested for impairment in accordance with the accounting policy stated in note 2(d).

	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Share of net assets of joint ventures	244	164

(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 2021	At 31 Dec 2020
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 2021 \$m	At 31 Dec 2020 \$m
CESC	Equity	38	38
BCCL	Equity	206	126
		244	164

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.

29. 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 carrying value of goodwill is compared to the recoverable amount, which is the higher of value-in-use and the fair value less costs to sell. Any impairment is recognised immediately in the consolidated income statement and is not subsequently reversed.

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.

29. 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.

Costs associated with maintaining computer systems and software programmes are recognised in the consolidated income statement as incurred.

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

29. Goodwill and Other Intangible Assets (continued)

	Other Intangible Assets				Total \$m
	Goodwill \$m	Tradenames \$m	Customer relationships \$m	Software systems \$m	
Cost:					
At 1 Jan 2020	13,344	895	3,144	4,174	21,557
Exchange differences	(58)	(4)	(14)	3	(73)
Additions	-	-	-	1,073	1,073
Disposals	-	-	-	(45)	(45)
At 31 Dec 2020	13,286	891	3,130	5,205	22,512
At 1 Jan 2021	13,286	891	3,130	5,205	22,512
Exchange differences	75	5	18	18	116
Additions	-	-	-	904	904
Disposals	-	-	-	(150)	(150)
At 31 Dec 2021	13,361	896	3,148	5,977	23,382
Accumulated amortisation:					
At 1 Jan 2020	-	-	919	2,260	3,179
Exchange differences	-	-	(3)	-	(3)
Amortisation	-	-	131	513	644
Disposals	-	-	-	(45)	(45)
At 31 Dec 2020	-	-	1,047	2,728	3,775
At 1 Jan 2021	-	-	1,047	2,728	3,775
Exchange differences	-	-	5	11	16
Amortisation	-	-	132	637	769
Disposals	-	-	-	(150)	(150)
At 31 Dec 2021	-	-	1,184	3,226	4,410
Net book value:					
At 31 Dec 2021	13,361	896	1,964	2,751	18,972
At 31 Dec 2020	13,286	891	2,083	2,477	18,737
Cost of software systems under development included above:					
At 31 Dec 2021	-	-	-	1,200	1,200
At 31 Dec 2020	-	-	-	1,143	1,143

Amortisation of \$769 million (2020: \$644 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.

29. 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. A summary of the allocation of goodwill and tradenames to these operating segments is as follows:

	At 31 Dec 2021		At 31 Dec 2020	
	Goodwill \$m	Tradenames \$m	Goodwill \$m	Tradenames \$m
Commodities segment	10,368	702	10,310	698
Post Trade segment	2,873	194	2,858	193
Technology segment	120	-	118	-
	13,361	896	13,286	891

The Commodities segment comprises the commodities trading platform in the UK (LME commodities CGU) and the commodities trading platform 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 2021.

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 2021			At 31 Dec 2020		
	Commodities segment	Post Trade segment	Technology segment	Commodities segment	Post Trade segment	Technology segment
EBITDA margin (average of next five years)	61%	44%	30%	65%	49%	33%
Growth rate	3%	3%	3%	3%	3%	3%
Discount rate	8%	8%	13%	9%	9%	14%

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 used are pre-tax and 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 2021 and 31 December 2020. Accordingly, no provision for impairment loss for goodwill or tradenames is considered necessary.

If the LME trading fee in the forecast period was 17 per cent lower than forecast, or the discount rate increased to 10 per cent, the recoverable amount of the Commodities segment would be lower than its carrying amount. If LME Clear clearing fees in the forecast period was 14 per cent lower than forecast, or the discount rate increased to 10 per cent, the recoverable amount of LME Clear under the Post Trade 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 2021.

30. Fixed Assets

Accounting Policy

Tangible fixed assets are stated at historical cost less accumulated depreciation and impairment losses. Historical cost includes expenditure that is directly attributable to the acquisition of the assets.

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 years
Furniture, equipment and motor vehicles	3 to 5 years
Data centre facilities and equipment	3 to 20 years

Expenditure incurred in the construction of leasehold buildings and other directly attributable costs are capitalised when it is probable that future economic benefits associated with the expenditure will flow to the Group and the costs can be measured reliably.

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. All other repairs and maintenance costs and other subsequent expenditure are charged to the consolidated income statement when incurred.

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

30. 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 2020	708	1,100	631	440	1,107	3,986
Exchange differences	-	5	-	-	2	7
Additions	-	154	105	7	49	315
Disposals	-	(49)	(105)	-	(6)	(160)
At 31 Dec 2020	708	1,210	631	447	1,152	4,148
At 1 Jan 2021	708	1,210	631	447	1,152	4,148
Exchange differences	-	2	2	-	2	6
Additions	-	43	62	64	54	223
Disposals	-	(92)	(20)	-	(9)	(121)
At 31 Dec 2021	708	1,163	675	511	1,199	4,256
Accumulated depreciation:						
At 1 Jan 2020	206	912	430	196	653	2,397
Exchange differences	-	3	-	-	2	5
Depreciation	28	46	53	30	91	248
Disposals	-	(48)	(105)	-	(6)	(159)
At 31 Dec 2020	234	913	378	226	740	2,491
At 1 Jan 2021	234	913	378	226	740	2,491
Exchange differences	-	2	2	-	2	6
Depreciation	28	59	63	30	95	275
Disposals	-	(92)	(20)	-	(9)	(121)
At 31 Dec 2021	262	882	423	256	828	2,651
Net book value:						
At 31 Dec 2021	446	281	252	255	371	1,605
At 31 Dec 2020	474	297	253	221	412	1,657
Cost of fixed assets in the course of construction included above:						
At 31 Dec 2021	-	19	72	46	50	187
At 31 Dec 2020	-	150	91	-	102	343

Depreciation of \$275 million (2020: \$248 million) is included in “depreciation and amortisation” in the consolidated income statement.

31. Right-of-use Assets

Accounting Policy

A contract is, or contains, a lease if the contract conveys a right to control the use of an identified asset for a period of time in exchange for consideration. The Group recognises a right-of-use asset and a lease liability (note 38) at the lease commencement date.

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.

Payments associated with short-term leases (i.e., leases with a lease term of 12 months or less) and low value leases are recognised on a straight-line basis as an expense in the consolidated income statement.

	Lease premium for land \$m	Properties \$m	Information technology facilities \$m	Equipment and motor vehicles \$m	Total \$m
At 1 Jan 2020	19	2,304	28	15	2,366
Exchange differences	-	3	-	-	3
Additions of leases	-	60	69	-	129
Depreciation	(1)	(285)	(14)	(5)	(305)
At 31 Dec 2020	18	2,082	83	10	2,193
At 1 Jan 2021	18	2,082	83	10	2,193
Exchange differences	-	2	-	-	2
Additions and reassessment of leases	-	10	-	1	11
Depreciation	(1)	(288)	(16)	(5)	(310)
At 31 Dec 2021	17	1,806	67	6	1,896

- (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 9 years.
- (b) Depreciation of \$310 million (2020: \$305 million) is included in "depreciation and amortisation" in the consolidated income statement.

32. Financial Liabilities at Fair Value through Profit or Loss

Accounting Policy

Financial liabilities at fair value through profit or loss are initially recognised at fair value on trade date and subsequently remeasured at their fair values. Changes in fair value of the liabilities are recognised in the consolidated income statement.

	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
<u>Held by LME Clear in its capacity as a central counterparty</u>		
Derivative financial instruments:		
– base, ferrous and precious metals futures and options contracts cleared through LME Clear (note (a))	91,424	92,884
	91,424	92,884

- (a) The amount represents the fair value of outstanding base, ferrous and precious 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.

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

Accounting Policy

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

Margin Funds are established by cash received or receivable from Clearing 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. 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.

33. Margin Deposits, Mainland Security and Settlement Deposits, and Cash Collateral from Clearing Participants (continued)

	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Margin deposits, Mainland security and settlement deposits, and cash collateral from Clearing Participants comprised:		
SEOCH Clearing Participants' margin deposits	21,051	16,873
HKCC Clearing Participants' margin deposits	56,840	59,422
HKSCC Clearing Participants' margin deposits, Mainland security and settlement deposits, and cash collateral	24,353	27,111
OTC Clear Clearing Participants' margin deposits	7,211	6,899
LME Clear Clearing Participants' margin deposits	94,081	76,703
	203,536	187,008
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)	145,586	122,184
Financial assets measured at fair value through other comprehensive income (note 23)	5,283	5,538
Financial assets measured at amortised cost (note 24)	40,371	47,407
Settlement Reserve Fund and Settlement Guarantee Fund held by ChinaClear (note 26)	12,757	11,862
Margin receivable from Clearing Participants	7	17
Less: Other financial liabilities of Margin Funds (notes (a) and 36)	(468)	–
	203,536	187,008

(a) Other financial liabilities of Margin Funds represent payable for debt securities traded before 31 December.

34. Accounts Payable, Accruals and Other Liabilities

Accounting Policy

Financial liabilities (other than financial liabilities at fair value through profit or loss (note 32) 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 2021 \$m	At 31 Dec 2020 \$m
Payable to ChinaClear and Exchange and Clearing Participants:		
– CNS money obligations payable (note 26(a))	25,293	39,120
– HKD/USD cash collateral for A-shares (note 21(a)(ii))	–	2
– others	429	553
Transaction levy payable to the SFC	158	185
Levies payable to the Financial Reporting Council	32	–
Unclaimed dividends (note (a))	467	376
Stamp duty payable to the Collector of Stamp Revenue	509	914
Payables for collective investment schemes traded before 31 Dec	–	504
Other payables, accruals and deposits received	1,447	1,320
	28,335	42,974

34. Accounts Payable, Accruals and Other Liabilities (continued)

- (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 \$12 million (2020: \$9 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 \$12 million (2020: \$21 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 2021 \$m	At 31 Dec 2020 \$m
Deferred revenue arising from unsatisfied performance obligations	1,454	1,420
Analysed as:		
Non-current liabilities	354	371
Current liabilities	1,100	1,049
	1,454	1,420

36. Other Financial Liabilities

Accounting Policy

A financial guarantee contract is a contract that requires the Group to make specified payments to reimburse the holder for a loss it incurs because a specified entity or person fails to make payment when due in accordance with the original or modified terms of an undertaking.

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 2021 \$m	At 31 Dec 2020 \$m
Financial liabilities of Margin Funds (note 33)	468	-
Financial liabilities of Clearing House Funds (note 37)	25	28
Financial liabilities of Corporate Funds:		
Financial guarantee contract (note (a))	20	20
	513	48

- (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 HKSCC, HKCC and SEOCH to their respective default funds (Skin-in-the-Game) are set at 10 per cent of the size of the respective funds, and such contributions, together with default fund credits granted to HKSCC and HKCC Participants, are included in Corporate Funds.

	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
The Clearing House Funds comprised:		
Clearing Participants' cash contributions	19,182	20,439
Contribution to OTC Clear Rates and FX Guarantee Resources	156	156
Clearing House Funds reserves (note 45)	612	628
	19,950	21,223
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)	15,503	18,847
Financial assets measured at fair value through other comprehensive income (note 23)	4,472	2,404
Less: Other financial liabilities of Clearing House Funds (note 36)	(25)	(28)
	19,950	21,223
The Clearing House Funds comprised the following Funds:		
HKSCC Guarantee Fund	4,552	5,667
SEOCH Reserve Fund	1,851	909
HKCC Reserve Fund	2,055	1,205
OTC Clear Rates and FX Guarantee Fund	2,778	2,730
OTC Clear Rates and FX Guarantee Resources	171	171
LME Clear Default Fund	8,543	10,541
	19,950	21,223

- (a) At 31 December 2021, the Skin-in-the-Game, together with default fund credits granted to HKSCC and HKCC Participants (note 53(c)), amounted to \$1,267 million (31 December 2020: \$1,241 million), and were included in Corporate Funds (note 25(b)).

38. Lease Liabilities

Accounting Policy

A contract is, or contains, a lease if the contract conveys a right to control the use of an identified asset for a period of time in exchange for consideration. The Group recognises a right-of-use asset (note 31) and a lease liability at the lease commencement date.

The 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 or, if that rate cannot be readily determined, the lessee's incremental borrowing rate is used. Generally, the lessee uses its incremental borrowing rate as the discount rate. 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 expense.

	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Total lease liabilities	2,059	2,358
Analysed as:		
Non-current liabilities	1,760	2,054
Current liabilities	299	304
	2,059	2,358

Some lease contracts include an option to renew for an additional period after the end of the initial contract term. Where practicable, the Group seeks to include in all leases such extension options exercisable by the Group to provide operational flexibility. 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 (i.e., the initial fair value plus cumulative amortisation of the difference between the initial fair value and the cash payments related to the put options using the effective interest method). The interest charge arising is recorded under finance costs in the consolidated income statement.

The written put options 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.

	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Written put options to non-controlling interests	426	423
Analysed as:		
Non-current liabilities	86	83
Current liabilities	340	340
	426	423

The amounts were repayable as follows:

	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Within one year	340	340
After one year but within two years	86	–
After two years but within five years	–	83
	426	423

At 31 December 2021, OTC Clear has issued 3,541 non-voting ordinary shares to certain third party shareholders at a total consideration of \$433 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.

At 31 December 2021, \$340 million of the written put options were exercisable (31 December 2020: \$340 million) and the remaining \$86 million of the options will become exercisable in October 2023. During the year ended 31 December 2021, none of the written put options was exercised (2020: none).

The effective interest rate of the options before they are exercisable was 3.0 per cent (2020: 3.0 per cent) per annum.

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 2021	106	106	212
Provision for the year	-	112	112
Amount used during the year	-	(121)	(121)
Amount paid during the year	(5)	(18)	(23)
At 31 Dec 2021	101	79	180
Analysed as:			
Non-current liabilities	98	-	98
Current liabilities	3	79	82
	101	79	180

- (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 9 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 is determined using tax rates that have been enacted or substantively enacted by the end of the reporting period and are expected to apply when the related deferred tax asset is realised or the deferred tax liability is settled.

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.

(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	
	2021 \$m	2020 \$m	2021 \$m	2020 \$m	2021 \$m	2020 \$m	2021 \$m	2020 \$m	2021 \$m	2020 \$m	2021 \$m	2020 \$m	2021 \$m	2020 \$m
At 1 Jan	382	305	566	533	(19)	(22)	(29)	(21)	(1)	(20)	5	-	904	775
Exchange differences	-	-	4	(3)	-	-	-	-	-	-	-	-	4	(3)
Charged/(credited) to the consolidated income statement (note 17(a))	25	77	135	36	6	3	4	(3)	-	19	28	-	198	132
(Credited)/charged to the consolidated statement of comprehensive income	-	-	-	-	-	-	-	-	-	-	(1)	5	(1)	5
Charged/(credited) directly to retained earnings	-	-	-	-	-	-	2	(5)	-	-	-	-	2	(5)
At 31 Dec	407	382	705	566	(13)	(19)	(23)	(29)	(1)	(1)	32	5	1,107	904

¹ Intangible assets include customer relationships and tradenames.

(b) The Group had unrecognised tax losses of \$1,810 million at 31 December 2021 (31 December 2020: \$1,623 million) that may be carried forward for offsetting against future taxable income. Tax losses of PRC entities amounting to \$772 million (31 December 2020: \$662 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.

41. Deferred Taxation (continued)

- (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 2021 \$m	At 31 Dec 2020 \$m
Deferred tax assets	(25)	(26)
Deferred tax liabilities	1,132	930
	1,107	904

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

	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Deferred tax assets		
Amounts to be recovered after more than 12 months	(23)	(25)
Amounts to be recovered within 12 months	(2)	(1)
	(25)	(26)
Deferred tax liabilities		
Amounts to be settled after more than 12 months	1,114	921
Amounts to be settled within 12 months	18	9
	1,132	930
Net deferred tax liabilities	1,107	904

42. Share Capital and Shares Held for Share Award Scheme

Accounting Policy

Shares

Ordinary shares are classified as equity.

Shares held for Share Award Scheme

Where HKEX shares are acquired by the Share Award Scheme from the market or by electing for scrip in lieu of cash dividends, the total consideration of shares acquired from the market (including any directly attributable incremental costs) or under the scrip dividend scheme is presented as Shares held for Share Award Scheme and deducted from total equity.

Upon vesting, the related costs of the vested Awarded Shares purchased from the market and shares acquired from reinvesting dividends or received under the scrip dividend scheme (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 2020	1,261,201	(3,274)	30,449	(770)	29,679
Shares issued in lieu of cash dividends (note (a))	6,636	(45)	1,438	(10)	1,428
Shares purchased for Share Award Scheme (note (b))	–	(84)	–	(31)	(31)
Vesting of shares of Share Award Scheme (note (c))	–	1,420	4	326	330
At 31 Dec 2020	1,267,837	(1,983)	31,891	(485)	31,406
At 1 Jan 2021	1,267,837	(1,983)	31,891	(485)	31,406
Shares purchased for Share Award Scheme (note (b))	–	(1,455)	–	(681)	(681)
Vesting of shares of Share Award Scheme (note (c))	–	1,067	5	265	270
At 31 Dec 2021	1,267,837	(2,371)	31,896	(901)	30,995

1 Excluding shares vested but not yet transferred to awardees of 33,763 shares at 31 December 2021 (31 December 2020: 307,960 shares)

42. Share Capital and Shares Held for Share Award Scheme (continued)

- (a) During the year ended 31 December 2020, the following shares were issued to shareholders who elected to receive HKEX shares in lieu of cash dividends pursuant to the scrip dividend scheme:

	2020				
	Number of shares	Scrip price \$	Share capital \$m	Shares held for Share Award Scheme \$m	Total \$m
Issued as 2019 second interim scrip dividends:					
– total	6,635,576	216.70	1,438	–	1,438
– to Share Award Scheme	(45,127)	216.70	–	(10)	(10)
	6,590,449		1,438	(10)	1,428

Following the suspension of the scrip dividend scheme from August 2020, no HKEX shares were issued during the year ended 31 December 2021.

- (b) During the year, the Share Award Scheme (note 43) acquired 1,454,300 HKEX shares (2020: 84,000 shares) through purchases on the open market. The total amount paid to acquire the shares during the year was \$681 million (2020: \$31 million).
- (c) During the year, a total of 1,066,959 HKEX shares (2020: 1,419,931 shares) were vested. The total cost of the vested shares was \$265 million (2020: \$326 million). In 2021, \$5 million (2020: \$4 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 amount to be expensed as share-based compensation expenses is determined by reference to the fair value of the Awarded Shares granted, taking into account all non-vesting conditions associated with the grants on grant date. The total expense is recognised over the relevant vesting periods (or on the grant date if the shares vest immediately), with a corresponding credit to an employee share-based compensation reserve under equity.

For those Awarded Shares which are amortised over the vesting periods, 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:

	2021 \$m	2020 \$m
At 1 Jan	232	250
Employee share-based compensation benefits (note 10)	324	281
Vesting of shares of Share Award Scheme	(250)	(299)
At 31 Dec	306	232

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

The awarded amounts for the purchase of shares (Awarded Shares) to eligible employees and/or selected senior executives (Awarded Sum) are approved by the Board. The Awarded Shares are either purchased from the market or are awarded by regranting the forfeited or unallocated shares held by the Scheme. Before vesting, the Awarded Shares are held in a trust set up by the Scheme.

Further shares are derived from dividends payable on the Awarded Shares held in the Scheme from reinvesting dividends or scrip shares received under the scrip dividend scheme (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 retires on reaching normal retirement age or suffers from permanent disability. 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 trustee of the Scheme who may award such shares to the other awardees, taking into consideration recommendations of the Board.

Details of Awarded Shares awarded during 2020 and 2021

Date of award	Number of Awarded Shares awarded	Average fair value per share \$	Vesting period
22 Jun 2020	9,700	307.10	17 Jun 2022 – 17 Jun 2023
4 Dec 2020	42,500	389.08	8 Feb 2021 – 8 Feb 2024
13 May 2021	600	442.39	31 Mar 2022 – 31 Mar 2023
13 May 2021	727,088 ¹	439.26	9 Dec 2022 – 9 Dec 2023
2 Jun 2021	211,756 ²	484.20	24 May 2022 – 24 May 2023
6 Sep 2021	5,300	493.22	6 Feb 2022 – 11 Feb 2024
29 Sep 2021	6,100	474.48	13 Jan 2022 – 13 Jan 2024
30 Sep 2021	200	478.82	11 Feb 2022 – 11 Feb 2024
30 Sep 2021	400	479.36	13 Jan 2022 – 13 Jan 2024
12 Nov 2021	900	466.12	27 Mar 2022 – 24 Mar 2024
30 Nov 2021	21,200	435.15	30 Nov 2023 – 30 Nov 2024

1 261,516 shares were awarded by re-granting the forfeited or unallocated shares held by the Scheme

2 The shares were awarded to HKEX's Chief Executive Officer.

In addition to the above, total Awarded Sum amounting to \$377 million were also granted to selected employees in 2021. At 31 December 2021, the shares had not yet been awarded to the employees.

Details of Awarded Shares (excluding dividend shares) vested during 2020 and 2021

During the year, 1,011,400 HKEX shares (2020: 1,112,075 shares) were vested at an aggregate fair value of \$250 million (2020: \$257 million), of which none of shares were for the HKEX's Chief Executive Officer (2020: 146,156 shares were for the then HKEX's Chief Executive).

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

	2021	2020
Number of Awarded Shares and dividend shares:		
Outstanding at 1 Jan	1,722,044	3,272,042
Awarded ³	973,544	52,200
Forfeited	(155,227)	(246,576)
Vested	(1,011,400)	(1,339,766)
Dividend shares:		
– allocated to awardees	37,818	73,046
– allocated to awardees but subsequently forfeited	(5,009)	(8,737)
– vested ⁴	(55,559)	(80,165)
Outstanding at 31 Dec	1,506,211	1,722,044

3 Average fair value per share was \$449.51 (2020: \$373.85).

4 In 2021, 55,559 dividend shares (2020: 80,165 shares), of which none of shares were for the HKEX's Chief Executive Officer (2020: 21,065 shares were for the then HKEX's Chief Executive), at a cost of \$20 million (2020: \$21 million) were vested.

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

	At 31 Dec 2021		At 31 Dec 2020	
	Remaining vesting or performance period	Number of Awarded Shares and dividend shares outstanding	Remaining vesting or performance period	Number of Awarded Shares and dividend shares outstanding
Shares awarded in				
2018	0.05 year	117	0.05 year to 1.05 years	523,567
2019	0.19 year to 0.95 year	497,700	0.11 year to 1.95 years	1,093,163
2020	0.11 year to 2.11 years	38,600	0.11 year to 3.11 years	52,200
2021	0.04 year to 2.92 years	939,430	–	–
Dividend shares	0.05 year to 2.11 years	30,364	0.05 year to 2.46 years	53,114
		1,506,211		1,722,044

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

	At 31 Dec 2021	At 31 Dec 2020
Number of Awarded Shares and dividend shares (note (b))	1,506,211	1,722,044
Forfeited or unallocated shares ⁵	864,690	261,516
Number of shares held by Share Award Scheme ⁶ (note 42)	2,370,901	1,983,560

5 The shares will be granted to eligible employees in future.

6 Excluding shares vested but not yet transferred to awardees of 33,763 shares at 31 December 2021 (31 December 2020: 307,960 shares).

44. Hedging and Revaluation Reserves

	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Hedging reserve (note (a))	(2)	-
Revaluation reserve (note (b))	17	25
	15	25

(a) Hedging reserve

Accounting Policy

The Group designates certain bank balances 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 assets), the amounts accumulated in hedging reserve are reclassified and included in the initial measurement of the cost of the asset.

When a hedging instrument expires or is sold, or when a hedge no longer meets the criteria for hedge accounting, any cumulative gain or loss existing in hedging reserve at that time remains in hedging reserve and is recognised when the forecast transaction is ultimately recognised in the consolidated income statement. When a forecast transaction is no longer expected to occur, the cumulative gain or loss that is retained in hedging reserve is immediately reclassified to the consolidated income statement.

44. Hedging and Revaluation Reserves (continued)

(a) Hedging reserve (continued)

The movements of hedging reserve were as follows:

	2021 \$m	2020 \$m
At 1 Jan	-	6
Cash flow hedges:		
– net fair value (losses)/gains of hedging instruments	(7)	10
– reclassified to the consolidated income statement as staff costs and related expenses (note (i))	3	(15)
– reclassified to the consolidated income statement as information technology and computer maintenance expenses (note (i))	-	(1)
– reclassified to intangible assets (note (i))	2	-
At 31 Dec	(2)	-
Fair value of hedging instruments at 31 Dec	341	-

(i) The functional currencies of LME and LME Clear are United States Dollars (USD). To hedge the foreign currency exposure of their operating expenses, these entities have designated certain bank balances of pound sterling (GBP) 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. At 31 December 2021, GBP32.3 million of the bank balances was outstanding (31 December 2020: GBP Nil).

(ii) The total amounts arising from ineffective cash flow hedges recognised in the consolidated income statement of the Group during the year amounted to \$Nil (2020: \$Nil).

(b) Revaluation reserve

	2021 \$m	2020 \$m
At 1 Jan	25	(3)
Changes in fair value of financial assets measured at fair value through other comprehensive income	(9)	33
Deferred tax on financial assets measured at fair value through other comprehensive income	1	(5)
At 31 Dec	17	25

45. Designated Reserves

	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Clearing House Funds reserves (notes (a) and 37)	612	628
PRC statutory reserve (note (b))	11	-
At 31 Dec	623	628

(a) Clearing House Funds reserves

	HKSCC Guarantee Fund reserve \$m	SEOCH Reserve Fund reserve \$m	HKCC Reserve Fund reserve \$m	OTC Clear Rates and FX Guarantee Fund reserve \$m	OTC Clear Rates and FX Guarantee Resources reserve \$m	Total \$m
At 1 Jan 2020	174	111	239	51	12	587
Surplus of net investment income net of expenses of Clearing House Funds transfer from retained earnings (note 46)	11	2	5	20	3	41
At 31 Dec 2020	185	113	244	71	15	628
At 1 Jan 2021	185	113	244	71	15	628
(Deficit)/surplus of net investment income net of expenses of Clearing House Funds transfer (to)/from retained earnings (note 46)	(20)	1	-	3	-	(16)
At 31 Dec 2021	165	114	244	74	15	612

(b) PRC statutory reserve

	2021 \$m	2020 \$m
At 1 Jan	-	-
Transfer from retained earnings (note 46)	11	-
At 31 Dec	11	-

Upon 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

	2021 \$m	2020 \$m
At 1 Jan	17,214	14,204
Profit attributable to shareholders	12,535	11,505
Transfer from/(to) Clearing House Funds reserves (note 45(a))	16	(41)
Transfer to PRC statutory reserve (note 45(b))	(11)	-
Dividends:		
2020/2019 second interim dividend	(5,646)	(3,761)
2021/2020 first interim dividend	(5,934)	(4,692)
Unclaimed HKEX dividends forfeited (note 34(a))	12	21
Vesting of shares of Share Award Scheme	(20)	(31)
UK tax relating to Share Award Scheme	7	9
At 31 Dec	18,173	17,214

47. Notes to the Consolidated Statement of Cash Flows

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

	2021 \$m	2020 \$m
Profit before taxation	14,841	13,332
Adjustments for:		
Net interest income	(766)	(1,773)
Net fair value gains on financial assets mandatorily measured at fair value through profit or loss and financial liabilities at fair value through profit or loss	(485)	(487)
Finance costs	154	181
Depreciation and amortisation	1,354	1,197
Employee share-based compensation benefits	324	281
Provision for impairment losses of receivables	7	12
Share of profits less losses of joint ventures	(80)	(69)
Other non-cash adjustments	(43)	12
Net increase in financial assets of Margin Funds	(17,005)	(44,439)
Net increase in financial liabilities of Margin Funds	16,996	44,472
Net decrease/(increase) in Clearing House Fund financial assets	1,276	(6,075)
Net (decrease)/increase in Clearing House Fund financial liabilities	(1,260)	6,034
Increase in cash prepayments and collateral for A-shares	(1,160)	(4,752)
Increase in Corporate Funds used for supporting Skin-in-the-Game and default fund credits	(26)	(423)
Decrease/(increase) in accounts receivable, prepayments and deposits	15,389	(14,901)
(Decrease)/increase in other liabilities	(14,197)	19,957
Net cash inflow from principal operations	15,319	12,559
Interest received from financial assets measured at amortised cost and cash and cash equivalents	775	2,066
Interest paid to Participants	(47)	(349)
Income tax paid	(2,150)	(2,320)
Net cash inflow from principal operating activities	13,897	11,956

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 2020	418	2,506
Additions of leases	–	127
Interest on borrowings (note 14)	5	–
Interest on lease liabilities (note 14)	–	89
Cash flows		
– Payments of capital elements of lease liabilities	–	(284)
– Payments of interest elements of lease liabilities	–	(89)
Exchange differences	–	9
At 31 Dec 2020	423	2,358
At 1 Jan 2021	423	2,358
Additions and reassessment of leases	–	10
Interest on borrowings (note 14)	3	–
Interest on lease liabilities (note 14)	–	79
Cash flows		
– Payments of capital elements of lease liabilities	–	(310)
– Payments of interest elements of lease liabilities	–	(79)
Exchange differences	–	1
At 31 Dec 2021	426	2,059

(c) Cash outflow for leases

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

	2021 \$m	2020 \$m
Within operating cash flows	(1)	(4)
Within financing cash flows	(389)	(373)
Total lease rental paid	(390)	(377)

48. Commitments

Commitments in respect of capital expenditures

	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Contracted but not provided for:		
– fixed assets	21	15
– intangible assets	175	146
Authorised but not contracted for:		
– fixed assets	361	260
– intangible assets	258	469
	815	890

49. Contingent Liabilities

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.

At 31 December 2021, the Group's material contingent liabilities 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 2020: \$71 million). Up to 31 December 2021, 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 638 trading Participants (31 December 2020: 635) covered by the indemnity at 31 December 2021 defaulted, the maximum contingent liability of the Group under the indemnity would amount to \$128 million (31 December 2020: \$127 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.

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

	2021 \$m	2020 \$m
Salaries and other short-term employee benefits	173	233
Employee share-based compensation benefits	104	68
Retirement benefit costs	7	8
	284	309

(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\$971 million (HK\$7,570 million) at 31 December 2021 (31 December 2020: US\$2,241 million (HK\$17,376 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\$13,513 million (HK\$105,351 million) at 31 December 2021 (31 December 2020: US\$11,486 million (HK\$89,061 million)). Such non-cash collateral, together with certain financial assets amounting to US\$400 million (HK\$3,117 million) at 31 December 2021 (31 December 2020: US\$496 million (HK\$3,845 million)), have been pledged to LME Clear's investment agent 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.

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 2021 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 (approximately \$1,674 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 (approximately \$3,348 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 (approximately \$809 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 (approximately \$1,618 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\$81.5 million (approximately HK\$635 million).
LME Clear	Bank of England, UK	Maintain cash or highly liquid financial instruments with minimal market and credit risk, amounting to US\$98.5 million (HK\$768 million), plus 10 per cent minimum reporting threshold of US\$9.9 million (HK\$77 million) and US\$24.6 million (HK\$192 million) financial resources available to set off losses in the event of default. Capital resources must be in the form of share capital, retained earnings and reserves, reduced by intangible assets and retained losses.

At 31 December 2021, the Group had set aside \$4,000 million (31 December 2020: \$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 2020: \$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 2021 and 31 December 2020.

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 2021 \$m	At 31 Dec 2020 \$m
Borrowings (note 39)	426	423
Less:		
Cash and cash equivalents of Corporate Funds (note 21)	12,900	10,753
Less: Amounts reserved for supporting Skin-in-the-Game and default fund credits of Clearing House Funds (note 21(b))	(502)	(311)
	(12,398)	(10,442)
Net debt (note (a))	-	-
Equity attributable to shareholders of HKEX	49,626	48,918
Less: Designated reserves (note 45)	(623)	(628)
Adjusted capital	49,003	48,290
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 Guidelines, which are approved by the Board and reviewed regularly. Investment restrictions and guidelines set out in the Investment Guidelines 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 for each fund to control risks (e.g., permissible asset type, asset allocation, liquidity, credit requirement, counterparty concentration, maturity, 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 collective investment schemes (External Portfolio) under the External Investment Guidelines. The guidelines include 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 guidelines also define 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 collective investment schemes 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 foreign currency unhedged positions held from single currency and on an aggregated basis.

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 certain GBP bank balances and forward foreign exchange contracts as cash flow hedges for hedging the foreign exchange risk of certain operating expenses.

Under the Investment Guidelines, 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 HK\$500 million can be invested in RMB investments.
- For internally-managed Corporate Funds, Clearing House Funds, Margin Funds and Cash for A-shares, unhedged investments in currencies other than HKD or USD must fully match the respective liabilities or forecast payments for the funds. Unhedged investments in USD may not exceed 20 per cent of the respective funds and unhedged investments in RMB for internally-managed Corporate Funds may not exceed RMB1 billion.

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 and other offsetting exposures (hedges)), at 31 December presented in HKD equivalents.

	Foreign currency	At 31 Dec 2021			At 31 Dec 2020		
		Gross open position \$m	Hedges \$m	Net open position \$m	Gross open position \$m	Hedges \$m	Net open position \$m
Financial assets ¹	EUR	4,476	(4,471)	5	3,902	(3,897)	5
	GBP	13,111	(12,837) ³	274	5,499	(5,193)	306
	JPY	829	(828)	1	4,908	(4,906)	2
	RMB	26,462	(25,921)	541	25,951	(25,602)	349
	USD	11,282	(8,745)	2,537	7,285	(4,353)	2,932
	Others	4	(2)	2	6	(1)	5
Financial liabilities ²	EUR	(4,471)	4,471	-	(3,897)	3,897	-
	GBP	(12,770)	12,496	(274)	(5,469)	5,193	(276)
	JPY	(828)	828	-	(4,906)	4,906	-
	RMB	(25,924)	25,921	(3)	(25,606)	25,602	(4)
	USD	(9,303)	8,745	(558)	(4,918)	4,354	(564)
	Others	(3)	2	(1)	(6)	1	(5)
Total net open positions for the Group	EUR			5			5
	GBP			-			30
	JPY			1			2
	RMB			538			345
	USD			1,979			2,368
	Others			1			-
			2,524			2,750	

1 Financial assets comprised cash and cash equivalents, financial assets measured at fair value through profit or loss (excluding collective investment schemes), 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 Clearing Participants, Participants' contributions to Clearing House Funds, financial liabilities at fair value through profit or loss, borrowings, lease liabilities, and accounts payable and other liabilities.

3 Includes \$341 million of bank deposits designated as cash flow hedges (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 collective investment schemes 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, ferrous and precious 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 collective investment schemes 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 setting a stress loss limit to limit its exposure. Limits are also set for maturity 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 collective investment schemes, 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 2021	At 31 Dec 2020	At 31 Dec 2021	At 31 Dec 2020
Carrying value (\$m)	88,992	84,696	103,998	89,503
Highest contractual interest rates	3.50%	3.25%	1.21%	1.33%
Lowest contractual interest rates ¹	0.07%	0.03%	-3.54%	-2.00%

1 The contractual interest rates for certain reverse repurchase investments denominated in Euro held by LME Clear were below 0 per cent.

53. Financial Risk Management (continued)

(a) Market risk (continued)

(iv) Sensitivity analysis

Investments other than collective investment schemes

The Group also uses Value at Risk (VaR) and portfolio stress testing to identify and measure foreign exchange risk and interest rate risks of the Group's investments other than collective investment schemes.

VaR measures the expected maximum loss over a given time interval (a holding period of 10 trading days is used by the Group) at a given confidence level (95 per cent confidence interval is adopted by the Group) based on historical data (one year is used by the Group).

VaR is a statistical measure of risks and has limitations associated with the assumptions employed. The calculation is based on historical simulation and therefore vulnerable to sudden changes in market behaviour. The use of a 10-day holding period may be insufficient at times of severe illiquidity. Also, VaR does not necessarily reflect all aspects of risks that affect the price of financial instruments and may underestimate real market risk exposure. In addition, VaR does not factor in the possibility of catastrophic risks but the use of stress testing for abnormal market conditions can mitigate this limitation.

The VaR for each risk factor and the total VaR of the investments other than collective investment schemes and related hedges of the Group at 31 December were as follows:

	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Foreign exchange risk	19	16
Interest rate risk	16	18
Total VaR	25	19

VaR for each risk factor is the independently derived largest potential loss due to fluctuations solely in that risk factor. The individual VaRs did not add up to the total VaR as there was diversification effect due to correlation amongst the risk factors.

53. Financial Risk Management (continued)

(a) Market risk (continued)

(iv) Sensitivity analysis (continued)

Collective investment schemes

At 31 December, the fair value of the Group's collective investment schemes (Funds) by strategy employed was as follows:

Strategy	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Public Equities	1,774	1,684
Diversifiers ¹	4,949	4,130
Government Bonds and Mortgage-backed Securities	2,020	1,679
Total	8,743	7,493
Number of Funds	34	25

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

The Group monitors the market value sensitivity of the Funds through a high-level simulation of the Funds' 1-year Value at Risk (simplified 1-year VaR) using the Funds' returns and volatilities. The simplified 1-year VaR helps to determine the potential changes in the market values of the Funds over a 1-year period. At 31 December 2021, the simplified 1-year VaR calculated at a 95 per cent confidence interval was 1.0 per cent (31 December 2020: 1.5 per cent), implying that the market value of the Group's Funds could potentially change by approximately \$87 million (2020: \$112 million).

The simplified 1-year VaR is computed using historical monthly returns of the Funds with the following steps:

1. Compute blended monthly returns of the Group's Funds using monthly historical returns of the respective Funds for the past 36 months, and their corresponding portfolio weights as of the latest month;
2. Compute the average monthly return and standard deviation of the Funds' returns and derive the annualised amounts; and
3. Compute the simplified 1-year VaR, at a 95 per cent confidence interval, by subtracting 1.65 times of the annualised standard deviation from the annualised average return.

The simplified 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 Funds' 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 Funds' 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 minimum levels of highly liquid assets for Corporate Funds, Clearing House Funds and Margin Funds. In particular, Corporate Funds solely used for supporting the Skin-in-the Game and default fund credits of Clearing House Funds are invested in overnight deposits or Exchange Fund Bills issued by the Hong Kong Monetary Authority and monitored 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, HKSCC, HKCC and SEOCH 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 2021, the Group's total available banking facilities for its daily operations amounted to \$21,249 million (31 December 2020: \$21,223 million), which included \$14,748 million (31 December 2020: \$14,722 million) of committed banking facilities and \$6,500 million (31 December 2020: \$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 2021, the total amount of such facilities was \$31,041 million (31 December 2020: \$30,244 million).

In addition, the Group has arranged contingency banking facilities amounting to RMB13,000 million (HK\$15,938 million) (31 December 2020: RMB13,000 million (HK\$15,516 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, ferrous and precious 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 financial assets into the relevant maturity buckets based on the following criteria:

- investments held under the collective investment schemes 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 collective investment schemes), 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; and
- other financial assets are allocated based on their contractual maturity dates or the expected dates of disposal.

	At 31 Dec 2021					Total \$m
	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	
Cash and cash equivalents	181,361	-	-	-	-	181,361
Financial assets measured at fair value through profit or loss	4,772	2,287	1,432	252	694	9,437
Financial assets measured at fair value through other comprehensive income	9,755	-	-	-	-	9,755
Financial assets measured at amortised cost	51,731	-	-	89	8	51,828
Accounts receivable and deposits ¹	32,502	7	-	-	-	32,509
	280,121	2,294	1,432	341	702	284,890

	At 31 Dec 2020					Total \$m
	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	
Cash and cash equivalents	157,996	-	-	-	-	157,996
Financial assets measured at fair value through profit or loss	4,264	1,818	1,115	296	220	7,713
Financial assets measured at fair value through other comprehensive income	7,942	-	-	-	-	7,942
Financial assets measured at amortised cost	62,589	-	-	91	8	62,688
Accounts receivable and deposits ¹	46,858	24	2	-	-	46,884
	279,649	1,842	1,117	387	228	283,223

1 Amounts exclude prepayments of \$229 million (31 December 2020: \$196 million).

53. Financial Risk Management (continued)

(b) Liquidity risk (continued)

Exposure (continued)

The table below analyses the Group's 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.

	At 31 Dec 2021					Total \$m
	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	
Margin deposits, Mainland security and settlement deposits, and cash collateral from Clearing Participants	203,536	-	-	-	-	203,536
Accounts payable, accruals and other liabilities	28,193	18	124	-	-	28,335
Other financial liabilities:						
Other financial liabilities of Margin Funds	468	-	-	-	-	468
Other financial liabilities of Clearing House Funds	24	-	1	-	-	25
Other financial liabilities of Corporate Funds:						
Financial guarantee contract (maximum amount guaranteed) (note 49(b))	128	-	-	-	-	128
Participants' contributions to Clearing House Funds	18,645	485	52	-	-	19,182
Borrowings:						
Written put options to non-controlling interests	-	-	340	93	-	433
Lease liabilities	36	58	281	1,143	842	2,360
Total	251,030	561	798	1,236	842	254,467

	At 31 Dec 2020					Total \$m
	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	
Margin deposits, Mainland security and settlement deposits, and cash collateral from Clearing Participants	187,008	-	-	-	-	187,008
Accounts payable, accruals and other liabilities	42,834	13	127	-	-	42,974
Other financial liabilities:						
Other financial liabilities of Clearing House Funds	28	-	-	-	-	28
Other financial liabilities of Corporate Funds:						
Financial guarantee contract (maximum amount guaranteed) (note 49(b))	127	-	-	-	-	127
Participants' contributions to Clearing House Funds	19,916	471	52	-	-	20,439
Borrowings:						
Written put options to non-controlling interests	-	-	340	93	-	433
Lease liabilities	38	60	288	1,248	1,101	2,735
Total	249,951	544	807	1,341	1,101	253,744

53. Financial Risk Management (continued)

(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.

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 collective investment schemes) were governed by the Group Credit Limit for Settlement and Investments framework. Under the framework, specific limits are set on an investment portfolio level and on single counterparty level. The investment portfolio is subject to a maximum portfolio expected loss limit, each investment counterparty is subject to a minimum investment grade rating, and each investment is also subject to maximum concentration limit per counterparty. Fund managers of collective investment schemes are financially strong and stable, and their selections are approved by the Investment Committee as delegated by the Board.

At 31 December 2021, the investments in debt securities held by the Group (excluding those held by the collective investment schemes) were of investment grade and had a weighted average credit rating of Aa2 (Moody) (31 December 2020: 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.

53. Financial Risk Management (continued)

(c) Credit risk (continued)

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 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.

At 31 December 2021, HKSCC had 642 Clearing Participants (31 December 2020: 643) and the total amounts of Margin Credit and Dynamic Contribution Credit utilised by HKSCC Clearing Participants amounted to \$903 million (31 December 2020: \$1,212 million), while HKCC had 166 Clearing Participants (31 December 2020: 166) and the total amount of Dynamic Contribution Credit utilised by HKCC Clearing Participants amounted to \$65 million (31 December 2020: \$58 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.

53. Financial Risk Management (continued)

(c) Credit risk (continued)

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 2021		At 31 Dec 2020	
	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)	128	(20)	127

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 2021		At 31 Dec 2020	
	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	32,509	13,037	46,884	11,953
Fair value of base, ferrous and precious metals futures and options contracts cleared through LME Clear	91,424	91,424	92,884	92,884
Reverse repurchase investments	101,041	101,041	84,981	84,981

1 Amounts exclude prepayments of \$229 million (31 December 2020: \$196 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 2021 and 31 December 2020, 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.

Recurring fair value measurements:	At 31 Dec 2021				At 31 Dec 2020			
	Level 1 \$m	Level 2 \$m	Level 3 \$m	Total \$m	Level 1 \$m	Level 2 \$m	Level 3 \$m	Total \$m
Financial assets								
Financial assets measured at fair value through profit or loss:								
– collective investment schemes	1,680	7,063	–	8,743	1,131	6,362	–	7,493
– equity securities	–	–	694	694	–	–	220	220
– base, ferrous, and precious metals futures and options contracts cleared through LME Clear	–	91,424	–	91,424	–	92,884	–	92,884
Financial assets measured at fair value through other comprehensive income:								
– debt securities	7,750	2,005	–	9,755	5,439	2,503	–	7,942
	9,430	100,492	694	110,616	6,570	101,749	220	108,539
Financial liabilities								
Financial liabilities at fair value through profit or loss:								
– base, ferrous, and precious metals futures and options contracts cleared through LME Clear	–	91,424	–	91,424	–	92,884	–	92,884

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)

During 2021 and 2020, 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 collective investment schemes, debt securities, base, ferrous and precious metals futures and options 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, net asset values and latest redemption prices or transaction prices of the respective collective investment schemes.

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.

Fair value measurements using significant unobservable inputs (Level 3)

	2021 \$m	2020 \$m
At 1 Jan	220	50
Investment in minority stakes in unlisted companies	349	160
Gains recognised in profit or loss	121	–
Gains recognised in other comprehensive income	4	10
At 31 Dec	694	220
Total gains or losses recognised in the consolidated income statement for assets held at 31 Dec	121	–

Level 3 valuations are prepared on bi-annually basis, at each interim and annual reporting date. The assumptions and inputs to the valuation model, the valuation techniques and the valuation results are reviewed and approved by management.

The following table summarises the basis of valuation used in level 3 fair value measurements:

Description	Fair value		Valuation technique	Unobservable inputs	Range
	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m			
Minority stake in Fusion Bank Limited	200	100	Market approach ¹	N/A	N/A
Minority stake in Huakong TsingJiao Information Science (Beijing) Limited	236	120	Market approach ¹	N/A	N/A
Minority stake in Guangzhou Futures Exchange	258	–	Market approach ¹	N/A	N/A
Total	694	220			

¹ Based on recent transactions

Fusion Bank Limited has a virtual banking license granted by the Hong Kong Monetary Authority. The investment is not traded in an active market. The company launched its virtual banking platform in 2020, offering a variety of banking services including savings, time deposits, local fund transfers and foreign exchange. At 31 December 2021, the latest fair value was based on recent market transactions.

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)

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. The investment is not traded in an active market. At 31 December 2021, the latest fair value was based on recent market transactions.

Guangzhou Futures Exchange was officially launched in April 2021, and it seeks to become an innovative and market-oriented exchange with international influence, focusing on serving the real economy and green development initiatives. At 31 December 2021, the latest fair value was based on recent market transactions.

(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 2021		At 31 Dec 2020	
	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	429	429	–	–
– other financial assets maturing over one year ²	97	87	99	94
Liabilities				
Borrowings:				
– written put options to non-controlling interests ³	426	430	423	430
Financial guarantee to the Collector of Stamp Revenue ⁴	20	56	20	76

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 0.41 per cent to 1.45 per cent at 31 December 2021 (31 December 2020: 0.12 per cent to 0.60 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 rate used was 1.70 per cent at 31 December 2021 (31 December 2020: 1.19 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 2.84 per cent at 31 December 2021 (31 December 2020: 2.10 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, ferrous and precious 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.
- (i) Financial assets and financial liabilities subject to offsetting, enforceable master netting arrangements or similar agreements

Type of financial instruments	At 31 Dec 2021					
	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	Related amounts not offset in the consolidated statement of financial position		
				Amounts subject to master netting arrangements \$m	Cash collateral \$m	Net amounts \$m
Financial assets:						
CNS money obligations receivable ¹	330,705	(312,784)	17,921	(3,101)	(10,472)	4,348
Base, ferrous and precious metals futures and options contracts cleared through LME Clear ²	1,512,980	(1,421,556)	91,424	(39,489)	(51,935)	-
Other accounts receivable from Participants, ChinaClear, information vendors and hosting services customers, net of provision for impairment losses	13,311	-	13,311	(5,607)	(113)	7,591
Total	1,856,996	(1,734,340)	122,656	(48,197)	(62,520)	11,939
Financial liabilities:						
CNS money obligations payable ¹	338,077	(312,784)	25,293	(8,708)	-	16,585
Base, ferrous and precious metals futures and options contracts cleared through LME Clear ²	1,512,980	(1,421,556)	91,424	(39,489)	-	51,935
Total	1,851,057	(1,734,340)	116,717	(48,197)	-	68,520

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)

Type of financial instruments	At 31 Dec 2020					
	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	Related amounts not offset in the consolidated statement of financial position Amounts subject to master netting arrangements \$m	Cash collateral \$m	Net amounts \$m
Financial assets:						
CNS money obligations receivable ¹	489,300	(456,390)	32,910	(10,134)	(8,009)	14,767
Base, ferrous and precious metals futures and options contracts cleared through LME Clear ²	1,556,627	(1,463,743)	92,884	(38,673)	(54,211)	-
Other accounts receivable from Participants, ChinaClear, information vendors and hosting services customers, net of provision for impairment losses	878	-	878	-	(140)	738
Total	2,046,805	(1,920,133)	126,672	(48,807)	(62,360)	15,505
Financial liabilities:						
CNS money obligations payable ¹	495,510	(456,390)	39,120	(10,134)	-	28,986
Base, ferrous and precious metals futures and options contracts cleared through LME Clear ²	1,556,627	(1,463,743)	92,884	(38,673)	-	54,211
Total	2,052,137	(1,920,133)	132,004	(48,807)	-	83,197

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, ferrous and precious metals futures and options contracts (i.e., after set-off) and other accounts receivable due from 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”, “financial assets measured at fair value through profit or loss” and “financial liabilities at fair value through profit or loss” presented in the consolidated statement of financial position.

	Accounts receivable, prepayments and deposits		Financial assets measured at fair value through profit or loss	
	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Net amount of financial assets after offsetting as stated above:				
– CNS money obligations receivable	17,921	32,910	–	–
– Other accounts receivable from Participants, ChinaClear, information vendors and hosting services customers, net of provision for impairment losses	13,311	878	–	–
– Base, ferrous and precious metals futures and options contracts cleared through LME Clear	–	–	91,424	92,884
Financial assets not in scope of offsetting disclosures	1,277	13,096	9,437	7,713
Prepayments	229	196	–	–
Amounts presented in the consolidated statement of financial position	32,738	47,080	100,861	100,597

	Accounts payable, accruals and other liabilities		Financial liabilities at fair value through profit or loss	
	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m	At 31 Dec 2021 \$m	At 31 Dec 2020 \$m
Net amount of financial liabilities after offsetting as stated above:				
– CNS money obligations payable	25,293	39,120	–	–
– Base, ferrous and precious metals futures and options contracts cleared through LME Clear	–	–	91,424	92,884
Financial liabilities not in scope of offsetting disclosures	3,042	3,854	–	–
Amounts presented in the consolidated statement of financial position	28,335	42,974	91,424	92,884

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. 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 2021			At 31 Dec 2020		
	Current \$m	Non-current \$m	Total \$m	Current \$m	Non-current \$m	Total \$m
Assets						
Cash and cash equivalents	3,808	–	3,808	4,057	–	4,057
Financial assets measured at fair value through profit or loss	8,491	510	9,001	7,197	296	7,493
Financial assets measured at amortised cost	5,264	197	5,461	7,263	74	7,337
Accounts receivable, prepayments and deposits	315	21	336	96	21	117
Amounts due from subsidiaries	808	11,594	12,402	1,008	11,581	12,589
Interests in joint ventures	–	114	114	–	114	114
Intangible assets	–	464	464	–	457	457
Fixed assets	–	404	404	–	434	434
Right-of-use assets	–	1,656	1,656	–	1,867	1,867
Investments in subsidiaries	–	15,694	15,694	–	15,451	15,451
Total assets	18,686	30,654	49,340	19,621	30,295	49,916
Liabilities and equity						
Liabilities						
Financial liabilities at fair value through profit or loss	333	–	333	347	–	347
Accounts payable, accruals and other liabilities	673	–	673	994	–	994
Amounts due to subsidiaries	159	–	159	345	–	345
Taxation payable	325	–	325	299	–	299
Other financial liabilities	11	–	11	11	–	11
Lease liabilities	209	1,543	1,752	211	1,745	1,956
Provisions	73	63	136	103	63	166
Deferred tax liabilities	–	95	95	–	90	90
Total liabilities	1,783	1,701	3,484	2,310	1,898	4,208
Equity						
Share capital			31,896			31,891
Shares held for Share Award Scheme			(901)			(485)
Employee share-based compensation reserve			306			232
Merger reserve			694			694
Retained earnings			13,861			13,376
Equity attributable to shareholders of HKEX			45,856			45,708
Total liabilities and equity			49,340			49,916
Net current assets			16,903			17,311

Approved by the Board of Directors on 24 February 2022

Laura M CHA
Director

Alejandro Nicolas AGUZIN
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 2020	250	694	12,060
Profit attributable to shareholders	-	-	9,779
2019 second interim dividend at \$2.99 per share	-	-	(3,761)
2020 first interim dividend at \$3.71 per share	-	-	(4,692)
Unclaimed HKEX dividends forfeited	-	-	21
Vesting of shares of Share Award Scheme	(299)	-	(31)
Employee share-based compensation benefits	281	-	-
At 31 Dec 2020	232	694	13,376
At 1 Jan 2021	232	694	13,376
Profit attributable to shareholders	-	-	12,073
2020 second interim dividend at \$4.46 per share	-	-	(5,646)
2021 first interim dividend at \$4.69 per share	-	-	(5,934)
Unclaimed HKEX dividends forfeited	-	-	12
Vesting of shares of Share Award Scheme	(250)	-	(20)
Employee share-based compensation benefits	324	-	-
At 31 Dec 2021	306	694	13,861

APPENDIX II

RECENT DEVELOPMENTS IN THE ISSUER'S BUSINESS

This section supersedes in its entirety the section in the Base Listing Document entitled "Information Relating to UBS AG".

1. Overview

UBS AG ("**Issuer**") with its subsidiaries (together, "**UBS AG consolidated**", or "**UBS AG Group**"; together with UBS Group AG, which is the holding company of UBS AG, and its subsidiaries, "**UBS Group**", "**Group**", "**UBS**" or "**UBS Group AG consolidated**") provides financial advice and solutions to private, institutional and corporate clients worldwide, as well as private clients in Switzerland. The operational structure of the Group is comprised of the Group Functions and four business divisions: Global Wealth Management, Personal & Corporate Banking, Asset Management and the Investment Bank.

On 31 December 2021, UBS Group's common equity tier 1 ("**CET1**") capital ratio was 15.0%, the CET1 leverage ratio was 4.24%, the total loss-absorbing capacity ratio was 34.7%, and the total loss-absorbing capacity leverage ratio was 9.8%.¹ On the same date, invested assets stood at USD 4,596 billion, equity attributable to shareholders was USD 60,662 million and market capitalisation was USD 61,230 million. On the same date, UBS employed 71,385 people.²

On 31 December 2021, UBS AG consolidated CET1 capital ratio was 13.9%, the CET1 leverage ratio was 3.90%, the total loss-absorbing capacity ratio was 33.3%, and the total loss-absorbing capacity leverage ratio was 9.3%.¹ On the same date, invested assets stood at USD 4,596 billion and equity attributable to UBS AG shareholders was USD 58,102 million. On the same date, UBS AG Group employed 47,067 people.²

The rating agencies S&P Global Ratings Europe Limited ("**S&P**"), Moody's Deutschland GmbH ("**Moody's**"), and Fitch Ratings Limited ("**Fitch**") have published solicited credit ratings reflecting their assessment of the creditworthiness of UBS AG, i.e. its ability to fulfil in a timely manner payment obligations, such as principal or interest payments on long-term loans, also known as debt servicing. The ratings from Fitch and S&P may be attributed a plus or minus sign, and those from Moody's a number. These supplementary attributes indicate the relative position within the respective rating class. UBS AG has a long-term counterparty credit rating of A+ from S&P, long-term senior debt rating of Aa3 from Moody's, and long-term issuer default rating of AA- from Fitch.

An explanation of the significance of ratings may be obtained from the rating agencies. Generally, rating agencies base their ratings on such material and information, and such of their own investigations, studies and assumptions, as they deem appropriate. The ratings of UBS AG should be evaluated independently from similar ratings of other entities, and from the rating, if any, of its securities. A credit rating is not a recommendation to buy, sell or hold securities issued or guaranteed by the rated entity and may be subject to review, revision, suspension, reduction or withdrawal at any time by the assigning rating agency. Fitch is established in the UK and registered under Regulation (EU) No 1060/2009 as it forms part of domestic law of the UK by virtue of the EUWA (the "**UK CRA Regulation**") and currently appears on the list of credit rating agencies registered or certified with the Financial Conduct Authority published on its website www.fca.org.uk/markets/credit-rating-agencies/registered-certified-cras. Ratings given by Fitch are endorsed by Fitch Ratings Ireland Limited, which is established in the EEA and registered under Regulation (EU) No 1060/2009, as

¹ All figures based on the Swiss systemically relevant bank framework. Refer to the "Capital management" section of the Annual Report 2021 for more information.

² Full-time equivalents.

amended (the "**EU CRA Regulation**") and currently appears on the list of credit ratings agencies published by ESMA on its website www.esma.europa.eu in accordance with the EU CRA Regulation. S&P and Moody's are established in the European Union and registered under the EU CRA Regulation and currently appear on the list of credit ratings agencies published by ESMA on its website in accordance with the EU CRA Regulation. Ratings given by S&P and Moody's are endorsed by Standard & Poor's Global Ratings UK Limited and Moody's Investors Service Ltd, respectively, which are established in the UK and registered under the UK CRA Regulation and currently appear on the list of credit rating agencies registered or certified with the FCA published on its website.

No profit forecasts or estimates are included in this document.

No recent events particular to the Issuer have occurred which are to a material extent relevant to the evaluation of the Issuer's solvency.

2. Information about the Issuer

2.1 Corporate Information

The legal and commercial name of the Issuer is UBS AG.

The Issuer was incorporated under the name SBC AG on 28 February 1978 for an unlimited duration and entered in the Commercial Register of Canton Basel-City on that day. On 8 December 1997, the Issuer changed its name to UBS AG. The Issuer in its present form was created on 29 June 1998 by the merger of Union Bank of Switzerland (founded 1862) and Swiss Bank Corporation (founded 1872). UBS AG is entered in the Commercial Registers of Canton Zurich and Canton Basel-City. The registration number is CHE-101.329.561.

UBS AG is incorporated and domiciled in Switzerland and operates under the Swiss Code of Obligations as an Aktiengesellschaft, a corporation limited by shares. UBS AG's Legal Entity Identifier (LEI) code is BFM8T61CT2L1QCEMIK50.

According to article 2 of the articles of association of UBS AG dated 26 April 2018 ("**Articles of Association**"), the purpose of UBS AG is the operation of a bank. Its scope of operations extends to all types of banking, financial, advisory, trading and service activities in Switzerland and abroad. UBS AG may establish branches and representative offices as well as banks, finance companies and other enterprises of any kind in Switzerland and abroad, hold equity interests in these companies, and conduct their management. UBS AG is authorized to acquire, mortgage and sell real estate and building rights in Switzerland and abroad. UBS AG may borrow and invest money on the capital markets. UBS AG is part of the group of companies controlled by the group parent company UBS Group AG. It may promote the interests of the group parent company or other group companies. It may provide loans, guarantees and other kinds of financing and security for group companies.

The addresses and telephone numbers of UBS AG's two registered offices and principal places of business are: Bahnhofstrasse 45, CH-8001 Zurich, Switzerland, telephone +41 44 234 1111; and Aeschenvorstadt 1, CH-4051 Basel, Switzerland, telephone +41 61 288 5050.

2.2 UBS's borrowing and funding structure and financing of UBS's activities

For information on UBS's expected financing of its business activities, please refer to "*Liquidity and funding management*" in the "*Capital, liquidity and funding, and balance sheet*" section of the Annual Report 2021.

3. Business Overview

3.1 Organisational Structure of the Issuer

UBS AG is a Swiss bank and the parent company of the UBS AG Group. It is 100% owned by UBS

Group AG, which is the holding company of the UBS Group. UBS operates as a group with four business divisions and Group Functions.

In 2014, UBS began adapting its legal entity structure in response to too-big-to-fail requirements and other regulatory initiatives. First, UBS Group AG was established as the ultimate parent holding company for the Group. In 2015, UBS AG transferred its personal & corporate banking and Swiss-booked wealth management businesses to the newly established UBS Switzerland AG, a banking subsidiary of UBS AG in Switzerland. That same year, UBS Business Solutions AG, a wholly owned subsidiary of UBS Group AG, was established and acts as the Group service company. In 2016, UBS Americas Holding LLC became the intermediate holding company for UBS's US subsidiaries and UBS's wealth management subsidiaries across Europe were merged into UBS Europe SE, UBS's German-headquartered European subsidiary. In 2019, UBS Limited, UBS's UK headquartered subsidiary, was merged into UBS Europe SE.

UBS Group AG's interests in subsidiaries and other entities as of 31 December 2021, including interests in significant subsidiaries, are discussed in "Note 29 Interests in subsidiaries and other entities" to the UBS Group AG's consolidated financial statements included in the UBS Group AG and UBS AG Annual Report 2021 published on 07 March 2022 ("**Annual Report 2021**").

UBS AG's interests in subsidiaries and other entities as of 31 December 2021, including interests in significant subsidiaries, are discussed in "Note 29 Interests in subsidiaries and other entities" to the UBS AG's consolidated financial statements included in the Annual Report 2021.

UBS AG is the parent company of, and conducts a significant portion of its operations through, its subsidiaries. UBS AG has contributed a significant portion of its capital and provides substantial liquidity to subsidiaries. In addition, UBS Business Solutions AG provides substantial services to group companies including UBS AG and its subsidiaries. To this extent, UBS AG is dependent on certain of the entities of the UBS AG Group and of the UBS Group.

3.2 Principal activities

UBS businesses are organised globally into four business divisions: Global Wealth Management, Personal & Corporate Banking, Asset Management, and the Investment Bank. All four business divisions are supported by Group Functions. Each of the business divisions and Group Functions are described below. A description of the businesses, organisational structures, products and services and targeted markets of the business divisions and Group Functions can be found under "*Our businesses*" in the "*Our strategy, business model and environment*" section of the Annual Report 2021.

- Global Wealth Management provides financial services, advice and solutions to private clients, in particular in the ultrahigh net worth and high net worth segments. Its offering ranges from investment management to estate planning and corporate finance advice, in addition to specific wealth management products and services. The business division is managed globally across the regions.
- Personal & Corporate Banking serves its private, corporate, and institutional clients' needs, from basic banking to retirement, financing, investments and strategic transactions, in Switzerland, through its branch network and digital channels.
- Asset Management is a large-scale and diversified global asset manager. It offers investment capabilities and styles across all major traditional and alternative asset classes, as well as advisory support to institutions, wholesale intermediaries and wealth management clients globally.
- The Investment Bank provides a range of services to institutional, corporate and wealth

management clients globally, to help them raise capital, grow their businesses, invest and manage risks. Its offerings include advisory services, facilitating clients raising debt and equity from the public and private markets and capital markets, cash and derivatives trading across equities and fixed income, and financing.

- Group Functions is made up of the following major areas: Group Services (which consists of Technology, Corporate Services, Human Resources, Finance, Legal, Risk Control, Compliance, Regulatory & Governance, Communications & Branding and Group Sustainability and Impact), Group Treasury and Non-core and Legacy Portfolio.

3.3 Competition

The financial services industry is characterized by intense competition, continuous innovation, restrictive, detailed, and sometimes fragmented regulation and ongoing consolidation. UBS faces competition at the level of local markets and individual business lines, and from global financial institutions that are comparable to UBS in their size and breadth, as well as competition from new technology-based market entrants, which may not be subject to the same level of regulation. Barriers to entry in individual markets and pricing levels are being eroded by new technology. UBS expects these trends to continue and competition to increase.

Any statements regarding the competitive position of UBS AG, UBS AG Group or the Group contained in this document are made on the basis of the opinion of UBS AG or the Group.

3.4 Recent Developments

3.4.1 UBS AG consolidated key figures

UBS AG derived the selected consolidated financial information included in the table below for the years ended 31 December 2021, 2020 and 2019 from the Annual Report 2021, except where noted.

The consolidated financial statements were prepared in accordance with International Financial Reporting Standards (“IFRS”) issued by the International Accounting Standards Board (“IASB”).

Information for the years ended 31 December 2021, 2020 and 2019 which is indicated as being unaudited in the table below was included in the Annual Report 2021, but has not been audited on the basis that the respective disclosures are not required under IFRS, and therefore are not part of the audited financial statements. Prospective investors should read the whole of this document, the Annual Report 2021 and should not rely solely on the summarized information set out below.

	As of or for the year ended		
<i>USD million, except where indicated</i>	31.12.21	31.12.20	31.12.19
	<i>audited, except where indicated</i>		
Results			
Income statement			
Operating income	35,976	32,780	29,307
Net interest income	6,605	5,788	4,415
Net fee and commission income	22,438	19,207	17,460
Credit loss (expense) / release	148	(695)	(78)
Other net income from financial instruments measured at fair value through profit or loss	5,844	6,930	6,833
Operating expenses	27,012	25,081	24,138

Operating profit / (loss) before tax	8,964	7,699	5,169
Net profit / (loss) attributable to shareholders	7,032	6,196	3,965
Balance sheet ¹			
Total assets	1,116,145	1,125,327	971,927
Total financial liabilities measured at amortized cost	744,762	732,364	617,429
<i>of which: customer deposits</i>	544,834	527,929	450,591
<i>of which: debt issued measured at amortized cost</i>	82,432	85,351	62,835
<i>of which: subordinated debt</i>	5,163	7,744	7,431
Total financial liabilities measured at fair value through profit or loss	300,916	325,080	291,452
<i>of which: debt issued designated at fair value</i>	71,460	59,868	66,592
Loans and advances to customers	398,693	380,977	327,992
Total equity	58,442	58,073	53,896
Equity attributable to shareholders	58,102	57,754	53,722
Profitability and growth			
Return on equity (%) ²	12.3*	10.9*	7.4*
Return on tangible equity (%) ³	13.9*	12.4*	8.5*
Return on common equity tier 1 capital (%) ⁴	17.6*	16.6*	11.3*
Return on risk-weighted assets, gross (%) ⁵	12.3*	11.9*	11.2*
Return on leverage ratio denominator, gross (%) ^{6, 7}	3.4*	3.4*	3.2*
Cost / income ratio (%) ⁸	75.4*	74.9*	82.1*
Net profit growth (%) ⁹	13.5*	56.3*	(3.4)*
Resources			
Common equity tier 1 capital ¹⁰	41,594	38,181	35,233*
Risk-weighted assets ¹⁰	299,005*	286,743*	257,831*
Common equity tier 1 capital ratio (%) ¹⁰	13.9*	13.3*	13.7*
Going concern capital ratio (%) ¹⁰	18.5*	18.3*	18.3*
Total loss-absorbing capacity ratio (%) ¹⁰	33.3*	34.2*	33.9*
Leverage ratio denominator ^{6, 10}	1,067,679*	1,036,771*	911,228*
Common equity tier 1 leverage ratio (%) ^{6, 10}	3.90*	3.68*	3.87*
Going concern leverage ratio (%) ^{6, 10}	5.2*	5.1*	5.2*
Total loss-absorbing capacity leverage ratio (%) ¹⁰	9.3*	9.5*	9.6*
Other			
Invested assets (USD billion) ¹¹	4,596	4,187	3,607
Personnel (full-time equivalents)	47,067*	47,546*	47,005*

* unaudited

¹ Except for *Total assets*, *Total equity* and *Equity attributable to shareholders*, balance sheet information for year ended 31 December 2019 is derived from the Annual Report 2020.

² Calculated as net profit attributable to shareholders (annualized as applicable) divided by average equity attributable to shareholders. This measure provides information about the profitability of the business in relation to equity.

³ Calculated as net profit attributable to shareholders (annualized as applicable) divided by average equity attributable to shareholders less average goodwill and intangible assets. This measure provides information about the profitability of the business in relation to tangible equity.

⁴ Calculated as net profit attributable to shareholders (annualized as applicable) divided by average common equity tier 1 capital. This measure provides information about the profitability of the business in relation to common equity tier 1 capital.

⁵ Calculated as operating income before credit loss expense or release (annualized as applicable) divided by average risk-weighted assets. This measure provides information about the revenues of the business in relation to risk-weighted assets.

⁶ Leverage ratio denominators and leverage ratios for year 2020 do not reflect the effects of the temporary exemption that applied from 25 March 2020 until 1 January 2021 and was granted by FINMA in connection with COVID-19.

⁷ Calculated as operating income before credit loss expense or release (annualized as applicable) divided by average leverage ratio denominator. This measure provides information about the revenues of the business in relation to leverage ratio denominator.

⁸ Calculated as operating expenses divided by operating income before credit loss expense or release (annualized as applicable). This measure provides information about the efficiency of the business by comparing operating expenses with gross income.

⁹ Calculated as change in net profit attributable to shareholders from continuing operations between current and comparison periods divided by net profit attributable to shareholders from continuing operations of comparison period. This measure provides information about profit growth in comparison with the prior period.

¹⁰ Based on the applicable Swiss systemically relevant bank framework as of 1 January 2020.

¹¹ Consists of invested assets for Global Wealth Management, Asset Management and Personal & Corporate Banking. Calculated as the sum of managed fund assets, managed institutional assets, discretionary and advisory wealth management portfolios, fiduciary deposits, time deposits, savings accounts, and wealth management securities or brokerage accounts. This measure provides information about the volume of client assets managed by or deposited with UBS for investment purposes.

3.4.2 *Regulatory, legal and other developments*

Refer to “*Our environment*” and “*Regulatory and legal developments*” in the Annual Report 2021, for information on key regulatory, legal and other developments.

3.5 **Trend Information**

For information on trends, refer to the “*Our environment*” section, and to “*Top and emerging risks*” and “*Country risk*” in the “*Risk management and control*” section of the Annual Report 2021. In addition, please refer to the “*Risk factors*” and the “*Recent Developments*” sections of this document for more information.

4. **Administrative, Management and Supervisory Bodies of the Issuer**

UBS AG complies with all relevant Swiss legal and regulatory corporate governance requirements. As a foreign private issuer with debt securities listed on the New York Stock Exchange (“**NYSE**”), UBS AG also complies with the relevant NYSE corporate governance standards applicable to foreign private issuers.

UBS AG operates under a strict dual board structure, as mandated by Swiss banking law. The Board of Directors (“**BoD**”) exercises the ultimate supervision over management, whereas the Executive Board (“**EB**”), headed by the President of the Executive Board (“**President of the EB**”), has executive management responsibility. The functions of Chairman of the BoD and President of the EB are assigned to two different people, ensuring a separation of power. This structure establishes checks and balances and preserves the institutional independence of the BoD from the executive management of UBS AG Group, for which responsibility is delegated to the EB under the leadership of the President of the EB. No member of one board may simultaneously be a member of the other.

Supervision and control of the EB remain with the BoD. The authorities and responsibilities of the two bodies are governed by the Articles of Association and the Organization Regulations of UBS AG.

4.1 Board of Directors

The BoD consists of between 5 and 12 members. All the members of the BoD are elected individually by the shareholders at the Annual General Meeting (“AGM”) for a term of office of one year, which expires after the completion of the next AGM. Shareholders also elect the Chairman upon proposal of the BoD.

The BoD meets as often as business requires, and at least six times a year.

4.1.1 Members of the Board of Directors

The current members of the BoD are listed below. In addition, UBS announced that at the next AGM Colm Kelleher will be nominated for election to the BoD as Chairman and Lukas Gähwiler will be nominated for election to the BoD as Vice Chairman.

Member	Title	Term of office	Current principal activities outside UBS AG
Axel A. Weber	Chairman	2022	Chairman of the Board of Directors of UBS Group AG; vice chairman of the Swiss Bankers Association; Trustees Board member of Avenir Suisse; board member of the Swiss Finance Council; chairman of the board of the Institute of International Finance; member of the European Financial Services Round Table; member of the European Banking Group; member of the International Advisory Councils of the China Banking and Insurance Regulatory Commission and the China Securities Regulatory Commission; member of the International Advisory Panel, Monetary Authority of Singapore; member of the Group of Thirty, Washington, D.C.; Advisory Board member of the Department of Economics, University of Zurich; member of the Trilateral Commission.
Jeremy Anderson	Vice Chairman	2022	Vice-Chairman and Senior Independent Director of the Board of Directors of UBS Group AG; board member of Prudential plc; trustee of the UK’s Productivity Leadership Group; trustee of Kingham Hill Trust; trustee of St. Helen Bishopsgate.
Claudia Böckstiegel	Member	2022	Member of the Board of Directors of UBS Group AG; General Counsel and member of the Enlarged Executive Committee of Roche Holding AG.
William C. Dudley	Member	2022	Member of the Board of Directors of UBS Group AG; member of the board of Trelia LLC; senior advisor to the Griswold Center for Economic Policy Studies at Princeton University; member of the Group of Thirty; member of the Council on Foreign Relations; chair of the Bretton Woods Committee board of directors; member of the board of the Council for Economic Education.
Patrick Firmenich	Member	2022	Member of the Board of Directors of UBS Group AG; chairman of the board of Firmenich International SA;

			member of the board of Jacobs Holding AG; member of the Board of INSEAD and INSEAD World Foundation; member of the Advisory Council of the Swiss Board Institute.
Reto Francioni	Member	2022	Member of the Board of Directors of UBS Group AG; professor at the University of Basel; board member of Coca-Cola HBC AG (Senior Independent Non-Executive Director, chair of the nomination committee); chairman of the board of Swiss International Air Lines AG; board member of economiesuisse.
Fred Hu	Member	2022	Member of the Board of Directors of UBS Group AG; non-executive chairman of the board of Yum China Holdings (chair of the nomination and governance committee); board member of Industrial and Commercial Bank of China; chairman of Primavera Capital Ltd and of Primavera Capital Group; member of the Board of Ant Group; board member of Minsheng Financial Leasing Co.; trustee of the China Medical Board; Governor of the Chinese International School in Hong Kong; co-chairman of the Nature Conservancy Asia Pacific Council; member of the Board of Trustees of the Institute for Advanced Studies (IAS).
Mark Hughes	Member	2022	Member of the Board of Directors of UBS Group AG; chair of the Board of Directors of the Global Risk Institute; visiting lecturer at the University of Leeds; senior advisor to McKinsey & Company.
Nathalie Rachou	Member	2022	Member of the Board of Directors of UBS Group AG; member of the board of Euronext N.V. (chair of the remuneration committee); member of the board of Veolia Environnement SA (chair of the audit committee); member of the board of the African Financial Institutions Investment Platform.
Julie G. Richardson	Member	2022	Member of the Board of Directors of UBS Group AG; member of the board of Yext (chair of the audit committee); member of the board of Datalog (chair of the audit committee).
Dieter Wemmer	Member	2022	Member of the Board of Directors of UBS Group AG; board member of Ørsted A/S (chair of the audit and risk committee); chairman of Marco Capital Holdings Limited and Marco Insurance, Malta; member of the Berlin Center of Corporate Governance.
Jeanette Wong	Member	2022	Member of the Board of Directors of UBS Group AG; member of the board of Prudential plc; member of the board of Singapore Airlines Limited; member of the Board Risk Committee of GIC Pte Ltd; board member of Jurong Town Corporation; board member of PSA International; chairman of the CareShield Life Council;

		member of the Securities Industry Council; member of the Board of Trustees of the National University of Singapore.
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4.2 Executive Board (“EB”)

Under the leadership of the President of the EB, the EB has executive management responsibility for UBS AG and its business. All EB members (with the exception of the President of the EB) are proposed by the President of the EB. The appointments are made by the BoD.

4.2.1 Members of the Executive Board

The current members of the EB are listed below. In addition, Sarah Youngwood joined the GEB at the beginning of March 2022, and will take over as Group Chief Financial Officer in May succeeding Kirt Gardner, who will retire from the firm.

Member and business address	Function	Current principal activities outside UBS AG
Ralph Hamers UBS AG, Bahnhofstrasse 45, CH-8001 Zurich	President of the Executive Board	Member of the Group Executive Board and Group Chief Executive Officer of UBS Group AG; member of the Board of the Swiss-American Chamber of Commerce; member of the Institut International D'Etudes Bancaires; member of the IMD Foundation Board; member of the McKinsey Advisory Council; member of the World Economic Forum International Business Council; Governor of the World Economic Forum (Financial Services).
Christian Bluhm UBS AG, Bahnhofstrasse 45, CH-8001 Zurich	Chief Risk Officer	Member of the Group Executive Board and Group Chief Risk Officer of UBS Group AG; board member of UBS Switzerland AG; member of the Foundation Board of the UBS Pension Fund; member of the Foundation Board – International Financial Risk Institute.
Mike Dargan UBS AG, Bahnhofstrasse 45, CH-8001 Zurich	Chief Digital and Information Officer	Member of the Group Executive Board and Chief Digital and Information Officer of UBS Group AG; President of the Executive Board and board member of UBS Business Solutions AG; member of the Board of Directors of Done Next Holdings AG; member of the Board of Trustees of the Inter-Community School Zurich.
Kirt Gardner UBS AG, Bahnhofstrasse 45, CH-8001 Zurich	Chief Financial Officer	Member of the Group Executive Board and Group Chief Financial Officer of UBS Group AG; board member of UBS Business Solutions AG.
Suni Harford	President Asset	Member of the Executive Board and President

<p>UBS AG, 1285 Avenue of the Americas, New York, NY 10019 USA</p>	<p>Management</p>	<p>Asset Management of UBS Group AG; chairman of the Board of Directors of UBS Asset Management AG; chair of the Board of UBS Optimus Foundation; member of the Leadership Council of the Bob Woodruff Foundation.</p>
<p>Robert Karofsky</p> <p>UBS AG, 1285 Avenue of the Americas, New York, NY 10019, USA</p>	<p>President Investment Bank</p>	<p>Member of the Group Executive Board and President Investment Bank of UBS Group AG; president of UBS Securities LLC; member of the board of UBS Americas Holding LLC; member of the board of UBS Optimus Foundation; trustee of the UBS Americas Inc. Political Action Committee.</p>
<p>Iqbal Khan</p> <p>UBS AG, Bahnhofstrasse 45, CH-8001 Zurich</p>	<p>Co-President Global Wealth Management and President UBS Europe, Middle East and Africa</p>	<p>Member of the Executive Board, co-President Global Wealth Management and President UBS Europe, Middle East and Africa of UBS Group AG; member of the Supervisory Board of UBS Europe SE; member of the board of UBS Optimus Foundation; board member of Room to Read Switzerland.</p>
<p>Edmund Koh</p> <p>UBS AG, One Raffles Quay North Tower, Singapore 048583</p>	<p>President UBS Asia Pacific</p>	<p>Member of the Group Executive Board and President UBS Asia Pacific of UBS Group AG; member of a sub-committee of the Singapore Ministry of Finance's Committee on the Future Economy; member of the Financial Centre Advisory Panel of the Monetary Authority of Singapore; council member of the Asian Bureau of Finance and Economic Research; member of the Board of Trustees of the Wealth Management Institute, Singapore; board member of Next50 Limited, Singapore; board member of Medico Suites (S) Pte Ltd; Council member of the KidSTART program of the Early Childhood Development Agency Singapore; trustee of the Cultural Matching Fund, Singapore; member of University of Toronto's International Leadership Council for Asia.</p>
<p>Barbara Levi</p> <p>UBS AG, Bahnhofstrasse 45, CH-8001 Zurich</p>	<p>General Counsel</p>	<p>Member of the Group Executive Board and Group General Counsel of UBS Group AG; member of the Employers' Board of the Global Institute for Women's Leadership, King's College London; member of the Board of Directors of the European General Counsel Association.</p>
<p>Tom Naratil</p> <p>UBS AG, 1285 Avenue of the</p>	<p>Co-President Global Wealth Management and President UBS Americas</p>	<p>Member of the Group Executive Board and co-President Global Wealth Management and President UBS Americas of UBS Group AG; CEO and board member of UBS Americas Holding</p>

Americas, New York, NY 10019 USA		LLC; board member of the American Swiss Foundation.
Markus Ronner UBS AG, Bahnhofstrasse 45, CH-8001 Zurich	Chief Compliance and Governance Officer	Member of the Group Executive Board and Group Chief Compliance and Governance Officer of UBS Group AG.
Sarah Youngwood UBS AG, Bahnhofstrasse 45, CH-8001 Zurich	Designated Chief Financial Officer as of May 2022	Member of the Group Executive Board of UBS Group AG, and Designated Group Chief Financial Officer as of May 2022; Advisory Board Member – Wall Street Women’s Alliance.

4.3 Potential Conflicts of Interest

Members of the BoD and the EB may act as directors or executive officers of other companies (for current principal positions outside UBS AG, if any, of BoD and EB members, please see sections 4.1.1 and 4.2.1 above, respectively) and may have economic or other private interests that differ from those of UBS AG. Conflicts of interest may potentially arise from these positions or interests. For example, it cannot be excluded that a member of the BoD or EB has or will have a function within a company, the shares of which are or will be traded by UBS AG or which has or will have a business relationship with UBS AG. UBS AG is confident that its internal corporate governance practices and its compliance with relevant legal and regulatory provisions reasonably ensure that any conflicts of interest of the type described above are appropriately managed, including through disclosure when appropriate.

Other than as indicated above, UBS is not aware of potential conflicts of interests between any duties to the Issuer of the members of the BoD and the EB and their private interests or other duties.

5. Auditors

Based on article 31 of the Articles of Association, UBS AG shareholders elect the auditors for a term of office of one year. At the AGMs of 18 April 2019, 27 April 2020 and 7 April 2021, Ernst & Young Ltd., Aeschengraben 9, CH-4002 Basel, Switzerland ("**Ernst & Young**") was elected as auditor for the consolidated and standalone financial statements of UBS AG for a one-year term.

Ernst & Young is a member of EXPERTsuisse, the Swiss Expert Association for Audit, Tax and Fiduciary. Ernst & Young is also registered with the Swiss Federal Audit Oversight Authority, which is responsible for the licensing and supervision of audit firms and individuals that provide audit services in Switzerland.

6. Major Shareholders of the Issuer

UBS Group AG owns 100% of the outstanding shares of UBS AG. UBS AG is a wholly owned subsidiary of UBS Group AG. While UBS has no specific corporate measures intended to prevent abuse of control to the detriment of minority shareholders, UBS has adopted a comprehensive and integrated governance framework which takes into account the specific requirements of each relevant jurisdiction. This governance framework includes separate articles of association and organizational regulations for UBS Group AG and UBS AG. In addition, as UBS AG is regulated as a bank in Switzerland, it is subject to capital regulation and close supervisory oversight. This includes the

general requirement under Swiss law that contracts of UBS AG with affiliates are subject to an arm's length principle of negotiation.

7. Financial Information concerning the Issuer's Assets and Liabilities, Financial Position and Profits and Losses

7.1 Historical Annual Financial Information

Detailed information about UBS AG consolidated and UBS AG assets and liabilities, financial position and profits and losses for financial year 2021 is available in the section "*UBS AG consolidated financial statements*" of the Annual Report 2021 and in the UBS AG's standalone financial statements for the year ended 31 December 2021 (the "**Standalone Financial Statements 2021**"), respectively; and for financial year 2020 it is available in the "*UBS AG consolidated financial statements*" section of the UBS Group AG and UBS AG annual report 2020, published on 5 March 2021 ("**Annual Report 2020**") and in the UBS AG's standalone financial statements for the year ended 31 December 2020 published on 5 March 2021 (the "**Standalone Financial Statements 2020**"). The consolidated and standalone financial accounts are closed on 31 December of each year.

The annual financial reports form an essential part of UBS AG's reporting. They include the audited consolidated financial statements of UBS AG, prepared in accordance with International Financial Reporting Standards, as issued by the International Accounting Standards Board. The annual reports also include discussions and analysis of the consolidated financial and business results of UBS, its business divisions and Group Functions. In addition, UBS AG prepares and publishes standalone financial statements in accordance with Swiss GAAP, as well as certain additional disclosures required under US Securities and Exchange Commission regulations.

7.2 Auditing of Historical Annual Financial Information

The consolidated financial statements and the standalone financial statements of UBS AG for the financial years 2021 and 2020 were audited by Ernst & Young. The reports of the auditors on the consolidated financial statements can be found on pages 422-428 (inclusive) of the Annual Report 2021 and on pages 417-428 (inclusive) of the Annual Report 2020. The reports of the auditors on the standalone financial statements of UBS AG can be found on pages 37-42 (inclusive) of the Standalone Financial Statements 2021 and on pages 34-39 (inclusive) of the Standalone Financial Statements 2020.

There are no qualifications in the auditors' reports on the consolidated financial statements of UBS AG and the standalone financial statements of UBS AG for the years ended on 31 December 2021 and 31 December 2020.

7.3 Litigation, Regulatory and Similar Matters

UBS operates in a legal and regulatory environment that exposes it to significant litigation and similar risks arising from disputes and regulatory proceedings. As a result, UBS is involved in various disputes and legal proceedings, including litigation, arbitration, and regulatory and criminal investigations. Such matters are subject to many uncertainties, and the outcome and the timing of resolution are often difficult to predict, particularly in the earlier stages of a case. The uncertainties inherent in all such matters affect the amount and timing of any potential outflows for both matters with respect to which provisions have been established and other contingent liabilities. Litigation, regulatory and similar matters may also result in non-monetary penalties and consequences. A guilty plea to, or conviction of, a crime could have material consequences for UBS. Resolution of regulatory proceedings may require UBS to obtain waivers of regulatory disqualifications to maintain certain operations, may entitle regulatory authorities to limit, suspend or terminate licenses and regulatory authorizations and may permit financial market utilities to limit, suspend or terminate UBS's

participation in such utilities. Failure to obtain such waivers, or any limitation, suspension or termination of licenses, authorizations or participations, could have material consequences for UBS.

Specific litigation, regulatory and other matters, including all such matters that management considers to be material and others that management believes to be of significance due to potential financial, reputational and other effects, are described in "*Note 18 Provisions and contingent liabilities*" of the Annual Report 2021. The amount of damages claimed, the size of a transaction or other information is provided where available and appropriate in order to assist users in considering the magnitude of potential exposures.

7.4 Material Contracts

Except as otherwise disclosed in this document (including the documents incorporated herein by reference), no material contracts have been entered into outside of the ordinary course of UBS AG's or UBS AG Group's business which could result in any member of the UBS AG Group being under an obligation or entitlement that is material to UBS AG's ability to meet its obligations to the investors in relation to the issued securities.

7.5 Significant Changes in the Financial Position and Performance; Material Adverse Change in Prospects

Except as otherwise indicated in this document (including the documents incorporated herein by reference), no material changes have occurred in UBS AG's assets and liabilities, financial position or profits and losses since 31 December 2021.

8. Share Capital

As reflected in the Articles of Association most recently registered with the Commercial Register of the Canton of Zurich and the Commercial Register of Basel-City, UBS AG has (i) fully paid and issued share capital of CHF 385,840,846.60, divided into 3,858,408,466 registered shares with a par value of CHF 0.10 each (article 4), and (ii) conditional capital in the amount of CHF 38,000,000, comprising 380,000,000 registered shares with a par value of CHF 0.10 each that can be issued upon the voluntary or mandatory exercise of conversion rights and/or warrants (article 4a).

9. Documents Available

The most recent Articles of Association of UBS AG are available on UBS's Corporate Governance website, at www.ubs.com/governance. Save as otherwise indicated herein, information on or accessible through the Group's corporate website, www.ubs.com, does not form part of and is not incorporated into this document.

APPENDIX III

**EXTRACT OF
THE AUDITED CONSOLIDATED FINANCIAL STATEMENTS OF
UBS AG AND ITS SUBSIDIARIES
FOR THE FULL YEAR ENDED 31 DECEMBER 2021**

UBS Group AG interim consolidated financial information (unaudited)

Income statement

<i>USD million</i>	For the quarter ended			For the year ended	
	31.12.21	30.9.21	31.12.20	31.12.21	31.12.20
Interest income from financial instruments measured at amortized cost and fair value through other comprehensive income	2,152	2,178	2,111	8,533	8,810
Interest expense from financial instruments measured at amortized cost	(768)	(822)	(857)	(3,259)	(4,247)
Net interest income from financial instruments measured at fair value through profit or loss	387	338	368	1,431	1,299
Net interest income	1,770	1,693	1,622	6,705	5,862
Other net income from financial instruments measured at fair value through profit or loss	1,365	1,697	1,453	5,850	6,960
Credit loss (expense) / release	27	14	(66)	148	(694)
Fee and commission income	6,042	6,119	5,543	24,372	20,961
Fee and commission expense	(513)	(510)	(459)	(1,985)	(1,775)
Net fee and commission income	5,529	5,610	5,084	22,387	19,186
Other income	40	115	24	452	1,076
Total operating income	8,732	9,128	8,117	35,542	32,390
Personnel expenses	4,216	4,598	3,989	18,387	17,224
General and administrative expenses	2,212	1,148	1,515	5,553	4,885
Depreciation, amortization and impairment of non-financial assets	574	518	627	2,118	2,126
Total operating expenses	7,003	6,264	6,132	26,058	24,235
Operating profit / (loss) before tax	1,729	2,865	1,985	9,484	8,155
Tax expense / (benefit)	370	576	341	1,998	1,583
Net profit / (loss)	1,359	2,289	1,645	7,486	6,572
Net profit / (loss) attributable to non-controlling interests	11	9	9	29	15
Net profit / (loss) attributable to shareholders	1,348	2,279	1,636	7,457	6,557

Earnings per share (USD)

Basic	0.39	0.66	0.46	2.14	1.83
Diluted	0.38	0.63	0.44	2.06	1.77

Statement of comprehensive income

USD million	For the quarter ended			For the year ended	
	31.12.21	30.9.21	31.12.20	31.12.21	31.12.20
Comprehensive income attributable to shareholders¹					
Net profit / (loss)	1,348	2,279	1,636	7,457	6,557
Other comprehensive income that may be reclassified to the income statement					
Foreign currency translation					
Foreign currency translation movements related to net assets of foreign operations, before tax	315	(392)	1,143	(1,076)	2,103
Effective portion of changes in fair value of hedging instruments designated as net investment hedges, before tax	(183)	175	(539)	498	(936)
Foreign currency translation differences on foreign operations reclassified to the income statement	0	7	0	(2)	(7)
Effective portion of changes in fair value of hedging instruments designated as net investment hedges reclassified to the income statement	3	0	0	10	2
Income tax relating to foreign currency translations, including the impact of net investment hedges	(24)	53	(52)	35	(67)
Subtotal foreign currency translation, net of tax	111	(156)	552	(535)	1,095
Financial assets measured at fair value through other comprehensive income					
Net unrealized gains / (losses), before tax	(49)	(44)	0	(203)	223
Net realized gains / (losses) reclassified to the income statement from equity	0	0	(3)	(9)	(40)
Income tax relating to net unrealized gains / (losses)	13	11	3	55	(48)
Subtotal financial assets measured at fair value through other comprehensive income, net of tax	(37)	(33)	0	(157)	136
Cash flow hedges of interest rate risk					
Effective portion of changes in fair value of derivative instruments designated as cash flow hedges, before tax	(250)	(112)	(191)	(992)	2,012
Net (gains) / losses reclassified to the income statement from equity	(269)	(282)	(256)	(1,073)	(770)
Income tax relating to cash flow hedges	98	77	87	390	(231)
Subtotal cash flow hedges, net of tax	(421)	(316)	(360)	(1,675)	1,011
Cost of hedging					
Cost of hedging, before tax	(14)	5	(1)	(32)	(13)
Income tax relating to cost of hedging	6	0	0	6	0
Subtotal cost of hedging, net of tax	(8)	5	(1)	(26)	(13)
Total other comprehensive income that may be reclassified to the income statement, net of tax	(355)	(500)	191	(2,393)	2,230
Other comprehensive income that will not be reclassified to the income statement					
Defined benefit plans					
Gains / (losses) on defined benefit plans, before tax	149	10	37	2	(327)
Income tax relating to defined benefit plans	(25)	(9)	49	(7)	109
Subtotal defined benefit plans, net of tax	124	2	86	(5)	(218)
Own credit on financial liabilities designated at fair value					
Gains / (losses) from own credit on financial liabilities designated at fair value, before tax	55	(98)	(211)	46	(293)
Income tax relating to own credit on financial liabilities designated at fair value	0	0	0	0	0
Subtotal own credit on financial liabilities designated at fair value, net of tax	55	(98)	(211)	46	(293)
Total other comprehensive income that will not be reclassified to the income statement, net of tax	178	(96)	(126)	42	(511)
Total other comprehensive income	(177)	(596)	65	(2,351)	1,719
Total comprehensive income attributable to shareholders	1,171	1,683	1,701	5,106	8,276
Comprehensive income attributable to non-controlling interests					
Net profit / (loss)	11	9	9	29	15
Total other comprehensive income that will not be reclassified to the income statement, net of tax	(4)	(14)	18	(16)	21
Total comprehensive income attributable to non-controlling interests	7	(5)	27	13	36
Total comprehensive income					
Net profit / (loss)	1,359	2,289	1,645	7,486	6,572
Other comprehensive income	(181)	(610)	83	(2,367)	1,740
<i>of which: other comprehensive income that may be reclassified to the income statement</i>	<i>(355)</i>	<i>(500)</i>	<i>191</i>	<i>(2,393)</i>	<i>2,230</i>
<i>of which: other comprehensive income that will not be reclassified to the income statement</i>	<i>175</i>	<i>(110)</i>	<i>(108)</i>	<i>26</i>	<i>(490)</i>
Total comprehensive income	1,178	1,678	1,728	5,119	8,312

¹ Refer to the "Group performance" section of this report for more information.

Balance sheet

<i>USD million</i>	31.12.21	30.9.21	31.12.20
Assets			
Cash and balances at central banks	192,817	174,478	158,231
Loans and advances to banks	15,480	16,378	15,444
Receivables from securities financing transactions	75,012	74,476	74,210
Cash collateral receivables on derivative instruments	30,514	31,654	32,737
Loans and advances to customers	397,761	390,369	379,528
Other financial assets measured at amortized cost	26,209	27,082	27,194
Total financial assets measured at amortized cost	737,794	714,437	687,345
Financial assets at fair value held for trading	130,821	125,471	125,397
<i>of which: assets pledged as collateral that may be sold or repledged by counterparties</i>	<i>43,397</i>	<i>47,683</i>	<i>47,098</i>
Derivative financial instruments	118,142	121,189	159,617
Brokerage receivables	21,839	20,746	24,659
Financial assets at fair value not held for trading	60,080	60,799	80,364
Total financial assets measured at fair value through profit or loss	330,882	328,205	390,037
Financial assets measured at fair value through other comprehensive income	8,844	8,397	8,258
Investments in associates	1,243	1,188	1,557
Property, equipment and software	12,888	12,827	13,109
Goodwill and intangible assets	6,378	6,401	6,480
Deferred tax assets	8,876	8,830	9,212
Other non-financial assets	10,277	8,489	9,768
Total assets	1,117,182	1,088,773	1,125,765
Liabilities			
Amounts due to banks	13,101	13,292	11,050
Payables from securities financing transactions	5,533	5,256	6,321
Cash collateral payables on derivative instruments	31,798	33,062	37,312
Customer deposits	542,007	517,697	524,605
Debt issued measured at amortized cost	139,155	133,662	139,232
Other financial liabilities measured at amortized cost	9,001	9,569	9,729
Total financial liabilities measured at amortized cost	740,595	712,537	728,250
Financial liabilities at fair value held for trading	31,688	34,650	33,595
Derivative financial instruments	121,309	121,162	161,102
Brokerage payables designated at fair value	44,045	45,557	38,742
Debt issued designated at fair value	73,799	71,898	61,243
Other financial liabilities designated at fair value	30,074	30,248	30,387
Total financial liabilities measured at fair value through profit or loss	300,916	303,515	325,069
Provisions	3,518	2,810	2,828
Other non-financial liabilities	11,151	9,359	9,854
Total liabilities	1,056,180	1,028,221	1,066,000
Equity			
Share capital	322	322	338
Share premium	15,928	15,828	16,753
Treasury shares	(4,675)	(3,847)	(4,068)
Retained earnings	43,851	42,330	38,776
Other comprehensive income recognized directly in equity, net of tax	5,236	5,586	7,647
Equity attributable to shareholders	60,662	60,219	59,445
Equity attributable to non-controlling interests	340	333	319
Total equity	61,002	60,552	59,765
Total liabilities and equity	1,117,182	1,088,773	1,125,765

Provisions and contingent liabilities

a) Provisions

The table below presents an overview of total provisions.

<i>USD million</i>	31.12.21	30.9.21	31.12.20
Provisions other than provisions for expected credit losses	3,322	2,607	2,571
Provisions for expected credit losses	196	203	257
Total provisions	3,518	2,810	2,828

The following table presents additional information for provisions other than provisions for expected credit losses.

<i>USD million</i>	Litigation, regulatory and similar matters ¹	Restructuring ²	Other ³	Total
Balance as of 31 December 2020	2,135	72	363	2,571
Balance as of 30 September 2021	2,084	170	352	2,607
Increase in provisions recognized in the income statement	856	78	25	959
Release of provisions recognized in the income statement	(30)	(14)	(18)	(62)
Provisions used in conformity with designated purpose	(101)	(64)	(17)	(181)
Capitalized reinstatement costs	0	0	4	4
Foreign currency translation / unwind of discount	(12)	1	6	(5)
Balance as of 31 December 2021	2,798	172	352	3,322

¹ Comprises provisions for losses resulting from legal, liability and compliance risks. ² Includes personnel-related restructuring provisions of USD 125 million as of 31 December 2021 (30 September 2021: USD 122 million; 31 December 2020: USD 18 million) and provisions for onerous contracts of USD 47 million as of 31 December 2021 (30 September 2021: USD 48 million; 31 December 2020: USD 49 million). ³ Mainly includes provisions related to real estate, employee benefits and operational risks.

Restructuring provisions primarily relate to personnel-related provisions and onerous contracts. Personnel-related restructuring provisions are used within a short period of time but potential changes in amount may be triggered when natural staff attrition reduces the number of people affected by a restructuring event and therefore the estimated costs. Onerous contracts for property are recognized when UBS is committed to pay for non-lease

components, such as utilities, service charges, taxes and maintenance, when a property is vacated or not fully recovered from sub-tenants.

Information about provisions and contingent liabilities in respect of litigation, regulatory and similar matters, as a class, is included in part b). There are no material contingent liabilities associated with the other classes of provisions.

b) Litigation, regulatory and similar matters

The Group operates in a legal and regulatory environment that exposes it to significant litigation and similar risks arising from disputes and regulatory proceedings. As a result, UBS (which for purposes of this disclosure may refer to UBS Group AG and/or one or more of its subsidiaries, as applicable) is involved in various disputes and legal proceedings, including litigation, arbitration, and regulatory and criminal investigations.

Such matters are subject to many uncertainties, and the outcome and the timing of resolution are often difficult to predict, particularly in the earlier stages of a case. There are also situations where the Group may enter into a settlement agreement. This may occur in order to avoid the expense, management distraction or reputational implications of continuing to contest liability, even for those matters for which the Group believes it should be exonerated. The uncertainties inherent in all such matters affect the amount and timing of any potential outflows for both matters with respect to which provisions have been established and other contingent liabilities. The Group makes provisions for such matters brought against it when, in the opinion of management after seeking legal advice, it is more likely than not that 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, and the amount can be reliably estimated. Where these factors are otherwise satisfied, a provision may be established for claims that have not yet been asserted against the Group, but are nevertheless expected to be, based on the Group's experience with similar asserted claims. If any of those conditions is not met, such matters result in contingent liabilities. If the amount of an obligation cannot be reliably estimated, a liability exists that is not recognized even if an outflow of resources is probable. Accordingly, no provision is established even if the potential outflow of resources with respect to such matters could be significant. Developments relating to a matter that occur after the relevant reporting period, but prior to the issuance of financial statements, which affect management's assessment of the provision for such matter (because, for example, the developments provide evidence of conditions that existed at the end of the reporting period), are adjusting events after the reporting period under IAS 10 and must be recognized in the financial statements for the reporting period.

Provisions and contingent liabilities (continued)

Specific litigation, regulatory and other matters are described below, including all such matters that management considers to be material and others that management believes to be of significance due to potential financial, reputational and other effects. The amount of damages claimed, the size of a transaction or other information is provided where available and appropriate in order to assist users in considering the magnitude of potential exposures.

In the case of certain matters below, we state that we have established a provision, and for the other matters, we make no such statement. When we make this statement and we expect disclosure of the amount of a provision to prejudice seriously our position with other parties in the matter because it would reveal what UBS believes to be the probable and reliably estimable outflow, we do not disclose that amount. In some cases we are subject to confidentiality obligations that preclude such disclosure. With respect to the matters for which we do not state whether we have established a provision, either: (a) we have not established a provision, in which case the matter is treated as a contingent liability under the applicable accounting standard; or (b) we have established a provision but expect disclosure of that fact to prejudice seriously our position with other parties in the matter because it would reveal the fact that UBS believes an outflow of resources to be probable and reliably estimable.

With respect to certain litigation, regulatory and similar matters for which we have established provisions, we are able to estimate the expected timing of outflows. However, the aggregate amount of the expected outflows for those matters for which we are able to estimate expected timing is immaterial relative to our current and expected levels of liquidity over the relevant time periods.

The aggregate amount provisioned for litigation, regulatory and similar matters as a class is disclosed in the "Provisions" table in part a) above. It is not practicable to provide an aggregate estimate of liability for our litigation, regulatory and similar matters as a class of contingent liabilities. Doing so would require UBS to provide speculative legal assessments as to claims and proceedings that involve unique fact patterns or novel legal theories, that have not yet been initiated or are at early stages of adjudication, or as to which alleged damages have not been quantified by the claimants. Although UBS therefore cannot provide a numerical estimate of the future losses that could arise from litigation, regulatory and similar matters, UBS believes that the aggregate amount of possible future losses from this class that are more than remote substantially exceeds the level of current provisions.

Litigation, regulatory and similar matters may also result in non-monetary penalties and consequences. A guilty plea to, or conviction of, a crime could have material consequences for UBS. Resolution of regulatory proceedings may require UBS to obtain waivers of regulatory disqualifications to maintain certain operations, may entitle regulatory authorities to limit, suspend or terminate licenses and regulatory authorizations, and may permit financial market utilities to limit, suspend or terminate UBS's participation in such utilities. Failure to obtain such waivers, or any limitation, suspension or termination of licenses, authorizations or participations, could have material consequences for UBS.

The risk of loss associated with litigation, regulatory and similar matters is a component of operational risk for purposes of determining capital requirements. Information concerning our capital requirements and the calculation of operational risk for this purpose is included in the "Capital management" section of this report.

Provisions for litigation, regulatory and similar matters by business division and in Group Functions¹

<i>USD million</i>	Global Wealth Management	Personal & Corporate Banking	Asset Management	Investment Bank	Group Functions	Total
Balance as of 31 December 2020	861	115	0	227	932	2,135
Balance as of 30 September 2021	765	98	8	275	938	2,084
Increase in provisions recognized in the income statement	709	83	0	39	24	856
Release of provisions recognized in the income statement	(29)	0	0	0	0	(30)
Provisions used in conformity with designated purpose	(98)	(1)	0	(2)	0	(101)
Foreign currency translation / unwind of discount	(9)	0	0	(3)	0	(12)
Balance as of 31 December 2021	1,338	181	8	310	962	2,798

¹ Provisions, if any, for the matters described in items 3 and 4 of this disclosure are recorded in Global Wealth Management, and provisions, if any, for the matters described in item 2 are recorded in Group Functions. Provisions, if any, for the matters described in items 1 and 6 are allocated between Global Wealth Management and Personal & Corporate Banking, and provisions, if any, for the matters described in item 5 are allocated between the Investment Bank and Group Functions.

Provisions and contingent liabilities (continued)

1. Inquiries regarding cross-border wealth management businesses

Tax and regulatory authorities in a number of countries have made inquiries, served requests for information or examined employees located in their respective jurisdictions relating to the cross-border wealth management services provided by UBS and other financial institutions. It is possible that the implementation of automatic tax information exchange and other measures relating to cross-border provision of financial services could give rise to further inquiries in the future. UBS has received disclosure orders from the Swiss Federal Tax Administration (FTA) to transfer information based on requests for international administrative assistance in tax matters. The requests concern a number of UBS account numbers pertaining to current and former clients and are based on data from 2006 and 2008. UBS has taken steps to inform affected clients about the administrative assistance proceedings and their procedural rights, including the right to appeal. The requests are based on data received from the German authorities, who seized certain data related to UBS clients booked in Switzerland during their investigations and have apparently shared this data with other European countries. UBS expects additional countries to file similar requests.

Since 2013, UBS (France) S.A., UBS AG and certain former employees have been under investigation in France for alleged complicity in unlawful solicitation of clients on French territory, regarding the laundering of proceeds of tax fraud, and banking and financial solicitation by unauthorized persons. In connection with this investigation, the investigating judges ordered UBS AG to provide bail ("*caution*") of EUR 1.1 billion and UBS (France) S.A. to post bail of EUR 40 million, which was reduced on appeal to EUR 10 million.

On 20 February 2019, the court of first instance returned a verdict finding UBS AG guilty of unlawful solicitation of clients on French territory and aggravated laundering of the proceeds of tax fraud, and UBS (France) S.A. guilty of aiding and abetting unlawful solicitation and of laundering the proceeds of tax fraud. The court imposed fines aggregating EUR 3.7 billion on UBS AG and UBS (France) S.A. and awarded EUR 800 million of civil damages to the French state. A trial in the French Court of Appeal took place in March 2021. On 13 December 2021, the Court of Appeal found UBS AG guilty of unlawful solicitation and aggravated laundering of the proceeds of tax fraud. The court ordered a fine of EUR 3.75 million, the confiscation of EUR 1 billion, and awarded civil damages to the French state of EUR 800 million. The court also found UBS (France) SA guilty of the aiding and abetting of unlawful solicitation and ordered it to pay a fine of EUR 1.875 million. UBS AG has filed an appeal with the French Supreme Court to preserve its rights. The appeal enables UBS AG to thoroughly assess the verdict of the Court of Appeal and to determine next steps in the best interest of its stakeholders. The fine and confiscation imposed by the Court of Appeal are suspended during the appeal. The award of civil damages is payable upon request by the French state.

Our balance sheet at 31 December 2021 reflected provisions with respect to this matter in an amount of EUR 1.1 billion (USD 1.252 billion at 31 December 2021). The wide range of possible outcomes in this case contributes to a high degree of estimation uncertainty and the provision reflects our best estimate of possible financial implications, although actual penalties and civil damages could exceed (or may be less than) the provision amount.

In 2016, UBS was notified by the Belgian investigating judge that it was under formal investigation ("*inculpé*") regarding the allegations of laundering of proceeds of tax fraud, banking and financial solicitation by unauthorized persons, and serious tax fraud. In November 2021, the Council Chamber approved a settlement with the Brussels Prosecution Office for EUR 49 million without recognition of guilt with regard to the allegations of banking and financial solicitation by unauthorized persons and serious tax fraud. The allegation of laundering of proceeds of tax fraud was dismissed.

Our balance sheet at 31 December 2021 reflected provisions with respect to matters described in this item 1 in an amount that UBS believes to be appropriate under the applicable accounting standard. As in the case of other matters for which we have established provisions, the future outflow of resources in respect of such matters cannot be determined with certainty based on currently available information and accordingly may ultimately prove to be substantially greater (or may be less) than the provision that we have recognized.

2. Claims related to sales of residential mortgage-backed securities and mortgages

From 2002 through 2007, prior to the crisis in the US residential loan market, UBS was a substantial issuer and underwriter of US residential mortgage-backed securities (RMBS) and was a purchaser and seller of US residential mortgages.

In November 2018, the DOJ filed a civil complaint in the District Court for the Eastern District of New York. The complaint seeks unspecified civil monetary penalties under the Financial Institutions Reform, Recovery and Enforcement Act of 1989 related to UBS's issuance, underwriting and sale of 40 RMBS transactions in 2006 and 2007. UBS moved to dismiss the civil complaint on 6 February 2019. On 10 December 2019, the district court denied UBS's motion to dismiss.

Our balance sheet at 31 December 2021 reflected a provision with respect to matters described in this item 2 in an amount that UBS believes to be appropriate under the applicable accounting standard. As in the case of other matters for which we have established provisions, the future outflow of resources in respect of this matter cannot be determined with certainty based on currently available information and accordingly may ultimately prove to be substantially greater (or may be less) than the provision that we have recognized.

Provisions and contingent liabilities (continued)

3. Madoff

In relation to the Bernard L. Madoff Investment Securities LLC (BMIS) investment fraud, UBS AG, UBS (Luxembourg) S.A. (now UBS Europe SE, Luxembourg branch) and certain other UBS subsidiaries have been subject to inquiries by a number of regulators, including the Swiss Financial Market Supervisory Authority (FINMA) and the Luxembourg Commission de Surveillance du Secteur Financier. Those inquiries concerned two third-party funds established under Luxembourg law, substantially all assets of which were with BMIS, as well as certain funds established in offshore jurisdictions with either direct or indirect exposure to BMIS. These funds faced severe losses, and the Luxembourg funds are in liquidation. The documentation establishing both funds identifies UBS entities in various roles, including custodian, administrator, manager, distributor and promoter, and indicates that UBS employees serve as board members.

In 2009 and 2010, the liquidators of the two Luxembourg funds filed claims against UBS entities, non-UBS entities and certain individuals, including current and former UBS employees, seeking amounts totaling approximately EUR 2.1 billion, which includes amounts that the funds may be held liable to pay the trustee for the liquidation of BMIS (BMIS Trustee).

A large number of alleged beneficiaries have filed claims against UBS entities (and non-UBS entities) for purported losses relating to the Madoff fraud. The majority of these cases have been filed in Luxembourg, where decisions that the claims in eight test cases were inadmissible have been affirmed by the Luxembourg Court of Appeal, and the Luxembourg Supreme Court has dismissed a further appeal in one of the test cases.

In the US, the BMIS Trustee filed claims against UBS entities, among others, in relation to the two Luxembourg funds and one of the offshore funds. The total amount claimed against all defendants in these actions was not less than USD 2 billion. In 2014, the US Supreme Court rejected the BMIS Trustee's motion for leave to appeal decisions dismissing all claims except those for the recovery of approximately USD 125 million of payments alleged to be fraudulent conveyances and preference payments. In 2016, the bankruptcy court dismissed these claims against the UBS entities. In February 2019, the Court of Appeals reversed the dismissal of the BMIS Trustee's remaining claims, and the US Supreme Court subsequently denied a petition seeking review of the Court of Appeals' decision. The case has been remanded to the Bankruptcy Court for further proceedings.

4. Puerto Rico

Declines since 2013 in the market prices of Puerto Rico municipal bonds and of closed-end funds (funds) that are sole-managed and co-managed by UBS Trust Company of Puerto Rico and distributed by UBS Financial Services Incorporated of Puerto Rico (UBS PR) led to multiple regulatory inquiries, which in 2014 and 2015, led to settlements with the Office of the Commissioner of Financial Institutions for the Commonwealth of Puerto Rico, the US Securities and Exchange Commission (SEC) and the Financial Industry Regulatory Authority.

Since then, UBS clients in Puerto Rico who own the funds or Puerto Rico municipal bonds and/or who used their UBS account assets as collateral for UBS non-purpose loans filed customer complaints and arbitration demands seeking aggregate damages of USD 3.4 billion, of which USD 3.1 billion have been resolved through settlements, arbitration or withdrawal of claims. Allegations include fraud, misrepresentation and unsuitability of the funds and of the loans.

A shareholder derivative action was filed in 2014 against various UBS entities and current and certain former directors of the funds, alleging hundreds of millions of US dollars in losses in the funds. In 2021, the parties reached an agreement to settle this matter for USD 15 million, subject to court approval.

In 2011, a purported derivative action was filed on behalf of the Employee Retirement System of the Commonwealth of Puerto Rico (System) against over 40 defendants, including UBS PR, which was named in connection with its underwriting and consulting services. Plaintiffs alleged that defendants violated their purported fiduciary duties and contractual obligations in connection with the issuance and underwriting of USD 3 billion of bonds by the System in 2008 and sought damages of over USD 800 million. In 2016, the court granted the System's request to join the action as a plaintiff. In 2017, the court denied defendants' motion to dismiss the complaint. In 2020, the court denied plaintiffs' motion for summary judgment.

Beginning in 2015, certain agencies and public corporations of the Commonwealth of Puerto Rico (Commonwealth) defaulted on certain interest payments on Puerto Rico bonds. In 2016, US federal legislation created an oversight board with power to oversee Puerto Rico's finances and to restructure its debt. The oversight board has imposed a stay on the exercise of certain creditors' rights. In 2017, the oversight board placed certain of the bonds into a bankruptcy-like proceeding under the supervision of a Federal District Judge.

In May 2019, the oversight board filed complaints in Puerto Rico federal district court bringing claims against financial, legal and accounting firms that had participated in Puerto Rico municipal bond offerings, including UBS, seeking a return of underwriting and swap fees paid in connection with those offerings. UBS estimates that it received approximately USD 125 million in fees in the relevant offerings.

In August 2019, and February and November 2020, four US insurance companies that insured issues of Puerto Rico municipal bonds sued UBS and several other underwriters of Puerto Rico municipal bonds in three separate cases. The actions collectively seek recovery of an aggregate of USD 955 million in damages from the defendants. The plaintiffs in these cases claim that defendants failed to reasonably investigate financial statements in the offering materials for the insured Puerto Rico bonds issued between 2002 and 2007, which plaintiffs argue they relied upon in agreeing to insure the bonds notwithstanding that they had no contractual relationship with the underwriters. Defendants' motions to dismiss were granted in two of the cases; those decisions are being appealed by the plaintiffs. In the third case, defendants' motion to dismiss was denied, but on appeal that ruling was reversed and the motion to dismiss was granted.

Provisions and contingent liabilities (continued)

Our balance sheet at 31 December 2021 reflected provisions with respect to matters described in this item 4 in amounts that UBS believes to be appropriate under the applicable accounting standard. As in the case of other matters for which we have established provisions, the future outflow of resources in respect of such matters cannot be determined with certainty based on currently available information and accordingly may ultimately prove to be substantially greater (or may be less) than the provisions that we have recognized.

5. Foreign exchange, LIBOR and benchmark rates, and other trading practices

Foreign exchange-related regulatory matters: Beginning in 2013, numerous authorities commenced investigations concerning possible manipulation of foreign exchange markets and precious metals prices. As a result of these investigations, UBS entered into resolutions with Swiss, US and United Kingdom regulators and the European Commission. UBS was granted conditional immunity by the Antitrust Division of the DOJ and by authorities in other jurisdictions in connection with potential competition law violations relating to foreign exchange and precious metals businesses.

Foreign exchange-related civil litigation: Putative class actions have been filed since 2013 in US federal courts and in other jurisdictions against UBS and other banks on behalf of putative classes of persons who engaged in foreign currency transactions with any of the defendant banks. UBS has resolved US federal court class actions relating to foreign currency transactions with the defendant banks and persons who transacted in foreign exchange futures contracts and options on such futures under a settlement agreement that provides for UBS to pay an aggregate of USD 141 million and provide cooperation to the settlement classes. Certain class members have excluded themselves from that settlement and have filed individual actions in US and English courts against UBS and other banks, alleging violations of US and European competition laws and unjust enrichment.

In 2015, a putative class action was filed in federal court against UBS and numerous other banks on behalf of persons and businesses in the US who directly purchased foreign currency from the defendants and alleged co-conspirators for their own end use. In March 2017, the court granted UBS's (and the other banks') motions to dismiss the complaint. The plaintiffs filed an amended complaint in August 2017. In March 2018, the court denied the defendants' motions to dismiss the amended complaint.

LIBOR and other benchmark-related regulatory matters: Numerous government agencies conducted investigations regarding potential improper attempts by UBS, among others, to manipulate LIBOR and other benchmark rates at certain times. UBS reached settlements or otherwise concluded investigations relating to benchmark interest rates with the investigating authorities. UBS was granted conditional leniency or conditional immunity from authorities in certain jurisdictions, including the Antitrust Division of the DOJ and the Swiss Competition Commission (WEKO), in connection with potential antitrust or

competition law violations related to certain rates. However, UBS has not reached a final settlement with WEKO, as the Secretariat of WEKO has asserted that UBS does not qualify for full immunity.

LIBOR and other benchmark-related civil litigation: A number of putative class actions and other actions are pending in the federal courts in New York against UBS and numerous other banks on behalf of parties who transacted in certain interest rate benchmark-based derivatives. Also pending in the US and in other jurisdictions are a number of other actions asserting losses related to various products whose interest rates were linked to LIBOR and other benchmarks, including adjustable rate mortgages, preferred and debt securities, bonds pledged as collateral, loans, depository accounts, investments and other interest-bearing instruments. The complaints allege manipulation, through various means, of certain benchmark interest rates, including USD LIBOR, Euroyen TIBOR, Yen LIBOR, EURIBOR, CHF LIBOR, GBP LIBOR, SGD SIBOR and SOR and Australian BBSW, and seek unspecified compensatory and other damages under varying legal theories.

USD LIBOR class and individual actions in the US: In 2013 and 2015, the district court in the USD LIBOR actions dismissed, in whole or in part, certain plaintiffs' antitrust claims, federal racketeering claims, CEA claims, and state common law claims, and again dismissed the antitrust claims in 2016 following an appeal. In December 2021, the Second Circuit affirmed the district court's dismissal in part and reversed in part and remanded to the district court for further proceedings. The Second Circuit, among other things, held that there was personal jurisdiction over UBS and other foreign defendants based on allegations that at least one alleged co-conspirator undertook an overt act in the United States. Separately, in 2018, the Second Circuit reversed in part the district court's 2015 decision dismissing certain individual plaintiffs' claims and certain of these actions are now proceeding. In 2018, the district court denied plaintiffs' motions for class certification in the USD class actions for claims pending against UBS, and plaintiffs sought permission to appeal that ruling to the Second Circuit. In July 2018, the Second Circuit denied the petition to appeal of the class of USD lenders and in November 2018 denied the petition of the USD exchange class. In January 2019, a putative class action was filed in the District Court for the Southern District of New York against UBS and numerous other banks on behalf of US residents who, since 1 February 2014, directly transacted with a defendant bank in USD LIBOR instruments. The complaint asserts antitrust claims. The defendants moved to dismiss the complaint in August 2019. On 26 March 2020 the court granted defendants' motion to dismiss the complaint in its entirety. Plaintiffs have appealed the dismissal. In August 2020, an individual action was filed in the Northern District of California against UBS and numerous other banks alleging that the defendants conspired to fix the interest rate used as the basis for loans to consumers by jointly setting the USD LIBOR rate and monopolized the market for LIBOR-based consumer loans and credit cards. Defendants moved to dismiss the complaint in September 2021.

Provisions and contingent liabilities (continued)

Other benchmark class actions in the US:

Yen LIBOR / Euroyen TIBOR – In 2014, 2015 and 2017, the court in one of the Yen LIBOR / Euroyen TIBOR lawsuits dismissed certain of the plaintiffs' claims, including the plaintiffs' federal antitrust and racketeering claims. In August 2020, the court granted defendants' motion for judgment on the pleadings and dismissed the lone remaining claim in the action as impermissibly extraterritorial. Plaintiffs have appealed. In 2017, the court dismissed the other Yen LIBOR / Euroyen TIBOR action in its entirety on standing grounds. In April 2020, the appeals court reversed the dismissal and in August 2020 plaintiffs in that action filed an amended complaint focused on Yen LIBOR. The court granted in part and denied in part defendants' motion to dismiss the amended complaint in September 2021 and plaintiffs and the remaining defendants have moved for reconsideration.

CHF LIBOR – In 2017, the court dismissed the CHF LIBOR action on standing grounds and failure to state a claim. Plaintiffs filed an amended complaint following the dismissal, and the court granted a renewed motion to dismiss in September 2019. Plaintiffs appealed. In September 2021, the Second Circuit granted the parties' joint motion to vacate the dismissal and remand the case for further proceedings.

EURIBOR – In 2017, the court in the EURIBOR lawsuit dismissed the case as to UBS and certain other foreign defendants for lack of personal jurisdiction. Plaintiffs have appealed.

SIBOR / SOR – In October 2018, the court in the SIBOR / SOR action dismissed all but one of plaintiffs' claims against UBS. Plaintiffs filed an amended complaint following the dismissal, and the court granted a renewed motion to dismiss in July 2019. Plaintiffs appealed. In March 2021, the Second Circuit reversed the dismissal. Plaintiffs filed an amended complaint in October 2021, which defendants have moved to dismiss.

BBSW – In November 2018, the court in the BBSW lawsuit dismissed the case as to UBS and certain other foreign defendants for lack of personal jurisdiction. Following that dismissal, plaintiffs filed an amended complaint in April 2019, which UBS and other defendants named in the amended complaint moved to dismiss. In February 2020, the court in the BBSW action granted in part and denied in part defendants' motions to dismiss the amended complaint. In August 2020, UBS and other BBSW defendants joined a motion for judgment on the pleadings, which the court denied in May 2021.

GBP LIBOR – The court dismissed the GBP LIBOR action in August 2019. Plaintiffs have appealed.

Government bonds: Putative class actions have been filed since 2015 in US federal courts against UBS and other banks on behalf of persons who participated in markets for US Treasury securities since 2007. A consolidated complaint was filed in 2017 in the US District Court for the Southern District of New York alleging that the banks colluded with respect to, and manipulated prices of, US Treasury securities sold at auction and in the secondary market and

asserting claims under the antitrust laws and for unjust enrichment. Defendants' motions to dismiss the consolidated complaint was granted in March 2021. Plaintiffs filed an amended complaint, which defendants moved to dismiss in June 2021. Similar class actions have been filed concerning European government bonds and other government bonds.

In May 2021, the European Commission issued a decision finding that UBS and six other banks breached European Union antitrust rules in 2007–2011 relating to European government bonds. The European Commission fined UBS EUR 172 million. UBS is appealing the amount of the fine.

With respect to additional matters and jurisdictions not encompassed by the settlements and orders referred to above, our balance sheet at 31 December 2021 reflected a provision in an amount that UBS believes to be appropriate under the applicable accounting standard. As in the case of other matters for which we have established provisions, the future outflow of resources in respect of such matters cannot be determined with certainty based on currently available information and accordingly may ultimately prove to be substantially greater (or may be less) than the provision that we have recognized.

6. Swiss retrocessions

The Federal Supreme Court of Switzerland ruled in 2012, in a test case against UBS, that distribution fees paid to a firm for distributing third-party and intra-group investment funds and structured products must be disclosed and surrendered to clients who have entered into a discretionary mandate agreement with the firm, absent a valid waiver. FINMA issued a supervisory note to all Swiss banks in response to the Supreme Court decision. UBS has met the FINMA requirements and has notified all potentially affected clients.

The Supreme Court decision has resulted, and continues to result, in a number of client requests for UBS to disclose and potentially surrender retrocessions. Client requests are assessed on a case-by-case basis. Considerations taken into account when assessing these cases include, among other things, the existence of a discretionary mandate and whether or not the client documentation contained a valid waiver with respect to distribution fees.

Our balance sheet at 31 December 2021 reflected a provision with respect to matters described in this item 6 in an amount that UBS believes to be appropriate under the applicable accounting standard. The ultimate exposure will depend on client requests and the resolution thereof, factors that are difficult to predict and assess. Hence, as in the case of other matters for which we have established provisions, the future outflow of resources in respect of such matters cannot be determined with certainty based on currently available information and accordingly may ultimately prove to be substantially greater (or may be less) than the provision that we have recognized.

UBS AG interim consolidated financial information (unaudited)

This section contains a comparison of selected financial and capital information between UBS Group AG consolidated and UBS AG consolidated. Information for UBS AG consolidated does not differ materially from UBS Group AG on a consolidated basis.

Comparison between UBS Group AG consolidated and UBS AG consolidated

The accounting policies applied under International Financial Reporting Standards (IFRS) to both the UBS Group AG and the UBS AG consolidated financial statements are identical. However, there are certain scope and presentation differences as noted below.

- Assets, liabilities, operating income, operating expenses and operating profit before tax relating to UBS Group AG and its directly held subsidiaries, including UBS Business Solutions AG, are reflected in the consolidated financial statements of UBS Group AG but not in those of UBS AG. UBS AG's assets, liabilities, operating income and operating expenses related to transactions with UBS Group AG and its directly held subsidiaries, including UBS Business Solutions AG and other shared services subsidiaries, are not subject to elimination in the consolidated financial statements of UBS AG, but are eliminated in the consolidated financial statements of UBS Group AG. UBS Business Solutions AG and other shared services subsidiaries of UBS Group AG charge other legal entities within the UBS AG consolidation scope for services provided, including a markup on costs incurred.
- The equity of UBS Group AG consolidated was USD 2.6 billion higher than the equity of UBS AG consolidated as of 31 December 2021. This difference was mainly driven by higher dividends paid by UBS AG to UBS Group AG compared with the dividend distributions of UBS Group AG, as well as higher retained earnings in the consolidated financial statements of UBS Group AG, largely related to the aforementioned markup charged by shared services subsidiaries of UBS Group AG to other legal entities in the UBS AG scope of consolidation. In addition, UBS Group AG is the grantor of the majority of the compensation plans of the Group and recognizes share premium for equity-settled awards granted. These effects were partly offset by treasury shares acquired as part of our share repurchase programs and those held to hedge share delivery obligations associated with Group compensation plans, as well as additional share premium recognized at the UBS AG consolidated level related to the establishment of UBS Group AG and UBS Business Solutions AG, a wholly owned subsidiary of UBS Group AG.
- The going concern capital of UBS Group AG consolidated was USD 5.1 billion higher than the going concern capital of UBS AG consolidated as of 31 December 2021, reflecting higher common equity tier 1 (CET1) capital of USD 3.7 billion and going concern loss-absorbing additional tier 1 (AT1) capital of USD 1.4 billion.
- The CET1 capital of UBS Group AG consolidated was USD 3.7 billion higher than that of UBS AG consolidated as of 31 December 2021. The higher CET1 capital of UBS Group AG consolidated was primarily due to higher UBS Group AG consolidated IFRS equity of USD 2.6 billion, as described above, and lower UBS Group AG accruals for future capital returns to shareholders, partly offset by compensation-related regulatory capital accruals at the UBS Group AG level.
- The going concern loss-absorbing AT1 capital of UBS Group AG consolidated was USD 1.4 billion higher than that of UBS AG consolidated as of 31 December 2021, mainly reflecting deferred contingent capital plan awards granted at the Group level to eligible employees for the performance years 2016 to 2020, partly offset by two loss-absorbing AT1 capital instruments on-lent by UBS Group AG to UBS AG.

Comparison between UBS Group AG consolidated and UBS AG consolidated

	As of or for the quarter ended 31.12.21		
	UBS Group AG consolidated	UBS AG consolidated	Difference (absolute)
<i>USD million, except where indicated</i>			
Income statement			
Operating income	8,732	8,846	(114)
Operating expenses	7,003	7,227	(224)
Operating profit / (loss) before tax	1,729	1,619	109
<i>of which: Global Wealth Management</i>	563	541	22
<i>of which: Personal & Corporate Banking</i>	365	362	3
<i>of which: Asset Management</i>	334	328	6
<i>of which: Investment Bank</i>	713	710	3
<i>of which: Group Functions</i>	(246)	(321)	75
Net profit / (loss)	1,359	1,266	93
<i>of which: net profit / (loss) attributable to shareholders</i>	1,348	1,255	93
<i>of which: net profit / (loss) attributable to non-controlling interests</i>	11	11	0
Statement of comprehensive income			
Other comprehensive income	(181)	(197)	16
<i>of which: attributable to shareholders</i>	(177)	(194)	16
<i>of which: attributable to non-controlling interests</i>	(4)	(4)	0
Total comprehensive income	1,178	1,069	109
<i>of which: attributable to shareholders</i>	1,171	1,062	109
<i>of which: attributable to non-controlling interests</i>	7	7	0
Balance sheet			
Total assets	1,117,182	1,116,145	1,037
Total liabilities	1,056,180	1,057,702	(1,522)
Total equity	61,002	58,442	2,559
<i>of which: equity attributable to shareholders</i>	60,662	58,102	2,559
<i>of which: equity attributable to non-controlling interests</i>	340	340	0
Capital information			
Common equity tier 1 capital	45,281	41,594	3,687
Going concern capital	60,488	55,434	5,054
Risk-weighted assets	302,209	299,005	3,204
Common equity tier 1 capital ratio (%)	15.0	13.9	1.1
Going concern capital ratio (%)	20.0	18.5	1.5
Total loss-absorbing capacity ratio (%)	34.7	33.3	1.3
Leverage ratio denominator	1,068,862	1,067,679	1,183
Common equity tier 1 leverage ratio (%)	4.24	3.90	0.34
Going concern leverage ratio (%)	5.7	5.2	0.5
Total loss-absorbing capacity leverage ratio (%)	9.8	9.3	0.5

As of or for the quarter ended 30.9.21			As of or for the quarter ended 31.12.20		
UBS Group AG consolidated	UBS AG consolidated	Difference (absolute)	UBS Group AG consolidated	UBS AG consolidated	Difference (absolute)
9,128	9,224	(95)	8,117	8,220	(103)
6,264	6,512	(248)	6,132	6,324	(192)
2,865	2,712	152	1,985	1,896	89
1,516	1,500	16	864	855	9
478	479	(1)	353	353	(1)
214	214	0	401	401	0
837	833	4	529	528	1
(180)	(314)	134	(161)	(241)	79
2,289	2,163	125	1,645	1,572	73
2,279	2,154	125	1,636	1,563	73
9	9	0	9	9	0
(610)	(598)	(12)	83	54	29
(596)	(584)	(12)	65	36	29
(14)	(14)	0	18	18	0
1,678	1,565	113	1,728	1,626	102
1,683	1,570	113	1,701	1,599	102
(5)	(5)	0	27	27	0
1,088,773	1,088,246	528	1,125,765	1,125,327	438
1,028,221	1,030,828	(2,607)	1,066,000	1,067,254	(1,254)
60,552	57,418	3,134	59,765	58,073	1,691
60,219	57,085	3,134	59,445	57,754	1,691
333	333	0	319	319	0
45,022	41,356	3,665	39,890	38,181	1,709
60,369	55,334	5,035	56,178	52,610	3,567
302,426	299,612	2,814	289,101	286,743	2,358
14.9	13.8	1.1	13.8	13.3	0.5
20.0	18.5	1.5	19.4	18.3	1.1
34.0	32.6	1.4	35.2	34.2	1.0
1,044,916	1,044,438	479	1,037,150	1,036,771	379
4.31	3.96	0.35	3.85	3.68	0.16
5.8	5.3	0.5	5.4	5.1	0.3
9.8	9.4	0.5	9.8	9.5	0.3

UBS AG consolidated key figures

<i>USD million, except where indicated</i>	As of or for the quarter ended			As of or for the year ended	
	31.12.21	30.9.21	31.12.20	31.12.21	31.12.20
Results					
Operating income	8,846	9,224	8,220	35,976	32,780
Operating expenses	7,227	6,512	6,324	27,012	25,081
Operating profit / (loss) before tax	1,619	2,712	1,896	8,964	7,699
Net profit / (loss) attributable to shareholders	1,255	2,154	1,563	7,032	6,196
Profitability and growth					
Return on equity (%)	8.7	15.3	10.9	12.3	10.9
Return on tangible equity (%)	9.8	17.3	12.2	13.9	12.4
Return on common equity tier 1 capital (%)	12.1	21.1	16.3	17.6	16.6
Return on risk-weighted assets, gross (%)	11.8	12.5	11.7	12.3	11.9
Return on leverage ratio denominator, gross (%) ¹	3.3	3.5	3.3	3.4	3.4
Cost / income ratio (%)	81.9	70.7	76.3	75.4	74.9
Net profit growth (%)	(19.7)	6.8	151.3	13.5	56.3
Resources					
Total assets	1,116,145	1,088,246	1,125,327	1,116,145	1,125,327
Equity attributable to shareholders	58,102	57,085	57,754	58,102	57,754
Common equity tier 1 capital ²	41,594	41,356	38,181	41,594	38,181
Risk-weighted assets ²	299,005	299,612	286,743	299,005	286,743
Common equity tier 1 capital ratio (%) ²	13.9	13.8	13.3	13.9	13.3
Going concern capital ratio (%) ²	18.5	18.5	18.3	18.5	18.3
Total loss-absorbing capacity ratio (%) ²	33.3	32.6	34.2	33.3	34.2
Leverage ratio denominator ^{1,2}	1,067,679	1,044,438	1,036,771	1,067,679	1,036,771
Common equity tier 1 leverage ratio (%) ^{1,2}	3.90	3.96	3.68	3.90	3.68
Going concern leverage ratio (%) ^{1,2}	5.2	5.3	5.1	5.2	5.1
Total loss-absorbing capacity leverage ratio (%) ²	9.3	9.4	9.5	9.3	9.5
Other					
Invested assets (USD billion) ³	4,596	4,432	4,187	4,596	4,187
Personnel (full-time equivalents)	47,067	47,293	47,546	47,067	47,546

¹ Leverage ratio denominators and leverage ratios for the respective periods in 2020 do not reflect the effects of the temporary exemption that applied from 25 March 2020 until 1 January 2021 and was granted by FINMA in connection with COVID-19. Refer to the "Regulatory and legal developments" section of our Annual Report 2020 for more information. ² Based on the Swiss systemically relevant bank framework as of 1 January 2020. Refer to the "Capital management" section of this report for more information. ³ Consists of invested assets for Global Wealth Management, Asset Management and Personal & Corporate Banking. Refer to "Note 32 Invested assets and net new money" in the "Consolidated financial statements" section of our Annual Report 2020 for more information.

Currency translation rates

The following table shows the rates of the main currencies used to translate the financial information of UBS's operations with a functional currency other than the US dollar into US dollars.

	Closing exchange rate			Average rate ¹				
	As of			For the quarter ended			For the year ended	
	31.12.21	30.9.21	31.12.20	31.12.21	30.9.21	31.12.20	31.12.21	31.12.20
1 CHF	1.10	1.07	1.13	1.09	1.09	1.11	1.09	1.07
1 EUR	1.14	1.16	1.22	1.14	1.17	1.19	1.18	1.15
1 GBP	1.35	1.35	1.37	1.35	1.37	1.33	1.37	1.29
100 JPY	0.87	0.90	0.97	0.88	0.90	0.96	0.91	0.94

¹ Monthly income statement items of operations with a functional currency other than the US dollar are translated into US dollars using month-end rates. Disclosed average rates for a quarter or a year represent an average of three month-end rates or an average of twelve month-end rates, respectively, weighted according to the income and expense volumes of all operations of the Group with the same functional currency for each month. Weighted average rates for individual business divisions may deviate from the weighted average rates for the Group.

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