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).

3,500,000 European Style Cash Settled Long Certificates relating to

the ordinary shares of Sunny Optical Technology (Group) Company 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 2022 (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 a 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 2001 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 products[1] 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 23 March 2023.

As at the date hereof, the Issuer's long term credit rating by S&P Global Ratings Europe Limited is A+, by Moody's Investors Service Ltd. is Aa3 and by Fitch Ratings Ireland 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.

22 March 2023

[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 fallen 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 Strategy (as described below) including the Funding 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 a 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 performance of the Underlying Stock over a period longer than one day. This difference may be amplified in a volatile market with a sideway 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 Strategy if the Underlying Stock falls further, but will also maintain a reduced exposure to the Underlying Stock in the event the Underlying Stock starts to rise 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 fall 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 the market (in respect of which the Underlying Stock is listed) opens the following day (including pre-opening trading session and extended auction hours, if applicable) or (ii) a sharp intraday fall 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 41 to 42 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 28 to 29 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 Strategy performance built in the Certificate. The Calculation Agent will make the Leverage 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 likehood 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) 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 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:	3,500,000 European Style Cash Settled Long Certificates relating to the ordinary shares of Sunny Optical Technology (Group) Company Limited (the "**Underlying Stock**" or the "**Underlying**")
ISIN:	CH1227876286
Company:	Sunny Optical Technology (Group) Company Limited (RIC: 2382.HK)
Underlying Price[3] and Source:	HK$92.1 (Bloomberg)
Calculation Agent:	UBS AG acting through its London Branch
Strike Level:	Zero
Daily Leverage:	5x (within the Leverage Strategy as described below)
Notional Amount per Certificate:	SGD 0.90
Management Fee (p.a.)[4]:	0.40%
Gap Premium (p.a.)[5]:	6.90%, is a hedging cost against extreme market movements overnight.
Funding Cost[6]:	The annualised costs of funding, referencing a publically published interbank offered rate plus spread.
Rebalancing Cost[6]:	The transaction costs (if applicable), computed as a function of leverage and daily performance of the Underlying Stock.
Launch Date:	15 March 2023
Closing Date:	22 March 2023

[3] These figures are calculated as at, and based on information available to the Issuer on or about 22 March 2023. 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 22 March 2023.
[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 Strategy.

Expected Listing Date:	23 March 2023
Last Trading Date:	The date falling 5 Business Days immediately preceding the Expiry Date, currently being 14 March 2025
Expiry Date:	21 March 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:	20 March 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 Long Certificates on Single Equities" section on pages 33 to 47 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 – Management Fee x (ACT (t-1;t) ÷ 360)) x (1 – Gap Premium (t-1) x (ACT (t-1;t) ÷ 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 Long Certificates on Single Equities" section on pages 33 to 47 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 Strategy (as described below) on the Valuation Date The calculation of the closing level of the Leverage Strategy is set out in the "Specific Definitions relating to the Leverage Strategy" section on pages 15 to 19 below.
Initial Exchange Rate[3]:	0.1701640911
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 Strategy and which is designed to reduce the Leverage Strategy exposure to the Underlying Stock during extreme market conditions. If the Underlying Stock falls by 15% or more ("**Air Bag Trigger Price**") during the trading day (which represents approximately 75% loss after a 5 times leverage), the Air Bag Mechanism is triggered and the Leverage Strategy is adjusted intra-day. The Air Bag Mechanism reduces the impact on the Leverage Strategy if the Underlying Stock falls further, but will also maintain a reduced exposure to the Underlying Stock in the event the Underlying Stock starts to rise 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 Strategy is floored at 0 and the Certificates cannot be valued below zero. Please refer to the "Air Bag Mechanism" section on page 19 below and the "Description of Air Bag Mechanism" section on pages 39 to 40 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 Strategy including the Funding 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.

Specific Definitions relating to the Leverage Strategy

Description of the Leverage Strategy

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

At the end of each trading day of the Underlying Stock, the exposure of the Leverage Strategy to the Underlying Stock is reset within the Leverage Strategy in order to retain a daily leverage of 5 times the 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 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 Strategy Formula

$\mathbf{LSL_t}$ means, the Leverage Strategy Level as at the Leverage Reset Time (t), calculated in accordance with the following formulae:

On Leverage Reset Time (1):

$\mathrm{LSL_1} = 1000$

On each subsequent Leverage Reset Time (t):

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

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).

$\mathbf{LR_{r(t),t}}$

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

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

$\mathbf{FC_{r(t),t}}$

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,

$$\mathrm{FC_{r(t),t}} = (\mathrm{Leverage} - 1) \times \frac{\mathrm{Rate_{r(t)}} \times \mathrm{ACT(r(t), t)}}{\mathrm{DayCountBasisRate}}$$

Otherwise, $\mathrm{FC_{r(t),t}} = 0$

$\mathbf{RC_{r(t),t}}$

means the Rebalancing Cost of the Leverage Strategy as at Leverage Reset Time (t), calculated as follows:

$$\mathrm{RC_{r(t),t}} = \mathrm{Leverage} \times (\mathrm{Leverage} - 1) \times \left(\left|\frac{\mathrm{S_t}}{\mathrm{S_{r(t)}} \times \mathrm{Rfactor_t}} - 1\right|\right) \times \mathrm{TC}$$

TC

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 :

0.13%

"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.

Leverage

5

S_t means the Underlying Stock Price as of Leverage Reset Time (t) computed as follows, subject to the adjustments and provisions of the Conditions:

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,

S_t is the Closing Price of the Underlying Stock as of such Observation Date.

Otherwise,

S_t is the lowest price of the Underlying Stock during the respective Intraday Restrike Observation Period.

$Rfactor_t$ means an amount determined by the Calculation Agent, according to the following formula, subject to the adjustments and provisions of the Conditions:

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 thereto) on any Observation Date,

$$\mathrm{Rfactor}_t = 1 - \frac{\mathrm{Div}_t}{S_{r(t)}}$$

Otherwise,

$$\mathrm{Rfactor}_t = 1$$

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 net of any applicable withholding taxes.

$Rate_t$ means, in respect of the Observation Date of Leverage Reset Time (t), a rate calculated as of such day in accordance with the following formula:

$$\mathrm{Rate}_t = \mathrm{CashRate}_t + \%\mathrm{SpreadLevel}_t$$

$CashRate_t$ means, in respect of the Observation Date of the Leverage Reset Time (t), the Overnight HKD Hong Kong Interbank Offered Rate (HIBOR) Fixing, as published on Reuters RIC HIHKDOND= or any successor page, being the rate as of day (t), provided that if any of such rate is not available, then that 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.

$\%\mathbf{SpreadLevel_t}$	means, in respect of the Observation Date of the Leverage Reset Time (t), a rate which shall be determined with respect to such Valuation Date(t) by the Calculation Agent as the difference between (1) the 12-month HKD Hong Kong Interbank Offered Rate (HIBOR) Fixing, as published on Reuters RIC HIHKD1YD= and (2) Overnight HKD Hong Kong Interbank Offered Rate (HIBOR) Fixing, as published on Reuters RIC HIHKDOND=or any successor page, each being the rate as of day (t), provided that if any of such rates is not available, then that 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.

Provided that if such difference is negative, $\%\mathbf{SpreadLevel_t}$ should be 0%.

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 decrease 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 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) a master instrument by way of deed poll (the "**Master Instrument**") dated 28 June 2022, 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 Master 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 Master 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:

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

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 Master 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 Master 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 Master 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 Master 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 2001 of Singapore

Unless otherwise expressly provided in the Global Warrant, the Master 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 Master Instrument and the Master Warrant Agent Agreement or Warrant Agent Agreement has no rights under the Contracts (Rights of Third Parties) Act 2001 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:	Sunny Optical Technology (Group) Company Limited
The Certificates:	European Style Cash Settled Long Certificates relating to the Underlying Stock
Number:	3,500,000 Certificates
Form:	The Certificates will be issued subject to, and with the benefit of, a master instrument by way of deed poll dated 28 June 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 23 March 2023.
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 LONG CERTIFICATES ON SINGLE EQUITIES

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

European style cash settled long 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 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 increase and are seeking short-term leveraged 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 Strategy including the Funding Cost and the Rebalancing Cost.

Illustration of the Calculation of Hedging Fee Factor

Hedging Fee Factor	=	Product of the Daily Fees

Daily Fees	=	**Daily Management Fee Adjustment** 1 – Management Fee x ACT (t-1;t) / 360 x **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)

		t[7]=0		t=1		t=2		t=i
Value of Certificates	=	Notional Amount	x	Leverage Strategy daily performance[8] x Daily Fees	x	Leverage Strategy daily performance x Daily Fees	x …	Leverage Strategy Daily performance x Daily Fees

		t=0		**Product of the daily Leverage Strategy Performance**		**Product of the Daily Fees (Hedging Fee Factor)**
Value of Certificates	=	Notional Amount	x	Leverage Strategy daily performance x Leverage Strategy daily performance	x	Daily Fees x Daily Fees

		t=0				
Final Value of Certificates	=	Notional Amount	x	Final Reference Level x Final Exchange Rate ÷ Initial Reference Level x Initial Exchange Rate	x	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 Strategy daily performance is computed as the Leverage Strategy Level on Business Day (t) divided by the Leverage 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 Sunny Optical Technology (Group) Company 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.):	**6.90%**
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:

HFF(0) = 100%

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

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

$$\mathrm{HFF}\ (1) = 100\% \times \left(1 - 0.40\% \times \frac{1}{360}\right) \times \left(1 - 6.90\% \times \frac{1}{360}\right)$$

$$\mathrm{HFF}\ (1)\ =\ 100\%\ \times\ 99.9989\%\ \ \times\ 99.9808\%\ \approx\ 99.9797\%$$

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

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

$$\text{HFF (2)} = 99.9797\% \times \left(1 - 0.40\% \times \frac{3}{360}\right) \times \left(1 - 6.90\% \times \frac{3}{360}\right)$$

$$\text{HFF (2)} = 99.9797\% \times 99.9967\% \times 99.9425\% \approx 99.9189\%$$

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

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

In this example, the Hedging Fee Factor as of the Valuation Date would be equal to 99.6962% as illustrated below:

Date	HFF
2/1/2021	100.0000%
2/2/2021	99.9797%
2/3/2021	99.9594%
2/4/2021	99.9392%
2/5/2021	99.9189%
2/8/2021	99.8581%
2/9/2021	99.8379%
2/10/2021	99.8176%
2/11/2021	99.7974%
2/12/2021	99.7772%
2/15/2021	99.7165%
2/16/2021	99.6962%

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 x 1) / (1000 x 1) – 0] x 99.6962%

= 119.64%

Cash Settlement Amount = Closing Level x Notional Amount per Certificate

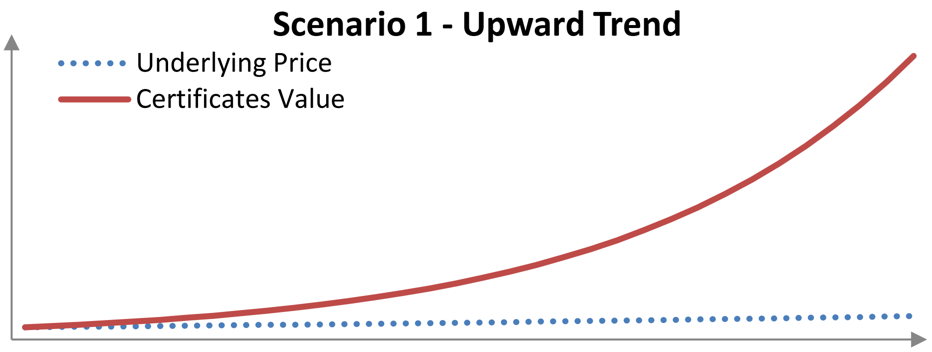
= 119.64% x 0.90 SGD

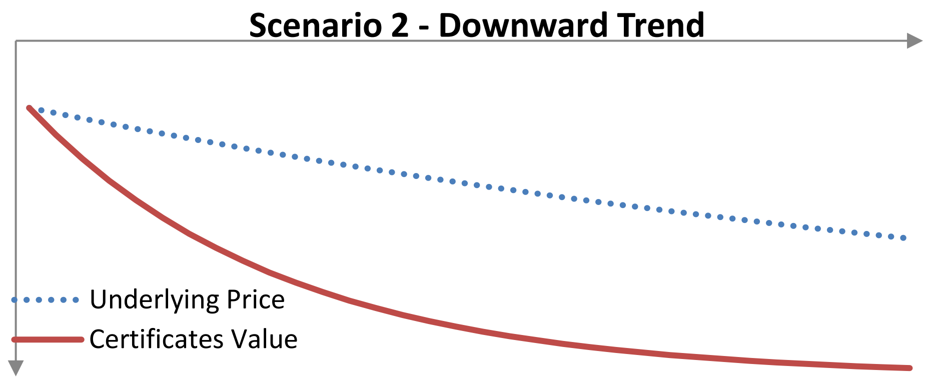
= 1.077 SGD

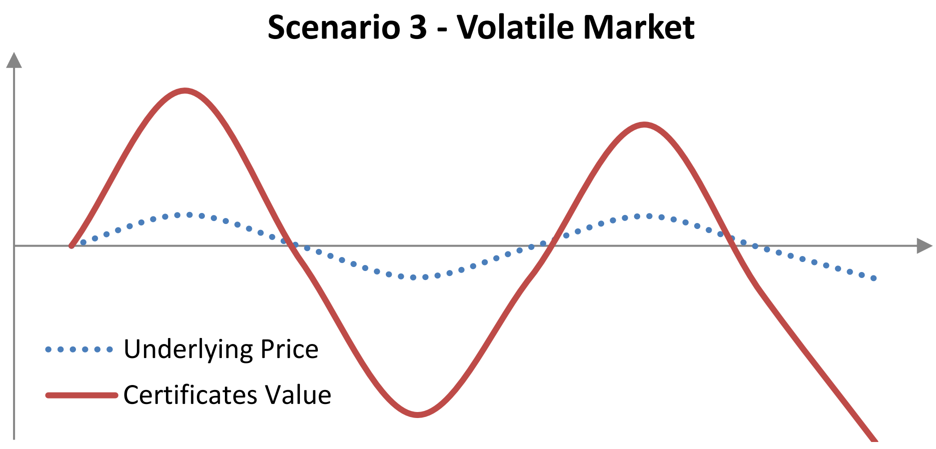
Illustration on how returns and losses can occur under different scenarios

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







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	0.99	1.09	1.20	1.32	1.45
Accumulated Return		10.00%	21.00%	33.10%	46.41%	61.05%

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	0.81	0.73	0.66	0.59	0.53
Accumulated Return		-10.00%	-19.00%	-27.10%	-34.39%	-40.95%

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	0.99	0.89	0.80	0.88	0.97
Accumulated Return		10.00%	-1.00%	-10.90%	-1.99%	7.81%

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 minimum 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 Strategy is reset using the minimum 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 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.

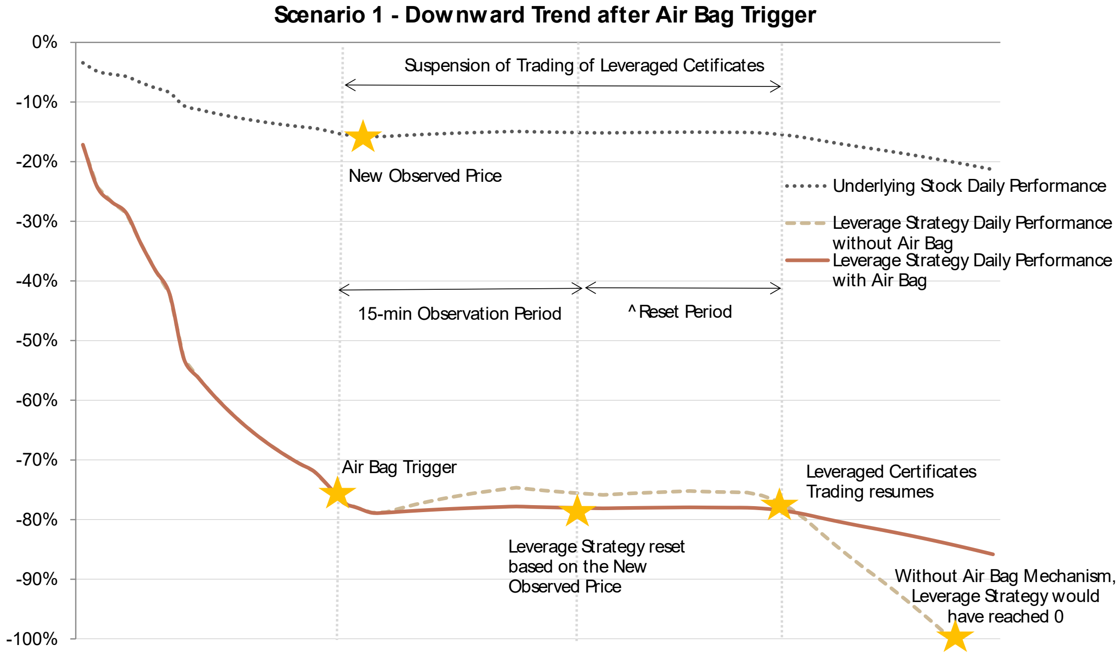
  For the avoidance of doubt, if the Air Bag Mechanism was triggered with more than 60 minutes of continuous trading before Market Close, trading of Certificates will resume the same trading day after the Reset Period has elapsed, subject to the SGX-ST's approval to resume trading. If the Air Bag Mechanism 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:

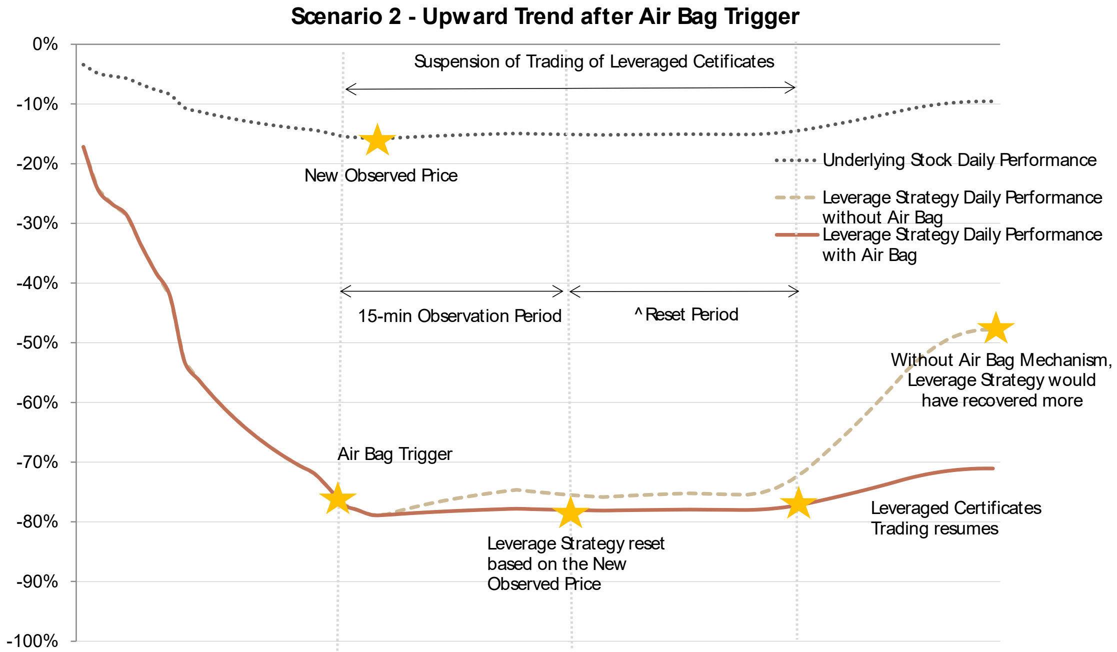
- Underlying Stock closing time with respect to the Observation Period including the closing auction session

- 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 Mechanism[9]



^ 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.

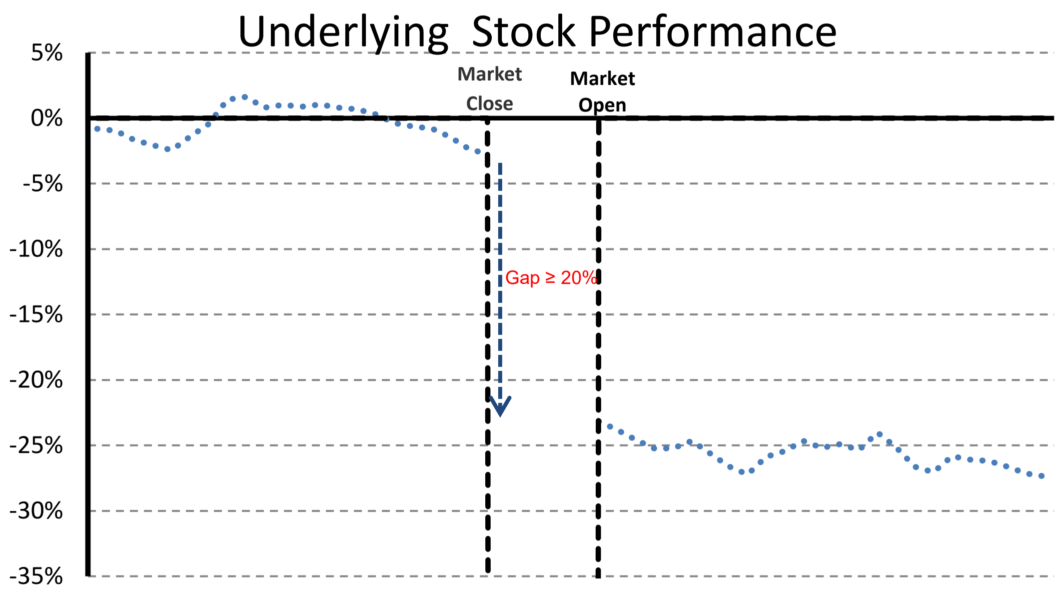
[9] The illustrative examples are not exhaustive.

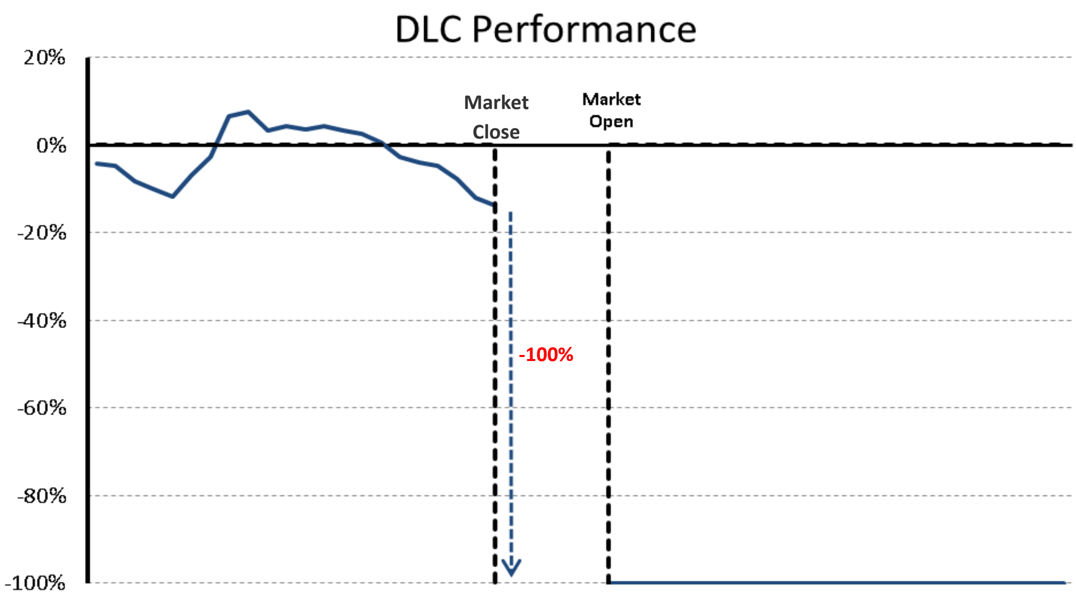
Scenarios where the investor may lose the entire value of the investment

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 fall of the Underlying Stock

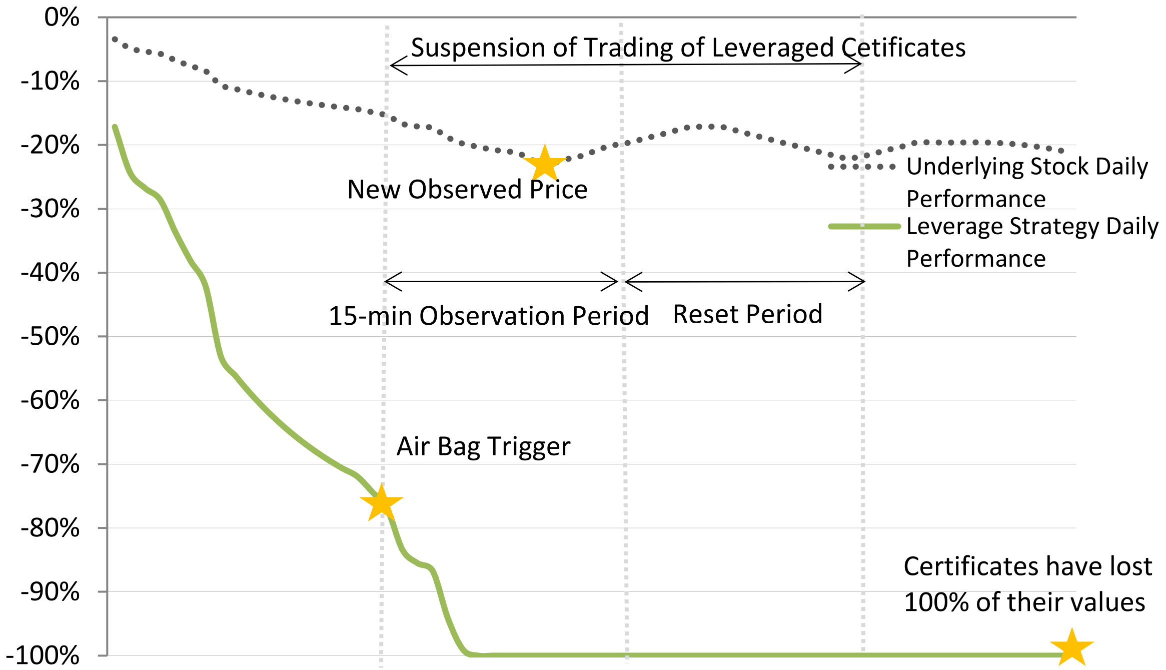
On any business day, the opening price of the Underlying Stock may be higher or lower than the closing price on the previous day. The difference between the previous closing price and the opening price of the Underlying Stock is termed a “gap”. If the opening price of the Underlying Stock is 20% or more below the previous day closing price, the Air Bag Mechanism would only be triggered when the market (in respect of which the Underlying Stock is listed) opens the following day (including pre-opening trading session and extended auction hours, if applicable), and the Certificates would lose their entire value in such event.





<u>*Scenario 2 – Sharp intraday fall of the Underlying Stock*</u>

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 falls 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 :

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

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 falls by 15% exclusively because of the dilutive effect of a corporate action.

Where:

$\mathrm{DivExc_t}$ 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):

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

$\mathrm{S_t}$ = \$51

$\mathrm{Div_t} = \$0$

$\mathrm{DivExc_t} = \$0$

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:

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

$\mathrm{S_{r(t)}}$	$\mathrm{S_{r(t)}} \times Rfactor_t$	$\mathrm{S_t}$	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	0.99	10%

In such case an Intraday Restrike Event would occur if the Underlying Stock price falls to $42.5, which is 15% below $50, the Underlying Stock Reference Price.

2. <u>Share Consolidation</u>

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

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

$\mathrm{S_t}$ = $202

$\mathrm{Div_t} = \$0$

$\mathrm{DivExc_t} = \$0$

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:

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

$S_{r(t)}$	$S_{r(t)} \times Rfactor_t$	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	0.945	5%

In such case an Intraday Restrike Event would occur if the Underlying Stock price falls to $170, which is 15% below $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 (i.e. subscription price of $40)

M = 0.5 (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	1.125	25%

In such case an Intraday Restrike Event would occur if the Underlying Stock price falls to $68, which is 15% below $80, the Underlying Stock Reference Price.

4. <u>Bonus Issues</u>

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

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

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

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:

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

$S_{r(t)}$	$S_{t(t)} \times Rfactor_t$	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	0.99	10%

In such case an Intraday Restrike Event would occur if the Underlying Stock price falls to $70.83, which is 15% below $83.33, the Underlying Stock Reference Price.

5. <u>Extraordinary Dividend</u>

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

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

S_t = \$84

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

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

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:

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

$\mathrm{S_{r(t)}}$	$\mathrm{S_{r(t)-}} \times Rfactor_t$	$\mathrm{S_t}$	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	1.125	25%

In such case an Intraday Restrike Event would occur if the Underlying Stock price falls to \$68, which is 15% below \$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 and/or the Company's web-site at http://www.sunnyoptical.com/en/default.html. The Issuer has not independently verified any of such information.*

Sunny Optical Technology (Group) Company Limited (the "**Company**") (SEHK stock code: 2382) is a leading company in integrated optical device manufacturers and an optical imaging system solution provider. The Company went public in 2007 and is listed on the Main Board of the Hong Kong Stock Exchange.

The Company has strong capabilities in R&D and manufacturing. With great reputation among its customers worldwide, the company has extended its market in forty countries and regions and has become the most important supplier to many Tier 1 customers domestically and internationally. The company has also gained significant global market share in compact module camera, lens sets for mobile devices and automotive lenses.

The Company has five production sites in Yangtze River Delta, Pearl River Delta, Bohai Bay and Central Plain Areas, respectively. There are also R&D center and local customer support offices in North America, Japan, South Korea, Singapore, and Taiwan.

The Company is one of a few enterprises inside China that have first-class design capability and mass production capacity for integrated products combining optics, mechanics electronics and software technology. Therefore, it has established its leadership in special coating technology in lens production, aspherical optics auto-focus and zooming, development in chalcogenide glass material, embedded software, 3D scanning and imaging, 3D ultra-precision vibration measuring, trace element analysis, ultra-high pixel camera modules design and manufacturing.

Supported by its high ranking in optoelectronic industry, the Company also promotes its "Famous Co-Star" strategy with commitment to achieve high tech, high value and high efficiency. Now it is focus on transformation and upgrading production, profit and operation models in order to advance its production base with advantages in value, system integration and brand name.

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 2022 and has been extracted and reproduced from an announcement by the Company dated 20 March 2023 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 2001 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 2022.

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 274 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 2022.

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 2022 OF SUNNY OPTICAL TECHNOLOGY (GROUP) COMPANY LIMITED AND ITS SUBSIDIARIES

SUNNY OPTICAL TECHNOLOGY (GROUP) COMPANY LIMITED
舜宇光學科技（集團）有限公司

(Incorporated in the Cayman Islands with limited liability)

(Stock Code: 2382.HK)

ANNUAL RESULTS ANNOUNCEMENT FOR THE YEAR ENDED 31 DECEMBER 2022

RESULT HIGHLIGHTS

Confronted with recurrent outbreaks of the coronavirus disease 2019 ("**COVID-19**") around the world, drastic changes in the global political and economic environment, increasing downward pressure on the global economy, rising costs of energy, logistics and raw materials, continuously weak consumer demand and increasingly fierce industry competition, yet the overall industrial competitive advantages of Sunny Optical Technology (Group) Company Limited (the "**Company**") and its subsidiaries (collectively referred to as the "**Group**") were further consolidated by maintaining its strategic focus, growing despite the challenges, expanding income sources and reducing costs.

For the year ended 31 December 2022, the Group's revenue was approximately Renminbi ("**RMB**")33,196.9 million, representing a decrease of approximately 11.5% as compared to that of last year.

For the year ended 31 December 2022, the Group's gross profit was approximately RMB6,605.0 million, representing a decrease of approximately 24.4% as compared to that of last year. The gross profit margin was approximately 19.9%, which was approximately 3.4 percentage points lower as compared to that of last year.

For the year ended 31 December 2022, profit for the year attributable to owners of the Company was approximately RMB2,407.8 million, representing a decrease of approximately 51.7% as compared to that of last year.

The board (the "**Board**") of directors (the "**Directors**", each a "**Director**") of the Company has proposed final dividends of Hong Kong Dollar ("**HKD**") 0.500 per share (equivalent to approximately RMB0.439 per share) for the year ended 31 December 2022.

FINANCIAL RESULTS

The Board is pleased to present the consolidated results of the Group for the year ended 31 December 2022, together with the comparative figures for the year of 2021 as follows:

Consolidated Statement of Profit or Loss and Other Comprehensive Income
For the year ended 31 December 2022

	NOTES	2022	2021
		RMB'000	*RMB'000*
Revenue	3,4	**33,196,937**	37,496,852
Cost of sales		**(26,591,940)**	(28,760,659)
Gross profit		**6,604,997**	8,736,193
Other income	5(A)	**697,707**	689,949
Other gains and losses	5(B)	**(193,460)**	99,065
Impairment losses under expected credit loss ("**ECL**") model, net of reversal		**(10,570)**	(5,182)
Selling and distribution expenses		**(352,785)**	(274,105)
Research and development expenditure		**(2,803,398)**	(2,642,196)
Administrative expenses		**(928,579)**	(757,592)
Share of results of associates		**(5,996)**	19,007
Finance costs	6	**(292,937)**	(230,252)
Profit before tax		**2,714,979**	5,634,887
Income tax expense	7	**(240,831)**	(578,972)
Profit for the year	8	**2,474,148**	5,055,915
Other comprehensive (expense) income			
Item that will not be reclassified to profit or loss:			
Fair value (loss) gain on investments in equity instruments at fair value through other comprehensive income ("**FVTOCI**"), net of income tax		**(20,787)**	2,808
Item that may be reclassified subsequently to profit or loss:			
Exchange differences arising on translation of foreign operations		**20,956**	(4,271)
Other comprehensive income (expense) for the year		**169**	(1,463)
Total comprehensive income for the year		**2,474,317**	5,054,452
Profit for the year attributable to:			
Owners of the Company		**2,407,796**	4,988,007
Non-controlling interests		**66,352**	67,908
		2,474,148	5,055,915
Total comprehensive income for the year attributable to:			
Owners of the Company		**2,409,478**	4,987,488
Non-controlling interests		**64,839**	66,964
		2,474,317	5,054,452
Earnings per share – Basic (RMB cents)	10	**220.26**	456.52
– Diluted (RMB cents)	10	**220.15**	455.93

Consolidated Statement of Financial Position
At 31 December 2022

	NOTES	31/12/2022	31/12/2021
		RMB'000	*RMB'000*
NON-CURRENT ASSETS			
Property, plant and equipment	11	**10,119,846**	8,303,229
Right-of-use assets		**612,062**	504,684
Investment properties		**35,502**	40,380
Intangible assets		**250,715**	306,926
Interests in associates		**200,645**	201,641
Deferred tax assets	12	**257,178**	255,651
Deposits paid for acquisition of property, plant and equipment		**489,947**	471,595
Equity instruments at FVTOCI	13	**168,160**	178,762
Financial assets at fair value through profit or loss ("**FVTPL**")	14	**19,518**	19,518
Time deposits	16	**200,000**	500,000
Goodwill		**2,119**	2,119
		12,355,692	10,784,505
CURRENT ASSETS			
Inventories	17	**4,720,913**	5,481,858
Trade and other receivables and prepayment	18	**7,205,110**	7,448,385
Receivables at FVTOCI		**548,956**	–
Tax recoverable		**28,120**	–
Derivative financial assets	15	**29,681**	27,237
Financial assets at FVTPL	14	**10,086,415**	8,314,143
Amount due from a related party		**8,256**	327
Time deposits	16	**500,000**	–
Pledged bank deposits	16	**9,775**	18,292
Short term fixed deposits	16	**475,176**	1,093,914
Cash and cash equivalents	16	**7,033,194**	5,605,179
		30,645,596	27,989,335
CURRENT LIABILITIES			
Trade and other payables	19	**12,917,286**	9,868,687
Amounts due to related parties		**9,992**	6,934
Derivative financial liabilities	15	**17,655**	40,446
Contract liabilities		**166,096**	178,101
Tax payable		**–**	188,022
Bank borrowings – current portion	20	**1,989,981**	1,538,897
Lease liabilities – current portion		**51,378**	46,271
Deferred income – current portion		**6,446**	6,099
Bonds payable	21	**4,178,082**	–
		19,336,916	11,873,457
NET CURRENT ASSETS		**11,308,680**	16,115,878
TOTAL ASSETS LESS CURRENT LIABILITIES		**23,664,372**	26,900,383

	NOTES	31/12/2022	31/12/2021
		RMB'000	*RMB'000*
NON-CURRENT LIABILITIES			
Deferred tax liabilities	12	**850,321**	1,015,890
Derivative financial liabilities	15	**–**	5,057
Long term payables	19	**122,777**	172,044
Bank borrowings – non-current portion	20	**30,000**	700,000
Lease liabilities – non-current portion		**187,938**	107,999
Deferred income – non-current portion		**290,950**	188,504
Bonds payable	21	**–**	3,815,623
		1,481,986	6,005,117
NET ASSETS		**22,182,386**	20,895,266
CAPITAL AND RESERVES			
Share capital	22	**105,163**	105,163
Reserves		**21,733,224**	20,482,909
Equity attributable to owners of the Company		**21,838,387**	20,588,072
Non-controlling interests		**343,999**	307,194
TOTAL EQUITY		**22,182,386**	20,895,266

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
For the year ended 31 December 2022

1. GENERAL INFORMATION

The Company was incorporated in the Cayman Islands on 21 September 2006 as an exempted company under the Companies Act Chapter 22 (Law 3 of 1961 as consolidated and revised, formerly known as Companies Law) of the Cayman Islands and its shares have been listed on the Stock Exchange of Hong Kong Limited (the "**Hong Kong Stock Exchange**") with effect from 15 June 2007. Its ultimate holding and parent company is Sun Xu Limited, a private limited company incorporated in the British Virgin Islands. Its ultimate controlling party is Mr. Wang Wenjian, also a non-executive Director of the Company. The addresses of the registered office and principal place of business of the Company are disclosed in the Corporate Information section of the annual report.

The Company is an investment holding company. The Group is principally engaged in the business of designing, researching and developing, manufacturing and selling of optical and optical related products and scientific instruments.

The consolidated financial statements are presented in RMB, which is also the functional currency of the Company.

2. APPLICATION OF AMENDMENTS TO HONG KONG FINANCIAL REPORTING STANDARDS ("HKFRSs")

Amendments to HKFRSs that are mandatorily effective for the current year

In the current year, the Group has applied the following amendments to HKFRSs issued by the Hong Kong Institute of Certified Public Accountants ("**HKICPA**") for the first time, which are mandatorily effective for the Group's annual period beginning on 1 January 2022 for the preparation of the consolidated financial statements:

Amendments to HKFRS 3	Reference to the Conceptual Framework
Amendment to HKFRS 16	COVID-19-Related Rent Concessions beyond 30 June 2021
Amendments to Hong Kong Accounting Standard ("**HKAS**") 16	Property, Plant and Equipment – Proceeds before Intended Use
Amendments to HKAS 37	Onerous Contracts – Cost of Fulfilling a Contract
Amendments to HKFRSs	Annual Improvements to HKFRSs 2018-2020

The application of the amendments to HKFRSs in the current year has had no material impact on the Group's financial positions and performance for the current and prior years and/or on the disclosures set out in these consolidated financial statements.

New and amendments to HKFRSs in issue but not yet effective

The Group has not early applied the following new and amendments to HKFRSs that have been issued but are not yet effective:

HKFRS 17	*Insurance Contracts*[1]
Amendments to HKFRS 10 and HKAS 28	*Sale or Contribution of Assets between an Investor and its Associate or Joint Venture*[2]
Amendments to HKFRS 16	*Lease Liability in a Sale and Leaseback*[3]
Amendments to HKAS 1	*Classification of Liabilities as Current or Non-current and related amendments to Hong Kong Interpretation 5 (2020)*[3]
Amendments to HKAS 1	*Non-current Liabilities with Covenants*[3]
Amendments to HKAS 1 and HKFRS Practice Statement 2	*Disclosure of Accounting Policies*[1]
Amendments to HKAS 8	*Definition of Accounting Estimates*[1]
Amendments to HKAS 12	*Deferred Tax related to Assets and Liabilities arising from a Single Transaction*[1]

1 Effective for annual periods beginning on or after 1 January 2023
2 Effective for annual periods beginning on or after a date to be determined
3 Effective for annual periods beginning on or after 1 January 2024

Except for the new and amendments to HKFRSs mentioned below, the Directors of the Company anticipate that the application of all other new and amendments to HKFRSs will have no material impact on the consolidated financial statements in the foreseeable future.

Amendments to HKAS 12 Deferred Tax related to Assets and Liabilities arising from a Single Transaction

The amendments narrow the scope of the recognition exemption of deferred tax liabilities and deferred tax assets in paragraphs 15 and 24 of HKAS 12 *Income Taxes* so that it no longer applies to transactions that, on initial recognition, give rise to equal taxable and deductible temporary differences.

For leasing transactions in which the tax deductions are attributable to the lease liabilities, the Group applies HKAS 12 requirements to the relevant assets and liabilities separately. Temporary differences on initial recognition of the relevant assets and liabilities are not recognised due to application of the initial recognition exemption.

Upon the application of the amendments, the Group will recognise a deferred tax asset (to the extent that it is probable that taxable profit will be available against which the deductible temporary difference can be utilised) and a deferred tax liability for all deductible and taxable temporary differences associated with the right-of-use assets and the lease liabilities.

The amendments are effective for the Group's annual reporting period beginning on 1 January 2023. The cumulative effect of initially applying the amendments will be recognised as an adjustment to the opening balance of retained earnings at the beginning of the earliest comparative period presented.

3. REVENUE

(i) Disaggregation of revenue from contracts with customers

	For the year ended 31 December 2022		
	Optical Components	Optoelectronic Products	Optical Instruments
	RMB'000	*RMB'000*	*RMB'000*
Types of goods			
Sales of optical and related components	**9,467,578**	**23,325,866**	**403,493**
Total	**9,467,578**	**23,325,866**	**403,493**
Geographical markets			
The People's Republic of China ("**PRC**" or "**China**")	**4,745,901**	**17,306,501**	**247,661**
Asia (except China)	**2,658,514**	**5,657,424**	**48,361**
Europe	**1,237,555**	**6,450**	**45,730**
North America	**780,872**	**98,904**	**59,510**
Others	**44,736**	**256,587**	**2,231**
Total	**9,467,578**	**23,325,866**	**403,493**
Timing of revenue recognition			
At a point in time	**9,467,578**	**23,325,866**	**403,493**

	For the year ended 31 December 2021		
	Optical Components	Optoelectronic Products	Optical Instruments
	RMB'000	*RMB'000*	*RMB'000*
Types of goods			
Sales of optical and related components	8,776,030	28,333,519	387,303
Total	8,776,030	28,333,519	387,303
Geographical markets			
China	4,944,126	23,666,093	270,171
Asia (except China)	2,078,974	4,495,319	38,204
Europe	1,046,409	3,459	29,099
North America	678,102	113,843	47,742
Others	28,419	54,805	2,087
Total	8,776,030	28,333,519	387,303
Timing of revenue recognition			
At a point in time	8,776,030	28,333,519	387,303

(ii) Performance obligations for contracts with customers

The Group sells optical and optical-related products directly to customers. For sales of optical components, optoelectronic products and optical instruments, revenue is recognised when control of the goods has transferred, being when customer acceptance has been obtained, which is the point of time when the customer has the ability to direct the use of these products and obtain substantially all of the remaining benefits of these products. The credit term granted to customers is average 90 days. The transaction price received by the Group is recognised as a contract liability for sales in which revenue has yet been recognised.

(iii) Transaction price allocated to the remaining performance obligation for contracts with customers

The Group's contracts have an original expected duration of one year or less, as permitted under HKFRS 15, the transaction price allocated to the remaining performance obligations is not disclosed.

4. OPERATING SEGMENTS

Information reported to the Board of Directors, being the chief operating decision maker, for the purpose of resource allocation and assessment of segment performance focuses on types of goods delivered because the Board of Directors has chosen to organise the Group among different major products. No operating segments identified by chief operating decision maker have been aggregated in arriving at the reportable segments of the Group.

Specifically, the Group's operating segments under HKFRS 8 *Operating Segments* are as follows:

1. Optical Components
2. Optoelectronic Products
3. Optical Instruments

Segment revenues and results

The following is an analysis of the Group's revenue and results by operating and reportable segments.

For the year ended 31 December 2022

	Optical Components	Optoelectronic Products	Optical Instruments	Segment Total	Eliminations	Total
	RMB'000	*RMB'000*	*RMB'000*	*RMB'000*	*RMB'000*	*RMB'000*
REVENUE						
External sales	9,467,578	23,325,866	403,493	33,196,937	–	33,196,937
Inter-segment sales	2,125,532	20,071	172,406	2,318,009	(2,318,009)	–
Total	11,593,110	23,345,937	575,899	35,514,946	(2,318,009)	33,196,937
Segment profit	2,120,162	970,264	106,788	3,197,214	–	3,197,214
Share of results of associates						(5,996)
Unallocated other income, other gains and losses						(148,853)
Unallocated administrative expenses and finance costs						(327,386)
Profit before tax						2,714,979

For the year ended 31 December 2021

	Optical Components	Optoelectronic Products	Optical Instruments	Segment Total	Eliminations	Total
	RMB'000	*RMB'000*	*RMB'000*	*RMB'000*	*RMB'000*	*RMB'000*
REVENUE						
External sales	8,776,030	28,333,519	387,303	37,496,852	–	37,496,852
Inter-segment sales	2,927,700	12,519	90,889	3,031,108	(3,031,108)	–
Total	11,703,730	28,346,038	478,192	40,527,960	(3,031,108)	37,496,852
Segment profit	2,674,903	3,027,049	99,604	5,801,556	–	5,801,556
Share of results of associates						19,007
Unallocated other income, other gains and losses						74,959
Unallocated administrative expenses and finance costs						(260,635)
Profit before tax						5,634,887

Inter-segment sales are charged at prevailing market rates.

The accounting policies of the operating segments are the same as the Group's accounting policies. Segment profit represents the profit earned by each segment without allocation of gains and losses, income and expenses of unallocated subsidiaries and central administration costs including Directors' emoluments, share of results of associates and finance costs. There were asymmetrical allocations to operating segments because the Group allocates interest income, government grants, depreciation and amortisation and gain or loss on disposal of property, plant and equipment to each segment without allocating the related cash and cash equivalents, deferred income, property, plant and equipment and intangible assets to those segments. This is the measure reported to the Board of Directors for the purposes of resource allocation and performance assessment.

Segment assets and liabilities

The following is an analysis of the Group's assets and liabilities by operating and reportable segments:

<u>**As at 31 December 2022**</u>

	Optical Components	**Optoelectronic Products**	**Optical Instruments**	**Total**
	RMB'000	***RMB'000***	***RMB'000***	***RMB'000***
Assets				
Trade receivables	**2,086,386**	**4,197,913**	**50,612**	**6,334,911**
Bill receivables	**359,503**	**178,872**	**10,581**	**548,956**
Inventories	**1,861,542**	**2,786,978**	**72,393**	**4,720,913**
Total segment assets	**4,307,431**	**7,163,763**	**133,586**	**11,604,780**
Unallocated assets				**31,396,508**
Consolidated assets				**43,001,288**
Liabilities				
Trade payables and accrued purchases	**1,938,163**	**3,340,195**	**107,145**	**5,385,503**
Note payables	**946,672**	**3,380,393**	**39,899**	**4,366,964**
Total segment liabilities	**2,884,835**	**6,720,588**	**147,044**	**9,752,467**
Unallocated liabilities				**11,066,435**
Consolidated liabilities				**20,818,902**

<u>As at 31 December 2021</u>

	Optical Components	Optoelectronic Products	Optical Instruments	Total
	RMB'000	*RMB'000*	*RMB'000*	*RMB'000*
Assets				
Trade receivables	1,878,514	3,690,969	65,169	5,634,652
Bill receivables	616,115	387,528	5,993	1,009,636
Inventories	1,854,941	3,532,694	94,223	5,481,858
Total segment assets	4,349,570	7,611,191	165,385	12,126,146
Unallocated assets				26,647,694
Consolidated assets				38,773,840
Liabilities				
Trade payables and accrued purchases	2,085,218	3,741,727	104,278	5,931,223
Note payables	530,292	1,267,054	23,938	1,821,284
Total segment liabilities	2,615,510	5,008,781	128,216	7,752,507
Unallocated liabilities				10,126,067
Consolidated liabilities				17,878,574

For the purposes of monitoring segment performance and allocating resources between segments:

- Trade receivables, bill receivables and inventories are allocated to the respective operating and reportable segments. All other assets are unallocated assets, which are not regularly reported to the Board of Directors.
- Trade payables and accrued purchases and note payables are allocated to the respective operating and reportable segments. All other liabilities are unallocated liabilities, which are not regularly reported to the Board of Directors.

Other segment information

For the year ended 31 December 2022

	Optical Components	**Optoelectronic Products**	**Optical Instruments**	**Unallocated**	**Consolidated total**
	RMB'000	***RMB'000***	***RMB'000***	***RMB'000***	***RMB'000***
Amounts included in the measure of segment profit or loss:					
Depreciation and amortisation	**1,188,146**	**732,673**	**18,146**	**1,614**	**1,940,579**
Impairment losses on trade receivables (reversed) recognised in profit or loss	**(1,945)**	**7,540**	**(1,704)**	**–**	**3,891**
Impairment losses on amount due from a related party recognised in profit or loss	**–**	**6,679**	**–**	**–**	**6,679**
Loss (gain) on disposal of property, plant and equipment	**10,796**	**(2,956)**	**118**	**24**	**7,982**
Share award scheme expense	**118,940**	**103,579**	**14,361**	**6,519**	**243,399**
Interest income from bank and financial instruments	**(13,598)**	**(372,136)**	**(6,251)**	**(4,600)**	**(396,585)**
Allowance for (reversal of) inventories	**74,123**	**(183,101)**	**(488)**	**–**	**(109,466)**
Amounts regularly provided to the chief operating decision maker but not included in the measure of segment assets:					
Addition to property, plant and equipment	**3,051,383**	**571,553**	**63,401**	**321**	**3,686,658**

For the year ended 31 December 2021

	Optical Components	Optoelectronic Products	Optical Instruments	Unallocated	Consolidated total
	RMB'000	*RMB'000*	*RMB'000*	*RMB'000*	*RMB'000*
Amounts included in the measure of segment profit or loss:					
Depreciation and amortisation	957,606	781,873	18,283	1,994	1,759,756
Impairment losses on trade receivables recognised (reversed) in profit or loss	1,778	(2,881)	6,285	–	5,182
(Gain) loss on disposal of property, plant and equipment	(6,822)	8,178	(6)	–	1,350
Share award scheme expense	94,336	73,018	15,450	5,474	188,278
Interest income from bank and financial instruments	(24,096)	(365,327)	(7,596)	(7,131)	(404,150)
(Reversal of) allowance for inventories	(27,710)	163,887	(3,803)	–	132,374
Amounts regularly provided to the chief operating decision maker but not included in the measure of segment assets:					
Addition to property, plant and equipment	1,596,179	896,012	6,099	162	2,498,452

Revenue from major products

The following is an analysis of the Group's revenue from its major products:

	2022	2021
	RMB'000	*RMB'000*
Handset related products	**23,277,387**	29,597,845
Vehicle related products	**4,107,668**	2,960,628
Augmented reality ("**AR**")/virtual reality ("**VR**") related products	**2,061,625**	1,344,637
Digital camera related products	**852,119**	1,004,258
Other lens sets	**494,500**	490,446
Optical instruments	**334,168**	273,734
Other spherical lens and plane products	**254,021**	142,255
Other products	**1,815,449**	1,683,049
	33,196,937	37,496,852

Geographical information

The Group's operations are mainly located in China, Vietnam, Korea, Japan, India and the United States.

The Group's revenue from continuing operations from external customers is presented based on the locations of goods physically delivered and information about the Group's non-current assets by the geographical location of the assets are detailed below:

	Revenue from external customers		**Non-current assets (Note)**	
	2022	2021	**31/12/2022**	31/12/2021
	RMB'000	*RMB'000*	*RMB'000*	*RMB'000*
China	**22,300,063**	28,880,390	**10,817,949**	8,969,717
Asia (except China)	**8,364,299**	6,612,497	**689,697**	656,476
Europe	**1,289,735**	1,078,967	**79**	128
North America	**939,286**	839,687	**347**	493
Others	**303,554**	85,311	**–**	–
	33,196,937	37,496,852	**11,508,072**	9,626,814

Note: Non-current assets excluded interests in associates, deferred tax assets, financial assets at FVTPL, equity instruments at FVTOCI, time deposits and goodwill.

Information about major customers

Revenues from the following customers contributed over 10% of the total sales of the Group:

	2022	2021
	RMB'000	*RMB'000*
Customer A, revenue mainly from optoelectronic and related products	**5,510,485**	5,811,013
Customer B, revenue mainly from optoelectronic and related products	**4,308,243**	7,664,838
Customer C, revenue mainly from optoelectronic and related products	**3,381,544**	N/A*
Customer D, revenue mainly from optoelectronic and related products	**N/A***	4,946,670

* The corresponding revenue did not contribute over 10% of the total revenue of the Group.

5(A). OTHER INCOME

	2022	2021
	RMB'000	*RMB'000*
Government grants	**166,555**	212,314
Interest income from time deposits, short term fixed deposits, pledged bank deposits and bank balances	**198,203**	97,112
Interest income from debt instruments	**895**	4,400
Investment income from unlisted financial products at FVTPL	**197,487**	302,638
Interest income from small loan services	**6,308**	7,833
Income from sales of moulds	**15,124**	16,467
Income from sales of scrap materials	**57,632**	30,753
Others	**55,503**	18,432
Total	**697,707**	689,949

5(B). OTHER GAINS AND LOSSES

	2022	2021
	RMB'000	*RMB'000*
Loss on disposal of property, plant and equipment	**(7,982)**	(1,350)
Gain on disposal of a subsidiary	**55,200**	–
Net foreign exchange (loss) gain	**(241,983)**	33,950
Gain on changes in fair value of derivative financial instruments	**30,292**	67,097
Loss on changes in fair value of equity investments at FVTPL	**–**	(8,151)
(Loss) gain on changes in fair value of debt instruments and fund investments at FVTPL	**(28,731)**	6,382
Others	**(256)**	1,137
Total	**(193,460)**	99,065

6. FINANCE COSTS

	2022	2021
	RMB'000	*RMB'000*
Interests on bank borrowings	**114,651**	62,490
Interests on bonds payable	**161,768**	153,970
Interests on long term payables related to intangible assets	**5,226**	6,203
Interests on lease liabilities	**11,292**	7,589
Total	**292,937**	230,252

7. INCOME TAX EXPENSE

	2022	2021
	RMB'000	*RMB'000*
Current tax:		
PRC Enterprise Income Tax	**264,305**	447,809
Withholding tax expense	**61,247**	46,792
Other jurisdictions	**13,422**	9,717
	338,974	504,318
Under (over) provision in prior years:		
PRC Enterprises Income Tax	**64,959**	(3,612)
Deferred tax (Note 12):		
Current year	**(163,102)**	78,266
	240,831	578,972

Under the Law of the PRC Enterprise Income Tax (the "**EIT Law**") and Implementation Regulation of the EIT Law, the tax rate of the PRC subsidiaries is 25% from 1 January 2008 onwards, except as described below:

(i) Ningbo Sunny Opotech Co., Ltd. ("**Sunny Opotech**"), Ningbo Sunny Automotive Optech Co., Ltd. ("**Sunny Automotive Optech**"), Sunny Optics (Zhongshan) Co., Ltd. ("**Sunny Zhongshan Optics**"), Ningbo Sunny Instruments Co., Ltd. ("**Sunny Instruments**"), Sunny Optical (Zhejiang) Research Institute Co., Ltd. ("**Sunny Research Institute**") and Zhejiang Sunny SmartLead Technologies Co., Ltd. ("**Sunny SmartLead**"), domestic limited liability companies, were approved as Hi-Tech Enterprises and entitled to a preferential tax rate of 15% with the expiry date on 31 December 2022.

(ii) Zhejiang Sunny Optics Co., Ltd. ("**Sunny Zhejiang Optics**") and Xinyang Sunny Optics Co., Ltd. ("**Sunny Xinyang Optics**"), domestic limited liability companies, were approved as Hi-Tech Enterprises and entitled to a preferential tax rate of 15% with the expiry date on 31 December 2023.

(iii) Ningbo Sunny Infrared Technologies Co., Ltd. ("**Sunny Infrared Optics**"), Zhejiang Sunny Optical Intelligence Technology Co., Ltd. ("**Sunny Optical Intelligence**"), and Yuyao Sunny Optical Intelligence Technology Co., Ltd. ("**Sunny Optical Intelligence (Yuyao)**"), domestic limited liability companies, were approved as Hi-Tech Enterprises and entitled to a preferential tax rate of 15% with the expiry date on 31 December 2024.

Taxation arising in other jurisdictions is calculated at the rates prevailing in the relevant jurisdictions.

The income tax charge for the year can be reconciled to the profit before tax per the consolidated statement of profit or loss and other comprehensive income as follows:

	2022	2021
	RMB'000	*RMB'000*
Profit before tax	**2,714,979**	5,634,887
Tax at the PRC EIT tax rate of 25%	**678,745**	1,408,722
Tax effect of share of results of associates	**1,499**	(4,752)
Tax effect of expenses not deductible for tax purpose	**5,520**	8,949
Tax effect of allowance granted under share award scheme in the PRC	**25,027**	(21,859)
Tax effect of preferential tax rates for certain subsidiaries (Note a)	**(137,255)**	(337,501)
Tax effect of additional tax deduction of research and development expenses (Note b)	**(623,120)**	(573,148)
Tax effect of additional tax deduction of expenditures for equipment and appliances purchasing (Note c)	**(425,524)**	–
Tax effect of tax losses not recognised	**657,538**	64,542
Tax effect of deductible temporary differences not recognised	**(1,701)**	(3,745)
Utilisation of tax losses not previously recognised	**(7,629)**	(13,431)
Deferred tax provided for withholding tax on income derived in the PRC	**24,321**	65,436
Withholding tax on interest derived in the PRC	**7,747**	–
Tax effect of different tax rates of subsidiaries operating in other jurisdictions	**(29,296)**	(10,629)
Under (over) provision in prior years	**64,959**	(3,612)
Income tax expense for the year	**240,831**	578,972

Details of deferred taxation and unrecognised temporary difference are disclosed in Note 12.

Notes:

(a) For the PRC subsidiaries which were approved as Hi-Tech Enterprises, they are entitled to a preferential enterprise tax rate of 15%.

(b) In August 2018, Caishui [2018] No. 99 "Notice on Increasing the Pre-tax Deduction Ratio of Research and Development Expenses" was released, according to which certain PRC subsidiaries are entitled to an additional 75% tax deduction on eligible research and development expenses incurred by them for both years ended 31 December 2021 and 2022.

In March 2021, the Ministry of Finance and the State Administration of Taxation released No. 13 announcement of 2021 named "Announcement on Further Improving the Policy on Pre-tax Deduction of Research and Development Expenses", according to which certain PRC subsidiaries engaged in manufacturing industry are entitled to an additional 100% tax deduction on eligible research and development expenses incurred by them for both years ended 31 December 2021 and 2022.

(c) In September 2022, the Ministry of Finance, the State Administration of Taxation and the Ministry of Science and Technology released No. 28 announcement of 2022 named "Announcement on Increasing Pre-tax Deduction for Supporting Sci-tech Innovation", according to which certain PRC subsidiaries are entitled to an additional 100% tax deduction on eligible expenditures for equipment and appliances purchasing incurred between 1 October 2022 and 31 December 2022.

8. PROFIT FOR THE YEAR

Profit for the year has been arrived at after charging:

	2022	2021
	RMB'000	*RMB'000*
Directors' emoluments	**15,799**	16,159
Other staff's salaries and allowances	**2,985,820**	2,518,548
Other staff's discretionary bonuses	**232,232**	217,220
Other staff's contribution to retirement benefit scheme	**395,995**	319,894
Other staff's share award scheme expense	**234,617**	178,746
	3,864,463	3,250,567
Cost of raw material inventories recognised as an expense	**21,451,988**	23,807,323
Auditor's remuneration	**4,709**	4,666
Depreciation of property, plant and equipment	**1,813,899**	1,638,067
Depreciation of investment properties	**4,878**	4,633
Depreciation of right-of-use assets	**65,591**	60,845
Amortisation of intangible assets	**56,211**	56,211
(Reversals of) allowance for inventories (included in cost of sales)	**(109,466)**	132,374

9. DIVIDENDS

	2022	2021
	RMB'000	*RMB'000*
Dividends for ordinary shareholders of the Company recognised as distribution during the year: 2021 final dividends – HKD111.80 cents (2021: 2020 final dividends – HKD105.70 cents) per share	**1,047,715**	974,003

Subsequent to the end of the reporting period, a final dividend in respect of the year ended 31 December 2022 of HKD50.00 cents per share, equivalent to approximately RMB43.90 cents per share, amounting to a total of approximately HKD548,425,000 (2021: HKD111.80 cents per share, equivalent to approximately RMB95.52 cents per share, amounting to a total of approximately HKD1,226,278,000) has been proposed by the Directors of the Company and is subject to approval by the shareholders in the forthcoming annual general meeting (the "**AGM**"). The final dividends proposed after the end of reporting period has not been recognised as a liability at the end of reporting period.

10. EARNINGS PER SHARE

The calculation of the basic and diluted earnings per share attributable to owners of the Company is based on the following data:

	2022	2021
	RMB'000	*RMB'000*
Earnings		
Earnings for the purpose of basic and diluted earnings per share	**2,407,796**	4,988,007

	2022	2021
	'000	*'000*
Number of shares		
Weighted average number of ordinary shares for the purpose of basic earnings per share (Note)	**1,093,141**	1,092,612
Effect of dilutive potential ordinary shares:		
Restricted shares	**567**	1,416
Weighted average number of ordinary shares for the purpose of diluted earnings per share	**1,093,708**	1,094,028

Note: The weighted average number of ordinary shares has been calculated taking into account the shares held by the Group under share award scheme.

11. PROPERTY, PLANT AND EQUIPMENT

	Owned properties	Machinery and production equipment	Motor vehicles	Fixtures and office equipment	Construction in progress	Total
	RMB'000	*RMB'000*	*RMB'000*	*RMB'000*	*RMB'000*	*RMB'000*
COST						
At 1 January 2021	1,300,460	8,948,438	19,535	1,242,658	853,007	12,364,098
Additions	28,860	991,314	801	503,859	973,618	2,498,452
Transfer	405,942	391,986	–	101,482	(899,410)	–
Transferred to investment properties	(8,418)	–	–	–	–	(8,418)
Disposals	(1,635)	(284,543)	(1,816)	(23,353)	–	(311,347)
Exchange realignment	(1,166)	(8,250)	(20)	(2,607)	–	(12,043)
At 31 December 2021	1,724,043	10,038,945	18,500	1,822,039	927,215	14,530,742
Additions	6,678	2,701,395	1,309	607,844	369,432	3,686,658
Derecognised on disposal of a subsidiary	–	(2,745)	–	(10,930)	–	(13,675)
Transfer	191,360	376,335	–	22,563	(590,258)	–
Disposals	–	(360,257)	(2,100)	(33,000)	–	(395,357)
Exchange realignment	6,922	2,600	110	5,319	2,640	17,591
At 31 December 2022	1,929,003	12,756,273	17,819	2,413,835	709,029	17,825,959
ACCUMULATED DEPRECIATION AND IMPAIRMENT						
At 1 January 2021	192,696	4,119,701	16,050	522,458	–	4,850,905
Charge for the year	67,508	1,289,851	1,474	279,234	–	1,638,067
Transferred to investment properties	(4,312)	–	–	–	–	(4,312)
Eliminated on disposals	(1,573)	(227,849)	(1,641)	(20,366)	–	(251,429)
Exchange realignment	(15)	(3,780)	(18)	(1,905)	–	(5,718)
At 31 December 2021	254,304	5,177,923	15,865	779,421	–	6,227,513
Charge for the year	75,440	1,471,631	763	266,065	–	1,813,899
Derecognised on disposal of a subsidiary	–	(2,626)	–	(7,267)	–	(9,893)
Eliminated on disposals	–	(301,651)	(1,787)	(23,019)	–	(326,457)
Exchange realignment	159	616	80	196	–	1,051
At 31 December 2022	329,903	6,345,893	14,921	1,015,396	–	7,706,113
CARRYING VALUES						
At 31 December 2022	1,599,100	6,410,380	2,898	1,398,439	709,029	10,119,846
At 31 December 2021	1,469,739	4,861,022	2,635	1,042,618	927,215	8,303,229

The above items of property, plant and equipment, except for construction in progress, are depreciated on a straight-line basis over their estimated useful lives as follows:

Owned properties	20 years
Machinery and production equipment	3 to 10 years
Motor vehicles	4 to 5 years
Fixtures and office equipment	3 to 10 years

As at 31 December 2022, the Group has obtained the ownership certificates for all buildings and no buildings of the Group were pledged to secure bank borrowings granted.

The Directors of the Company considered no impairment loss on property, plant and equipment for both years ended 31 December 2022 and 2021.

12. DEFERRED TAXATION

For the purpose of presentation in the consolidated statement of financial position, certain deferred tax assets and liabilities have been offset. The following is the analysis of the deferred tax balances for financial reporting purposes:

	31/12/2022	31/12/2021
	RMB'000	*RMB'000*
Deferred tax assets	**(257,178)**	(255,651)
Deferred tax liabilities	**850,321**	1,015,890
	593,143	760,239

The following are the major deferred tax liabilities (assets) recognised and movements thereon during the current and prior years:

	Withholding tax on undistributed profit from the PRC	**Allowance for inventories and ECL provision**	**Deferred subsidy income**	**Accelerated depreciation**	**Accrued bonus**	**Tax losses**	**Others**	**Total**
	RMB'000	*RMB'000*	*RMB'000*	*RMB'000*	*RMB'000*	*RMB'000*	*RMB'000*	*RMB'000*
At 1 January 2021	145,737	(91,356)	(8,321)	712,126	(97,519)	–	20,810	681,477
Charge (Credit) to profit or loss (Note 7)	11,634	(20,576)	(18,358)	97,876	1,778	–	5,912	78,266
Charge to other comprehensive income	–	–	–	–	–	–	496	496
At 31 December 2021	157,371	(111,932)	(26,679)	810,002	(95,741)	–	27,218	760,239
(Credit) Charge to profit or loss (Note 7)	(29,179)	17,694	(16,553)	106,432	(2,757)	(232,649)	(6,090)	(163,102)
Credit to other comprehensive income	–	–	–	–	–	–	(7,707)	(7,707)
Derecognised on disposal of a subsidiary	–	1,399	2,314	–	–	–	–	3,713
At 31 December 2022	**128,192**	**(92,839)**	**(40,918)**	**916,434**	**(98,498)**	**(232,649)**	**13,421**	**593,143**

As at 31 December 2022, the deferred tax liabilities amounting to RMB128,192,000 (31 December 2021: RMB157,371,000) was provided in respect of the temporary differences attributed to the PRC undistributed profits to the extent exceeding the investment plan which the Directors of the Company decided to distribute. The Group has determined that the remaining portion of the profits derived from those PRC operating subsidiaries will be retained by those subsidiaries and not distributed in the foreseeable future, since the Group is in a position to control the timing of the reversal of the temporary differences, and it is probable that such differences will not reverse nor be subject to withholding tax in the foreseeable future.

At the end of the reporting period, the Group had unused tax losses of approximately RMB4,766,689,000 (2021: RMB682,828,000) available for offset against future profits. A deferred tax asset has been recognised in respect of approximately RMB1,550,992,000 (2021: nil) of such losses. No deferred tax asset has been recognised in respect of the remaining tax losses of RMB3,215,697,000 (2021: RMB682,828,000) either due to the unpredictability of future profit streams or because it is not probable that the unused tax losses will be available for utilisation before their expiry. Among the unrecognised tax losses, the tax losses arising from the PRC non high-tech subsidiaries of RMB335,983,000 (2021: RMB144,435,000) can be carried forward for maximum of five years and will expire during 2023 to 2027 (2021: 2022 to 2026) while the tax losses arising from the PRC high-tech subsidiaries of RMB2,486,801,000 (2021: RMB473,504,000) can be carried forward for maximum of ten years and will expire during 2023 to 2032 (2021: 2022 to 2031) according to Caishui [2018] No.76. which has extended the expiration period from five years to ten years. Other tax losses may be carried forward indefinitely.

By reference to financial budgets, the Directors of the Company believe that there will be sufficient future taxable profits or taxable temporary differences available in the future for the realisation of deferred tax assets which have been recognised in respect of tax losses and other temporary differences.

13. EQUITY INSTRUMENTS AT FAIR VALUE THROUGH OTHER COMPREHENSIVE INCOME

	31/12/2022	31/12/2021
	RMB'000	*RMB'000*
Unlisted equity investments	**168,160**	178,762

The unlisted equity investments represent the Group's equity interests in private entities. The Directors of the Company have elected to designate these investments in equity instruments as at FVTOCI as they believe that recognising short-term fluctuations in these investments' fair value in profit or loss would not be consistent with the Group's strategy of holding these investments for long-term purposes and realising their performance in the long run.

During the current year, the Group disposed an equity instrument at FVTOCI at the proceed of RMB108,000 (2021: nil) and the Group made new equity investments measured as equity instruments at FVTOCI amounting to RMB18,000,000 (2021: RMB40,849,000).

The fair value loss of the remaining equity instruments at FVTOCI in the amount of RMB20,810,000 (2021: gain of RMB2,808,000), net off with the recognition of related deferred tax assets of RMB7,707,000 (2021: deferred tax liabilities of RMB496,000) was recognised in FVTOCI reserve.

14. FINANCIAL ASSETS AT FAIR VALUE THROUGH PROFIT OR LOSS

	31/12/2022	31/12/2021
	RMB'000	*RMB'000*
Current assets		
Fund investments (Note a)	**–**	283,132
Unlisted financial products (Note b)	**10,086,415**	7,992,170
Debt instruments (Note c)	**–**	38,841
	10,086,415	8,314,143
Non-current assets		
Equity investments (Note d)	**19,518**	19,518
	19,518	19,518

Notes:

(a) Fund investments

During the current year, the Group disposed all fund investments at the proceed of RMB254,580,000 (2021: nil). The disposal loss of the fund investments in the amount of RMB28,104,000 is recognised in profit or loss of the current year.

(b) Unlisted financial products

During the current year, the Group entered into several contracts of unlisted financial products with banks. The unlisted financial products are managed by related banks in the PRC to invest principally in certain financial assets including bonds, trusts and cash funds, etc. The unlisted financial products have been accounted for financial assets at FVTPL on initial recognition of which the return of the unlisted financial products was determined by reference to the performance of the underlying debt instruments and treasury notes and as at 31 December 2022, the expected return rate stated in the contracts ranges from 1.80% to 5.00% (31 December 2021: 1.78% to 4.60%) per annum.

(c) Debt instruments

During the current year, the Group disposed all debt instruments at the proceed of RMB40,418,000 (2021: RMB32,427,000). The disposal loss of the debt instruments in the amount of RMB627,000 is recognised in profit or loss of the current year.

(d) Equity investments

The Group's equity investments in several partnership enterprises amounting to RMB19,518,000 (31 December 2021: RMB19,518,000) were classified as financial assets at FVTPL.

In the opinion of the Directors of the Company, the fair value change of the equity investments is insignificant as at 31 December 2022.

15. DERIVATIVE FINANCIAL ASSETS AND LIABILITIES

At the end of the reporting period, the Group held certain derivatives classified as held for trading and not under hedge accounting as follows:

	Assets		Liabilities	
	31/12/2022	31/12/2021	**31/12/2022**	31/12/2021
	RMB'000	*RMB'000*	***RMB'000***	*RMB'000*
Foreign currency forward contracts	**29,681**	27,120	**508**	41,321
Foreign currency options contracts	**–**	–	**17,147**	4,087
Foreign exchange swap contracts	**–**	117	**–**	95
Total	**29,681**	27,237	**17,655**	45,503
Less: current portion				
Foreign currency forward contracts	**29,681**	27,120	**508**	36,264
Foreign currency options contracts	**–**	–	**17,147**	4,087
Foreign exchange swap contracts	**–**	117	**–**	95
	29,681	27,237	**17,655**	40,446
Non-current portion	**–**	–	**–**	5,057

As at 31 December 2022, the Group had entered into the following foreign currency forward contracts and foreign currency options contracts:

Foreign currency forward contracts

The Group entered into several United States dollar ("**USD**")/RMB and HKD/RMB foreign currency forward contracts with banks in the PRC in order to manage the Group's foreign currency risk.

	Receiving currency	Selling currency	Maturity date	Weighted average forward exchange rate
Contract W	USD11,250,000	RMB78,616,125	18 January 2023	USD:RMB: 6.99
Contract 16	USD50,000,000	RMB333,690,000	12 June 2023	USD:RMB: 6.67
Contract 17	HKD780,000,000	RMB666,042,000	15 June 2023	HKD:RMB: 0.85

Foreign currency options contracts

The Group entered into several USD/RMB foreign currency options contracts with banks in the PRC in order to manage the Group's foreign currency risk.

The Group is required to transact with the banks for designated notional amount on each of the valuation dates specified within the respective contracts ("**Valuation Date**").

At each Valuation Date, the reference rate which represents the spot rate as specified within the respective contracts shall be compared against the strike rates (upper and lower)/barrier rate as specified within the respective contracts, and the Group may receive from/pay to the bank an amount as specified in the contracts if certain conditions specified within the respective contracts are met.

Extracts of details of foreign currency options contracts from the respective contracts outstanding as at 31 December 2022 are as follows:

	Notional amount	Strike/barrier rates	Ending settlement date
	USD'000		
Contract O	9,500	USD:RMB at 1:7.2125	16 January 2023
Contract P	60,000	USD:RMB at 1:7.3893	17 January 2023
Contract Q	85,350	USD:RMB at 1:7.3266	30 January 2023
Contract R	6,500	USD:RMB at 1:7.2960	30 January 2023
Contract S	9,500	USD:RMB at 1:7.2664	6 February 2023
Contract T	10,880	USD:RMB at 1:7.0530	22 February 2023
Contract U	8,200	USD:RMB at 1:7.1571	22 February 2023
Contract V	40,000	USD:RMB at 1:7.2521	22 February 2023
Contract X	81,450	USD:RMB at 1:7.1639	22 February 2023
Contract Y	6,500	USD:RMB at 1:7.1636	22 February 2023
Contract Z	12,000	USD:RMB at 1:6.9869	27 March 2023
Contract A	22,670	USD:RMB at 1:6.9081	27 March 2023
Contract B	119,490	USD:RMB at 1:7.0111	27 March 2023
Contract C	12,600	USD:RMB at 1:7.0687	27 March 2023
Contract D	60,700	USD:RMB at 1:6.8687	27 March 2023
Contract E	60,700	USD:RMB at 1:6.8687	27 March 2023

The Group has entered certain derivative transactions that are covered by the International Swaps and Derivatives Association Master Agreements ("**ISDA Agreements**") signed with a bank. These derivative instruments are not offset in the consolidated statement of financial position as the ISDA Agreements are in place with a right of set off only in the event of default, insolvency or bankruptcy so that the Group currently has no legally enforceable right to set off the recognised amounts.

16. TIME DEPOSITS/PLEDGED BANK DEPOSITS/SHORT TERM FIXED DEPOSITS/CASH AND CASH EQUIVALENTS

During the year ended 31 December 2022, the Group deposited RMB700,000,000 time deposits with several banks in the PRC. These time deposits carry fixed interest rates ranging from 3.15% to 4.18% (31 December 2021: 3.85% to 4.18%) per annum. The original maturity period of these time deposits is three years. The time deposits with an amount of RMB500,000,000 will be matured within one year and RMB200,000,000 will be matured within a period of more than two years.

The Group pledged certain of its bank deposits to banks as security for bank acceptance bills and the pledged bank deposits carry fixed interest rates ranging from 0.25% to 3.75% (31 December 2021: 1.80% to 3.50%) per annum. The pledged bank deposits will be released upon the maturity of relevant bills.

Short term fixed deposits carry fixed interest rates ranging from 0.20% to 4.75% (31 December 2021: 1.20% to 1.90%) per annum. Short term fixed deposits have original maturity dates more than three months but less than one year and therefore classified as current assets.

Cash and cash equivalents include demand deposits and short term deposits with original maturity dates less than three months for the purpose of meeting the Group's short term cash commitments, which carry interest at market rates range from 0.01% to 1.70% (31 December 2021: 0.30% to 1.70%) per annum.

17. INVENTORIES

	31/12/2022	31/12/2021
	RMB'000	*RMB'000*
Raw materials	**1,061,132**	1,510,395
Work in progress	**202,428**	202,365
Finished goods	**3,457,353**	3,769,098
	4,720,913	5,481,858

18. TRADE AND OTHER RECEIVABLES AND PREPAYMENT

	31/12/2022	31/12/2021
	RMB'000	*RMB'000*
Current assets		
Trade receivables	**6,428,554**	5,730,277
Less: allowance for expected credit losses	**(93,643)**	(95,625)
	6,334,911	5,634,652
Bill receivables (Note a)	**–**	1,009,636
Loan receivables (Note b)	**87,619**	142,829
Other receivables and prepayment		
Value added tax and other tax receivables	**199,895**	119,284
Advance to suppliers	**132,028**	110,068
Interest receivables	**42,977**	130,416
Prepaid expenses	**177,693**	145,316
Utilities deposits and prepayment	**76,712**	41,429
Advances to employees	**124,890**	88,915
Others	**28,385**	25,840
	782,580	661,268
Total trade and other receivables and prepayment	**7,205,110**	7,448,385

Notes:

(a) Since the second half of 2022, the bill receivables were held within the business model whose objective is achieved by both collecting contractual cash flows and selling the financial assets, and the contractual cash flows are solely payments of principal and interest on the principal amount outstanding. Therefore, bill receivables are measured at FVTOCI and reclassified to receivables at FVTOCI.

(b) The Group provides fixed-rate loans with a term from one month to one year to local individuals and small enterprises in the PRC. All loans are either backed by guarantees and/or secured by collaterals.

As at 1 January 2021, trade receivables amounted to RMB6,792,243,000.

The Group allows a credit period of average 90 days to its trade customers. The following is an aged analysis of trade receivables net of allowance for credit loss presented based on the invoice date at the end of the reporting period, which approximated the respective revenue recognition dates.

	31/12/2022	31/12/2021
	RMB'000	*RMB'000*
Within 90 days	**6,082,252**	5,540,795
91 to 180 days	**252,335**	92,903
Over 180 days	**324**	954
	6,334,911	5,634,652

As at 31 December 2022, included in the Group's trade receivables balance are debtors with aggregate carrying amount of RMB48,942,000 (31 December 2021: RMB50,024,000) which are past due as at the reporting date. Out of the past due balances, nil (31 December 2021: nil) has been past due 90 days or more.

19. TRADE AND OTHER PAYABLES

The following is an aged analysis of trade payables presented based on the invoice date and note payables presented based on the issue date at the end of reporting period.

	31/12/2022	31/12/2021
	RMB'000	*RMB'000*
Current liabilities		
Trade payables		
Within 90 days	**4,193,511**	4,262,386
91 to 180 days	**625,453**	742,744
Over 180 days	**12,387**	355
Accrued purchases	**554,152**	925,738
Total trade payables and accrued purchases	**5,385,503**	5,931,223
Note payables		
Within 90 days	**3,663,957**	1,336,260
91 to 180 days	**680,441**	385,024
Over 180 days	**22,566**	100,000
	4,366,964	1,821,284
Advance deposits from a customer	**555,456**	–
Payables for purchase of property, plant and equipment	**410,958**	267,891
Staff salaries and welfare payables	**1,378,175**	1,311,836
Labor outsourcing payables	**194,150**	139,747
Payables for acquisition of patents	**39,534**	40,913
Value added tax payables and other tax payables	**214,476**	113,297
Interest payables	**76,738**	64,473
Rental and utilities payables	**61,367**	58,346
Others	**233,965**	119,677
	3,164,819	2,116,180
	12,917,286	9,868,687
Non-current liability		
Long term payables		
Payables for acquisition of patents	**122,777**	172,044

The credit period on purchases of goods is up to 180 days (2021: 180 days) and the credit period for note payables is 90 days to 365 days (2021: 90 days to 365 days). The Group has financial risk management policies in place to ensure that all payables are settled within the credit time frame.

20. BANK BORROWINGS

Unsecured	**31/12/2022**	31/12/2021
	RMB'000	*RMB'000*
Guaranteed	**1,393,051**	1,601,327
Unguaranteed	**626,930**	637,570
	2,019,981	2,238,897

	31/12/2022	31/12/2021
	RMB'000	*RMB'000*
The carrying amounts of the above borrowings are repayable*:		
Within one year	**1,989,981**	1,538,897
Within a period of more than one year but not exceeding two years	**30,000**	700,000
	2,019,981	2,238,897

* The amounts due are based on scheduled repayment dates set out in the loan agreements.

The exposure of the Group's bank borrowings are as follows:

	31/12/2022	31/12/2021
	RMB'000	*RMB'000*
Fixed-rate borrowings	**975,000**	900,000
Variable-rate borrowings	**1,044,981**	1,338,897
	2,019,981	2,238,897

The range of effective interest rates per annum (which are equal to contractual interest rates) on the Group's bank borrowings are as follows:

	31/12/2022	31/12/2021
Fixed-rate borrowings	**2.30%-3.20%**	3.10%
Variable-rate borrowings	**3.60%-3.70%**	0.60%-0.87%

The variable-rate borrowings as at 31 December 2022 were denominated in USD and HKD (2021: USD) which carried the floating-rates at Secured Overnight Financing Rate ("**SOFR**") and Hong Kong Inter-Bank Offer Rate ("**HIBOR**") (2021: London Inter-Bank Offer Rate) plus a premium.

The Group's bank borrowings that are denominated in currency other than the functional currencies of the relevant group entities are set out below:

	31/12/2022	31/12/2021
	RMB'000	*RMB'000*
USD	**348,230**	1,338,897
HKD	**696,751**	–
	1,044,981	1,338,897

21. BONDS PAYABLE

On 16 January 2018, the Company issued unsecured bonds in the amount of USD600 million at the rate of 3.75% per annum which will be due by 2023 to professional investors outside of the United States in accordance with Regulation S under the U.S. Securities Act. The issuance has been completed on 23 January 2018 and the listing of the bonds in the Hong Kong Stock Exchange became effective on 24 January 2018.

The Company had used all of the net proceeds from the bonds for fulfilling working capital requirements, refinancing existing indebtedness and other general corporate purposes.

During the current year, interest expense of approximately RMB161,768,000 (2021: RMB153,970,000) was recognised in the consolidated statement of profit or loss and other comprehensive income.

22. SHARE CAPITAL

	Number of shares	Amount	Equivalent to
		HKD'000	*RMB'000*
Authorised:			
Ordinary shares of HKD0.10 each at 1 January 2021, 31 December 2021 and 31 December 2022	100,000,000,000	10,000,000	
Issued & fully paid:			
Ordinary shares of HKD0.10 each at 1 January 2021, 31 December 2021 and 31 December 2022	1,096,849,700	109,685	105,163

Scope of work of Messrs. Deloitte Touche Tohmatsu

The figures in respect of the Group's consolidated statement of financial position, consolidated statement of profit or loss and other comprehensive income and the related notes thereto for the year ended 31 December 2022 as set out in this announcement have been agreed by the Group's auditor, Messrs. Deloitte Touche Tohmatsu, to the amounts set out in the Group's audited consolidated financial statements for the year. The work performed by Messrs. Deloitte Touche Tohmatsu in this respect did not constitute an assurance engagement in accordance with Hong Kong Standards on Auditing, Hong Kong Standards on Review Engagements or Hong Kong Standards on Assurance Engagements issued by the Hong Kong Institute of Certified Public Accountants and consequently no assurance has been expressed by Messrs. Deloitte Touche Tohmatsu on this announcement.

MANAGEMENT DISCUSSION AND ANALYSIS

The Group is principally engaged in the design, research and development (the "**R&D**"), manufacture and sales of optical and optical-related products. Such products include Optical Components (such as vehicle lens sets, optical parts of vehicle light detection and ranging ("**LiDAR**"), VR positioning lens sets, handset lens sets, glass spherical lenses for digital cameras and other optical components), Optoelectronic Products (such as vehicle modules, VR folded path ("**Pancake**") modules, VR visual modules, handset camera modules and other optoelectronic modules) and Optical Instruments (such as intelligent inspection equipment and microscopes). The Group focuses on the application fields of optoelectronic-related products, such as vehicles, VR/AR, robots and handsets, which are combined with optical, electronic, algorithm and mechanical technologies.

BUSINESS REVIEW

During the year under review, facing the rapid-changing political and economic situation, the impact of the normalized pandemic and fierce competition in the market, the Group consolidated its leading position in the industry through the following efforts:

1. Strengthened and expanded the existing advantageous businesses, and further increased the market share;

2. Continued to enhance investments in new businesses and took over strategic control points in the industry;

3. Improved refined management and devoted to continuously improving the operational quality; and

4. Further deepened human resource development and corporate culture building.

OPTICAL COMPONENTS

In terms of the vehicle lens sets business, with the gradual easing of the chip shortage status in the supply chain, the further increase of adoption rate of advanced driving assistance system ("**ADAS**") and the gradual increase in the level of autonomous driving, the shipment volume of vehicle lens sets of the Group increased by approximately 16.1% to approximately 78,909,000 units during the year under review as compared to that of last year. The global market share of the Group was still ahead of others with continuing growth, which further enlarged the gap between the Group and the second player. In addition, the Group further achieved technological breakthroughs in high resolution ADAS vehicle lens sets and hybrid ADAS vehicle lens sets. During the year under review, by solving the tricky problems that large size vehicle lens sets could be loosening in high temperature and how to dissipate the water-mist of vehicle lens sets, the Group has completed the R&D of 17-mega pixel front-view vehicle lens sets, which could be used for level-4 autonomous driving. Meanwhile, the Group has completed the R&D of 2-mega pixel hybrid ADAS vehicle lens sets, of which the technical performance was recognized by renowned platform providers, and for the first time, the road running certification of hybrid ADAS vehicle lens sets and road running data collection on real vehicles have been in progress.

In terms of the emerging vehicle business field, the Group continued to speed up the R&D and market promotion of LiDAR, head up display ("**HUD**"), smart headlamp and other new products and continuously deployed optical sensing technologies and products for the continuously upgrading of smart driving system. In the LiDAR aspect, the Group focused on optical components and modules, and the number of newly added designated customers increased quickly during the year under review. The Group became the first enterprise in the world achieving mass production of polygonal rotating prisms made of glass and had continuously added value to the LiDAR manufacturers. In the HUD aspect, the Group focused on the core optical engine – picture generation unit ("**PGU**") modules business, among which the self-developed diffuser achieved a technological breakthrough with multiple mass production projects obtained. In the smart headlamp aspect, the Group actively secured the industry opportunities in smart headlamp applications. The Group has completed the R&D of its first micro lens array and obtained a designated project for 1-mega level pixel headlamp product.

In terms of the emerging optical business, the Group continued to explore the application of optics in VR/AR fields, keeping pace with the development of key customers and advancing technology deployment and business development. Various optical products have not only achieved substantial progress in technology but also diversified customer distribution. During the year under review, the Group has completed the R&D of hybrid see through ("**See Through**") lens sets with wide-angle, which could realize the interaction of reality and virtual scenarios. Meanwhile, the binocular VR optical modules have been commenced mass production, which further improved the distortion and chromatism and greatly enhanced the display effect of VR device.

For the handset lens sets business, the shipment volume of handset lens sets of the Group decreased by approximately 17.2% to approximately 1,192,629,000 units during the year under review as compared to that of last year. The handset lens set market faced a severe challenge due to the weak demand in the global smartphone market and the further impact of the downgraded specification of smartphone cameras. In the face of the severe industry challenges, the Group acted quickly and took various measures to actively respond to the market changes, firmly adhering to its product strategy of "Ding Tian Li Di (頂天立地)", i.e. increasing customer stickiness for high-end products and gaining market share for low-end products, thus maintaining its position as the global No. 1 in terms of market share amidst severe industry competition. Meanwhile, the Group strived for continuous breakthroughs in customization capabilities with respect to customers' demand and continued to strengthen its R&D and engineering capabilities. During the year under review, the Group has completed the R&D of the industry's first prism-centered periscope handset lens sets. In addition, the super tele-macro handset lens sets, the industry's first ultra-aperture handset lens sets, the periscope handset lens sets with the largest image size in the industry, 1-inch hybrid handset lens sets, 200-mega pixel ultra-thin handset lens sets, 160-mega pixel super definition handset lens sets for main cameras and the industry's thinnest handset lens sets for main cameras applied to foldable smartphones have been commenced mass production.

OPTOELECTRONIC PRODUCTS

In terms of the vehicle modules business, the Group continued to cultivate the technical elements of its products deeply, solved customers' pain points and difficulties, delivered the high-value products to the customers with high-quality, and provided the customers with superior services. The layout of the comprehensive product lines of vehicle modules was highly recognized by the market. During the year under review, the Group has completed the R&D of 8-mega pixel ADAS vehicle modules using chip on board ("**COB**") technology and active defogging vehicle modules. Meanwhile, the Group has commenced mass production of all series (including 1.7-mega pixel, 2-mega pixel and 8-mega pixel) of ADAS vehicle modules adapted to the platforms of Mobileye, NVIDIA and Horizon Robotics. In addition, during the year under review, the Group has obtained seven additional designated projects of 8-mega pixel ADAS vehicle modules.

In terms of VR/AR field, VR spatial positioning modules have maintained high propotion of shipments to overseas clients all the time. Meanwhile, the Group achieved a breakthrough in the domestic market and the products supplied to the domestic customers have been commenced small batch production. In addition, See Through high pixel module products have been the first released in an industry-leading customer. Gesture-recognition and eye-tracking related module products have also been developed in accordance with the requirements of customers, which are expected to be further applied in new models.

In terms of sweeping robots field, the Group has commenced mass production of wide-angle linear time of flight ("**ToF**") camera modules for industry-leading customers, which could realize the simultaneous mapping and obstacle avoidance for the first time. At the same time, the Group has also commenced mass production of self-developed linear structured-light camera modules for industry-leading customers. In terms of service robots field, the Group has commenced mass production of modular camera based on ToF for industry-leading customers, which could achieve the application in obstacle avoidance of the service robot for the first time.

In terms of the handset camera modules business, continuously affected by the weak demand in the global smartphone market and downgraded specification of smartphone cameras, the shipment volume growth and the product mix upgrade of handset camera modules of the Group were both under pressure. During the year under review, the shipment volume of handset camera modules of the Group amounted to approximately 516,639,000 units, representing a decrease of approximately 23.3% as compared to that of last year. In the complex market environment, the Group has continued to strengthen its business cooperation with international customers, further enhanced its vertical integration capabilities, strived to improve the management and operational efficiency of overseas factories despite the restrictions of Entry-Exit of factory's managerial and technical personnel due to domestic pandemic control, and maintained its global No. 1 position in terms of market share amid fierce market competition through measures such as expanding revenue sources and reducing expenditure, reducing costs while increasing efficiency. During the year under review, the Group has completed the R&D of the industry's first prism-centered periscope handset camera module. At the same time, the periscope handset camera modules with the largest image size in the industry, 1-inch handset camera modules with optical image stabilization ("**OIS**"), 160-mega pixel super definition handset camera modules for main cameras and the industry's thinnest handset camera modules for main cameras applied to foldable phones have been commenced mass production.

OPTICAL INSTRUMENTS

In terms of the intelligent equipment business, in order to seize the market opportunities in the industrial field brought by the development of the manufacturing industry towards "high-end, intelligent and automation" trend, the Group has successfully completed the R&D of vehicle module automatic production line during the year under review, which could be applied to various production processes of the vehicle modules, including automatic alignment and assembly of lens sets and sensors, and the testing of semi-finished and finished vehicle modules. These production lines could save manual procedures and significantly improve production efficiency, which is at the leading level in the industry. In addition, the customers have applied the Group's self-developed integrated testing lines in batches for handset lens sets in their manufacturing plants. These production lines could achieve automatic pick-and-place, automatic circulation and automatic testing for handset lens sets, with the leading position in overall efficiency and technics in the industry.

In terms of the microscope business, the Group has made further breakthroughs in the R&D and innovation. During the year under review, the Group has completed the development of the first domestic 45mm parfocal super apochromatic ("**SAPO**") series 100X oilimmersion objectives, which could achieve high-resolution and high-precision imaging in the scientific research field. So far, the Group has achieved the full localization of the SAPO series objectives, among which the Group has received bulk orders for SAPO10X, SAPO20X, SAPO40X and SAPO60X, and is capable of mass-producing SAPO100X, effectively enhancing the Group's core competitiveness in the high-end microscopic system field.

OUTLOOK AND FUTURE STRATEGIES

Looking forward to 2023, the Group will continue to face grave challenges such as slow recovery of the global economy, weak consumption demand and more intensified competition. However, development trend of the global economy will not change, which will stick to digital economy and green economy. This will bring new growth potentials and development opportunities to the optoelectronic industry. The rapid development of autonomous driving will promote the adoption of multi-sensor and huge market potentials will appear in VR/AR, robotic vision and other emerging industries. As such, 2023 will continue to be a year of challenges and opportunities. The Group will also explore and seize business opportunities based on the following three principles, so as to achieve the sustainable business development.

1. **Tapping new potential in mature businesses**

   - Potential of new customers – follow target major customers closely and satisfy their demand to the greatest extent so as to rapidly increase our supply proportion and become an important supplier; and

   - Potential of product mix – the proportion of high-end and high-value products still has room for improvement.

2. **Seeking new opportunities in emerging industries**

   - While the number and specification of cameras on single vehicle are increasing quickly, the Group continues to strengthen its competitiveness in the vehicle lens sets business and build brand products in this category; the Group will also increase its investment in vehicle modules business and grasp opportunities to quickly expand its market share, aiming to be an irreplaceable supplier in vehicle camera field; and

- In vehicle LiDAR, HUD, VR/AR, robotic vision and other emerging fields, in addition to basic optical components, the Group will constantly improve its product portfolio and increase added value to its products and its competitiveness in the industry.

3. **Focusing on quality while expanding the volume**

- Continue to improve operational efficiency and quality and further increase its capacity utilization rate;
- Further increase product quality, working efficiency and yield rate; and
- Continuously reduce product cost per unit and loss rate.

Looking forward, the Group will stick to its strategic position, continue to be innovation-driven, enhance the awareness of crisis, expand revenue sources and reduce costs thoroughly and further deepen the construction of sustainable development capability to constantly enhance its comprehensive competitiveness, provide more quality products and services to top global high-tech enterprises, advance the corporate growth and value improvement, and continuously create more returns to shareholders of the Company ("**Shareholders**").

FINANCIAL REVIEW

Revenue

For the year ended 31 December 2022, the Group's revenue was approximately RMB33,196.9 million, representing a decrease of approximately 11.5% as compared to that of last year. The decrease in revenue was mainly attributable to the decrease in the revenue of handset lens sets and handset camera modules of the Group because of the weak demand in the smartphone market and a trend of downgrading specification on the smartphone cameras, which brought by the factors such as the resurgence of the pandemic, chip shortage, Russian-Ukrainian conflict, inflation and the uncertainties in the global economy.

Revenue generated from the Optical Components business segment was approximately RMB9,467.6 million, representing an increase of approximately 7.9% as compared to that of last year. The increase in revenue was mainly attributable to the increase of revenue of the vehicle lens sets with the gradual easing of the chip shortage in the supply chain. Meanwhile, the revenue related to the optical parts of vehicle LiDAR and HUD increased significantly as the projects have been gradually commenced mass production. In addition, benefiting from the diversified layout of the product mix and customer portfolio, the revenue related with the VR optical products also achieved great increase. The increase in revenue from these businesses offset the decrease in revenue of handset lens sets.

Revenue generated from the Optoelectronic Products business segment was approximately RMB23,325.8 million, representing a decrease of approximately 17.7% as compared to that of last year. The decrease in revenue was mainly attributable to the decrease of shipment volume of handset camera modules, which was affected by the weak demand of smartphone market.

Revenue generated from the Optical Instruments business segment was approximately RMB403.5 million, representing an increase of approximately 4.2% as compared to that of last year. The increase in revenue was mainly attributable to the increase in the market demand for optical instruments applied to domestic industrial and medical fields and the increase in the demand for overall overseas market.

Gross Profit and Margin

The gross profit of the Group for the year ended 31 December 2022 was approximately RMB6,605.0 million, representing a decrease of approximately 24.4% as compared to that of last year. The gross profit margin was approximately 19.9%, which was approximately 3.4 percentage points lower as compared to that of last year.

The gross profit margins of Optical Components business segment, Optoelectronic Products business segment and Optical Instruments business segment were approximately 33.4%, 10.7% and 42.0%, respectively (2021: approximately 39.5%, 13.7% and 45.1% respectively).

Selling and Distribution Expenses

The selling and distribution expenses of the Group for the year ended 31 December 2022 were approximately RMB352.8 million, representing an increase of approximately 28.7% as compared to that of last year. It accounted for approximately 1.1% of the Group's revenue during the year, as compared to approximately 0.7% of last year. The increase in absolute amount was attributable to the increase in the headcount and remuneration of sales staff.

R&D Expenditure

The R&D expenditure of the Group for the year ended 31 December 2022 was approximately RMB2,803.4 million, representing an increase of approximately 6.1% as compared to that of last year. It accounted for approximately 8.4% of the Group's revenue during the year, as compared to approximately 7.0% of last year. The increase in absolute amount was attributable to the Group's continuous upgrading for existing businesses and the increase in R&D expenditure on the products related to the emerging fields like vehicle, VR/AR, etc.

Administrative Expenses

The administrative expenses of the Group for the year ended 31 December 2022 were approximately RMB928.6 million, representing an increase of approximately 22.6% as compared to that of last year. It accounted for approximately 2.8% of the Group's revenue during the year, as compared to approximately 2.0% of last year. The increase in absolute amount was attributable to the increase in the remuneration of administrative staff, and the increase in expenses related to the grant of restricted shares under the restricted share award scheme of the Company ("**Restricted Share Award Scheme**") and the informationization construction.

Income Tax Expense

The income tax expense of the Group for the year ended 31 December 2022 was approximately RMB240.8 million, representing a decrease of approximately 58.4% as compared to that of last year. The decrease in absolute amount was mainly attributable to the decrease of profit before tax. The Group's effective tax rate was approximately 8.9% during the year, as compared to approximately 10.3% of last year. For more details related to the income tax expense, please refer to the Note 7 to the consolidated financial statements in this announcement.

Net Profit and Net Profit Margin

The net profit of the Group for the year ended 31 December 2022 was approximately RMB2,474.1 million, representing a decrease of approximately 51.1% as compared to that of last year. The decrease in net profit was primarily attributable to: (i) the factors such as the resurgence of the pandemic, chip shortage, Russian-Ukrainian conflict, inflation and the uncertainties in the global economy in the year of 2022, the smartphone market experienced weak demand and the smartphone camera showed a trend of downgrading specification, which resulted in the year-on-year decrease of the shipment volume of handset lens sets and handset camera modules of the Group, with high pressure on average selling prices and gross profit margins; and (ii) the depreciation of the RMB in the year of 2022, an unrealized foreign exchange loss amounting to approximately RMB353.3 million was caused by the USD600.0 million bonds issued by the Company on 23 January 2018, which was a non-cash item.

The net profit margin of the Group for the year ended 31 December 2022 was approximately 7.5% (2021: approximately 13.5%).

Profit for the Year Attributable to Owners of the Company and Basic Earnings per Share

The profit for the year attributable to owners of the Company for the year ended 31 December 2022 was approximately RMB2,407.8 million, representing a decrease of approximately 51.7% as compared to that of last year.

The basic earnings per share for the year ended 31 December 2022 was approximately RMB220.3 cents, representing a decrease of approximately 51.8% as compared to that of last year.

FINAL DIVIDENDS

For the year ended 31 December 2022, the Board proposed final dividends of HKD0.500 per share (equivalent to approximately RMB0.439 per share), with payout ratio of approximately 20.0% of the profit for the year attributable to owners of the Company. The final dividends payable on 28 June 2023 is subject to the approval of the Shareholders at the forthcoming AGM to be held on 24 May 2023.

LIQUIDITY AND FINANCIAL RESOURCES

Cash Flows

The table below summarises the Group's cash flows for the years ended 31 December 2022 and 31 December 2021:

	For the year ended 31 December	
	2022	2021
	RMB million	*RMB million*
Net cash from operating activities	**7,377.3**	6,979.0
Net cash used in investing activities	**(3,833.9)**	(2,901.5)
Net cash used in financing activities	**(2,159.2)**	(1,241.4)

Funding and Financial Policy

The Group derives its working capital mainly from cash on hand and net cash generated from operating activities. The Board expects that the Group will rely on net cash generated from operating activities, bank borrowings and debt financing in the short run to meet its working capital and other requirements. In the long run, the Group will be mainly funded by net cash from operating activities and, if necessary, by additional bank borrowings, debt financing or equity financing. There were no material changes in the funding and financial policy of the Group for the year ended 31 December 2022.

As at 31 December 2022, the Group had current assets of approximately RMB30,645.6 million (31 December 2021: approximately RMB27,989.3 million), comprising cash and cash equivalents of approximately RMB7,033.2 million (31 December 2021: approximately RMB5,605.2 million); and current liabilities of approximately RMB19,336.9 million (31 December 2021: approximately RMB11,873.5 million). The Group's current ratio was approximately 1.6 times (31 December 2021: approximately 2.4 times). The Group's total assets as at 31 December 2022 was approximately RMB43,001.3 million, representing an increase of approximately 10.9% as compared to that as at 31 December 2021.

Operating Activities

Cash inflow from operating activities was mainly generated from cash receipt from sales of the Group's products. Cash outflow from operating activities was mainly used for the purchases of raw materials, selling and distribution expenses, R&D expenditure and administrative expenses. Net cash from operating activities was approximately RMB7,377.3 million for the year ended 31 December 2022 and net cash from operating activities was approximately RMB6,979.0 million for the year ended 31 December 2021.

The trade receivables turnover days (average of the opening and closing trade receivables balances/revenue × 365 days) increased from approximately 60 days for the year ended 31 December 2021 to approximately 66 days for the year ended 31 December 2022. The increase in trade receivables turnover days was mainly attributable to the revenue from those customers with longer credit terms grew faster during the year of 2022.

The trade payables and accrued purchases turnover days (average of the opening and closing trade payable and accrued purchases balances/cost of sales × 365 days) decreased from approximately 83 days for the year ended 31 December 2021 to approximately 78 days for the year ended 31 December 2022. The decrease in the trade payables and accrued purchases turnover days was mainly attributable to the Group's improved control on the procurement of raw materials.

The inventory turnover days (average of the opening and closing inventory balances/cost of sales × 365 days) decreased from approximately 71 days for the year ended 31 December 2021 to approximately 70 days for the year ended 31 December 2022. There was no significant difference in the number of inventory turnover days in these two fiscal years.

Investing Activities

For the year ended 31 December 2022, the Group recorded a net cash used in investing activities of approximately RMB3,833.9 million, which mainly included purchases and release of unlisted financial products of approximately RMB13,939.8 million and approximately RMB11,908.5 million respectively, and capital expenditure amounting to approximately RMB3,113.8 million.

Financing Activities

For the year ended 31 December 2022, the Group recorded a net cash used in financing activities of approximately RMB2,159.2 million. The cash inflow mainly came from proceeds from new bank borrowings raised of approximately RMB8,151.8 million. Major outflows were the repayment of bank borrowings of approximately RMB8,550.1 million and dividends paid to the Shareholders of approximately RMB1,058.7 million.

Capital Expenditure

For the year ended 31 December 2022, the Group's capital expenditure amounted to approximately RMB3,113.8 million, which was mainly used for the purchases of property, plant and equipment, acquisition of land use right, payment for intangible assets and purchase of other tangible assets. All of the capital expenditure was financed by internal resources.

CAPITAL STRUCTURE

Indebtedness

Bank borrowings

Bank borrowings of the Group as at 31 December 2022 amounted to approximately RMB2,020.0 million (2021: approximately RMB2,238.9 million). No bank borrowings were secured by certain buildings and land of the Group as at 31 December 2022 and 31 December 2021. As at 31 December 2022, the bank borrowings were denominated in RMB, USD and HKD.

Details of the bank borrowings are set out in Note 20 to the consolidated financial statements in this announcement.

Bank facilities

As at 31 December 2022, the Group had bank facilities of RMB6,400.0 million with Agricultural Bank of China Limited, RMB3,000.0 million with Ningbo Bank Co., Ltd., RMB2,400.0 million with The Export-Import Bank of China, RMB1,670.0 million with Industrial and Commercial Bank of China Limited, RMB600.0 million with China Construction Bank Corporation, RMB380.0 million with of Bank of Communications Co., Ltd., RMB2,515.0 million and USD115.0 million with Bank of China Limited respectively, USD120.0 million with BNP Paribas, USD110.117 million with The Hongkong and Shanghai Banking Corporation Limited, USD91.0 million with China Development Bank, USD80.0 million with Crédit Agricole Corporate and Investment Bank, USD80.0 million with Standard Chartered Bank and USD75.0 million with Citibank.

Debt securities

As at 31 December 2022, debt securities of the Group amounted to approximately RMB4,178.1 million (2021: approximately RMB3,815.6 million). For details of bonds payable, please refer to Note 21 to the consolidated financial statements in this announcement.

As at 31 December 2022, the Group's gearing ratio of approximately 14.4% refers to the ratio of total borrowings to total capital (total capital being the sum of total liabilities and shareholders' equity), reflecting the Group's financial position at a sound level.

Contingent liabilities

As at 31 December 2022, the Group did not have any material contingent liabilities or guarantees.

Financing and fiscal policies and objectives

The Group adopts prudent financing and fiscal policies. The Group will seek bank borrowings and debt financing when its operating demand grows, and will regularly review its bank borrowings and debt securities to achieve a sound financial position.

PLEDGE OF ASSETS

The Group did not have any pledge or charge on assets as at 31 December 2022, except for the pledged bank deposits of approximately RMB9.8 million (2021: approximately RMB18.3 million). For details of the pledged bank deposits, please refer to Note 16 to the consolidated financial statements in this announcement.

COMMITMENTS

As at 31 December 2022, the capital expenditure of the Group in respect of acquisition of property, plant and equipment contracted for but not provided in the consolidated financial statements amounted to approximately RMB1,257.5 million (2021: approximately RMB684.4 million).

As at 31 December 2022, the Group had no other capital commitments save as disclosed above.

OFF-BALANCE SHEET TRANSACTIONS

As at 31 December 2022, the Group did not enter into any material off-balance sheet transactions.

PERFORMANCE OF INVESTMENTS MADE AND FUTURE INVESTMENT PLAN

The Group's investing activities primarily include the purchases and release of unlisted financial products, placement and release of short term fixed deposits and purchases of property, plant and equipment. The purchase and disposal of financial assets at fair value through profit or loss include debt instruments, equity investments, fund investments and unlisted financial products. Among them, the fund investments are managed by relevant financial institutions, mainly investing in debt securities linked to the performance of related senior debts; unlisted financial products are managed by relevant banks in China, mainly investing in certain financial assets such as bonds, trusts and cash funds, and their investment incomes are determined based on the performance of relevant government debt instruments and treasury bills.

As disclosed in the announcements of the Company dated 14 November 2022 and 11 January 2023, Sunny Zhejiang Optics has subscribed for registered capital of RMB1,110.0 million by way of capital injection into Chongqing Ant Consumer Finance Co., Ltd. (the "**Target Company**") in the sum of RMB1,110.0 million (the "**Subscription**"), representing 6% equity interests of the Target Company as enlarged by the capital increase.

To the best knowledge of the Directors, there were no other significant investments made by the Group except for the Subscription as disclosed above for the year ended 31 December 2022.

Important investments

As at 31 December 2022, the Group maintained a portfolio of unlisted financial products with the total carrying amount of approximately RMB10,086.4 million (31 December 2021: approximately RMB7,992.2 million), of which approximately RMB3,407.7 million has been released on or before 16 March 2023. As at 31 December 2022, the fair value of the unlisted financial products subscribed by the Group in aggregate represented approximately 23.5% of the Group's total assets (31 December 2021: approximately 20.6%). The investment costs for the unlisted financial products subscribed as at 31 December 2022 was approximately RMB10,007.6 million (31 December 2021: approximately RMB7,992.2 million). For the year ended 31 December 2022, the amount of investment income from the unlisted financial products at FVTPL was approximately RMB197.5 million (2021: approximately RMB302.6 million).

The following table sets forth a breakdown of the major unlisted financial products subscribed by the Group as at 31 December 2022 (in descending order):

Name of the unlisted financial products*	Name of banks	Investment costs	Fair value of the unlisted financial products as at 31 December 2022	Percentage of fair value of the unlisted financial products relative to the total assets of the Group as at 31 December 2022
		RMB'000	*RMB'000*	
Bank of Ningbo NingXin fixed income 9-month periodic wealth management No. 2 (寧銀理財寧欣固定收益類 9 個月周期型理財 2 號)	Bank of Ningbo Co., Ltd.	950,000	945,711	2.2%
Sunshine Jin Zhou Tian Li Zhen Xiang No. B001 (陽光金周添利臻享 B001 號)	China Everbright Bank Co., Ltd.	800,000	804,314	1.9%
Bank of Ningbo NingXin fixed income one-year fixed-term open-ended wealth management No. 16 (寧銀理財寧欣固定收益類一年定期開放式理財 16 號)	Bank of Ningbo Co., Ltd.	800,000	799,912	1.9%
Bank of Ningbo NingXin fixed income six-month fixed-term open-ended wealth management No. 24 (寧銀理財寧欣固定收益類半年定期開放式理財 24 號)	Bank of Ningbo Co., Ltd.	500,000	500,989	1.2%
Bank of Ningbo NingXin fixed income six-month fixed-term open-ended wealth management No. 1 (寧銀理財寧欣固定收益類半年定期開放式理財 1 號)	Bank of Ningbo Co., Ltd.	495,000	499,785	1.2%
Others#		6,462,600	6,535,704	15.1%
	Total	**10,007,600**	**10,086,415**	**23.5%**

* The English names are unofficial English translations of unlisted financial products with Chinese names only. If there is any inconsistency, the Chinese names shall prevail.

\# Other unlisted financial products included 44 unlisted financial products with 7 different banks to lower the concentration risk. The fair value of such 44 unlisted financial products as at 31 December 2022 was approximately RMB148.5 million in average.

The unlisted financial products were measured at fair value as at 31 December 2022. Such investment activities were funded primarily by the idle self-owned funds of the Group.

The Board considers that the terms of such unlisted financial products are on normal commercial terms, fair and reasonable and in the interests of the Company and Shareholders as a whole.

For the year ended 31 December 2022, the Group's investments amounted to approximately RMB3,113.8 million, which was primarily for the purchases of property, plant and equipment, acquisition of land use right and the necessary equipment configurations for new projects. These investments enhanced the Group's R&D and technological application capability and production efficiency, and thus expanded the sources of revenue.

Future Plans for Material Investments or Capital Assets

Going forward, the Group will continue to further diversify its investments among different banks to lower the concentration risk and will closely monitor the performance of investments made and future investments plan in accordance with its prudent funding and treasury policy to utilise and to increase the yield of the idle funds of the Group while maintaining a high level of liquidity and a low level of risk. Such investment activities were made and will be made on the premises that it would not adversely affect the working capital of the Group or the operation of the Group's principal business. The Group intends to make further investments to enhance its competitiveness in the future.

QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK

Interest Rate Risk

The Group is exposed to interest rate risks arising from its bank borrowings for working capital and capital expenditure that are associated with the expansion of the Group and utilisation for other purposes. The rising of interest rates increases the costs of both existing and new debts. As at 31 December 2022, the effective interest rate on fixed-rate bank borrowings was approximately 2.3% to 3.2% per annum, while the effective interest rate of variable-rate bank borrowings was approximately 3.6% to 3.7% per annum.

Foreign Exchange Rate Fluctuation Risk

The Group exports a portion of its products to and purchases a considerable amount of products from international markets where transactions are denominated in USD or other foreign currencies. For details of the Group's foreign currency forward contracts and foreign currency options contracts, please refer to Note 15 to the consolidated financial statements in this announcement. Except certain investments which are in line with the Group's business development and which are denominated in foreign currencies, the Group did not and has no plan to make any other foreign currency investment.

Credit Risk

The Group's financial assets include derivative financial assets, cash and cash equivalents, pledged bank deposits, short-term fixed deposits, time deposits, financial assets at fair value through profit or loss, trade and other receivables and prepayments, amount due from a related party, receivables at FVTOCI and equity instruments at FVTOCI, which represent the Group's maximum exposure to credit risk in relation to financial assets.

In order to minimise the credit risk in relation to trade receivables, the management of the Company (the "**Management**") has delegated a team responsible for the determination of credit limits, credit approvals and other monitoring procedures to ensure that appropriate followup actions are taken to recover overdue debts. The Group has also purchased insurance relating to trade receivables. In addition, the Group reviews the recoverable amount of each individual trade debt at the end of each reporting period to ensure that adequate impairment losses are made for irrecoverable amounts. Therefore, the Directors consider that the Group's credit risk is significantly reduced. The amounts presented in the consolidated statement of financial position are net of allowance for ECL, estimated by the Management based on prior experience and historically observed default rates, their assessment of the current economic environment and the discounted cash flows to be received in future.

The Group has no significant concentration of credit risk since its trade receivables are dispersed over a large number of counterparties and customers. The credit risk on liquidity is limited because the majority of the counterparties are banks with high credit ratings by international credit-rating agencies.

Cash Flow Interest Rate Risk

The Group's cash flow interest rate risk is primarily related to variable rates applicable to bank borrowings. The Management will review the proportion of borrowings in fixed and variable rates and ensure they are within reasonable range. Therefore, any future variations in interest rates will not have any significant impact on the results of the Group.

Liquidity Risk

The Group manages liquidity risk by maintaining an adequate level of cash and cash equivalents through continuously monitoring the forecast and actual cash flows and matching them with the maturity profiles of financial assets and liabilities.

MAJOR ACQUISITIONS AND DISPOSALS

For the year ended 31 December 2022, there were no material acquisitions and disposals of subsidiaries, associates and joint ventures of the Group.

EMPLOYEE AND REMUNERATION POLICY

The Group had 26,610 full-time employees as at 31 December 2022. In line with the overall operation of the Company, the industry level and the performance of individual employees, the Group has established a fair and competitive emoluments and welfare system to recruit new talents and to reward and retain existing talents, in which the emoluments includes annual basic salary, year-end bonus, the economic-value-added bonus and share award, while the welfare includes social insurance, housing provident fund, employee holidays and emergency relief fund. The Group is committed to achieving the goals of "consistency in responsibilities and interests, abilities and values, risks and returns, performance and income" in remuneration distribution.

The Group adopted the Restricted Share Award Scheme in 2010, for the purposes of providing incentives and rewards to eligible participants to recognise their contribution to the Group and to enhance their ownership spirits. For the year ended 31 December 2022, 4,299,957 shares of the Company were granted to eligible employees in accordance with the Restricted Share Award Scheme by the Group.

CLOSURE OF REGISTER OF MEMBERS

In order to determine the eligibility for attending the AGM, which is to be held on 24 May 2023, the register of members of the Company will be closed from 19 May 2023 to 24 May 2023, both days inclusive, during which no transfer of shares will be registered. All transfer of shares accompanied by the relevant share certificates must be lodged with the Company's branch share registrar in Hong Kong, Computershare Hong Kong Investor Services Limited at Shops 1712 – 1716, 17th Floor, Hopewell Centre, 183 Queen's Road East, Wanchai, Hong Kong for registration no later than 4:30 p.m. on 18 May 2023.

In order to determine the eligibility for receiving the final dividends, the register of members of the Company will be closed from 1 June 2023 to 7 June 2023, both days inclusive, during which no transfer of shares will be registered. All transfer of shares accompanied by the relevant share certificates must be lodged with the Company's branch share registrar in Hong Kong, Computershare Hong Kong Investor Services Limited at Shops 1712-1716, 17th Floor, Hopewell Centre, 183 Queen's Road East, Wanchai, Hong Kong for registration no later than 4:30 p.m. on 31 May 2023.

PURCHASE, SALE OR REDEMPTION OF THE COMPANY'S SHARES

The Company is empowered by the applicable Cayman Islands Companies Act and the amended and restated articles of association of the Company to repurchase its own shares subject to certain restrictions and the Board may only exercise this power on behalf of the Company subject to any applicable requirements imposed from time to time by the Hong Kong Stock Exchange. There was no purchase, sale, redemption or writing-off by the Company or its subsidiaries, with the exception of the trustee of the Restricted Share Award Scheme, of the Company's listed shares during the year ended 31 December 2022.

CORPORATE GOVERNANCE

Corporate Governance Practices

For the year ended 31 December 2022, the Company complied with all of the mandatory disclosure requirements of the Corporate Governance Code (the "**Corporate Governance Code**") contained in Appendix 14 to the Listing Securities on the Hong Kong Stock Exchange (the "**Listing Rules**"). Meanwhile, the Company has applied the principles of good corporate governance (the "**Principles**") and complied with the code provisions and most of the recommended best practices set out in Part 2 of the Corporate Governance Code. The Company annually reviews the application of the Principles and will improve its corporate governance practices with reference to the latest development of corporate governance.

Securities Transactions by Directors

The Company has adopted the Model Code for Securities Transactions by Directors of Listed Issuers (the "**Model Code**") as set out in Appendix 10 of the Listing Rules. Having made specific enquiry with regard to securities transactions of the Directors, all Directors have confirmed their compliance with the required standards set out in the Model Code and its code of conduct regarding Directors' securities transactions for the year ended 31 December 2022.

IMPORTANT EVENTS SINCE 31 DECEMBER 2022

On 11 January 2023, the Subscription was completed and Sunny Zhejiang Optics held 6% equity interests in the Target Company immediately after such completion.

As disclosed in the announcements of the Company dated 4 January 2023, 10 January 2023, 17 January 2023 and 18 January 2023, the issuance of USD400,000,000 5.95% per annum sustainability-linked bonds due 2026 was completed by the Company.

Save as disclosed above, there were no other important events affecting the Group which have occurred since 31 December 2022.

REVIEW OF FINANCIAL STATEMENTS

The Group's audited annual results for the year ended 31 December 2022 were reviewed by all the members of the audit committee of the Board (the "**Audit Committee**"), namely Mr. Zhang Yuqing (chairman of the Audit Committee), Mr. Feng Hua Jun, Mr. Shao Yang Dong and Ms. Jia Lina who are all independent non-executive Directors.

SHAREHOLDERS ENGAGEMENT

The Company is committed to creating channels of communication between the Directors, senior Management and investors, maintaining close contact with all the Shareholders through a variety of channels and promoting the communication with investors. The Chairman of the Board would ensure the appropriate steps are taken to provide effective communication with the Shareholders and that their views are communicated to the Board as a whole. The Company has adopted an updated Shareholders' communication policy (the "**Shareholders' Communication Policy**") on 28 December 2021 which is available on the website of the Company (www.sunnyoptical.com), to formalise and facilitate an effective and sound communication between the Company and the Shareholders and other stakeholders. The Company considers that the Shareholders' Communication Policy facilitated effective communication between the Company and the Shareholders for the year ended 31 December 2022.

Investor Contact and Inquiries

The Group has a dedicated team to maintain contact with investors and handle Shareholders' enquiries which may be put to the Board for discussion. Should you have any queries, please contact the Group's investor relations management department (Tel: +86-574-6253 0875; +852-3568 7038; e-mail: iroffice@sunnyoptical.com).

PUBLICATION OF ANNUAL RESULTS ANNOUNCEMENT AND ANNUAL REPORT

The annual results announcement is available for viewing on the website of HKEXnews of the Hong Kong Stock Exchange (www.hkexnews.hk) and on the website of the Company (www.sunnyoptical.com). The annual report of the Company for the year ended 31 December 2022 will be despatched to shareholders of the Company and will be published on the above websites in due course.

APPRECIATION

The Group would like to express its appreciation to all of its staff for their long-term efforts and to the Management for their outstanding contributions. It is the unremitting efforts of each member that enable the Group to make great achievements. Meanwhile, the Group wishes to express its sincere gratitude towards its shareholders, customers and business partners for their long-standing support and recognition. The Group will continue to strive for the sustainable development of the business, so as to realise higher values for its shareholders and other stakeholders.

By order of the Board
Sunny Optical Technology (Group) Company Limited
Ye Liaoning
Chairman and Executive Director

Hong Kong, 20 March 2023

As at the date of this announcement, the Board comprises Mr. Ye Liaoning, Mr. Sun Yang and Mr. Wang Wenjie, who are executive Directors; Mr. Wang Wenjian, who is non-executive Director, and Mr. Zhang Yuqing, Mr. Feng Hua Jun, Mr. Shao Yang Dong and Ms. Jia Lina, who are independent non-executive Directors.

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 2022, UBS Group's common equity tier 1 ("**CET1**") capital ratio was 14.2%, the CET1 leverage ratio was 4.42%, and the total loss-absorbing capacity ratio was 33.0%.[1] On the same date, invested assets stood at USD 3,957 billion, equity attributable to shareholders was USD 56,876 million and market capitalisation was USD 57,848 million. On the same date, UBS employed 72,597 people.[2]

On 31 December 2022, UBS AG consolidated CET1 capital ratio was 13.5%, the CET1 leverage ratio was 4.17%, and the total loss-absorbing capacity ratio was 32.0%.[1] On the same date, invested assets stood at USD 3,957 billion and equity attributable to UBS AG shareholders was USD 56,598 million. On the same date, UBS AG Group employed 47,628 people.[2]

The rating agencies S&P Global Ratings Europe Limited ("**S&P**"), Moody's Investors Service Ltd. ("**Moody's**"), and Fitch Ratings Ireland 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. Moody's 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/firms/credit-rating-agencies. Ratings given by Moody's are endorsed by Moody's Deutschland GmbH, which is established in the EEA and registered under Regulation (EU) No 1060/2009, as 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 Fitch are

[1] All figures based on the Swiss systemically relevant bank framework. Refer to the "Capital management" section of the Annual Report 2022 for more information.
[2] Full-time equivalents.

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 Fitch are endorsed by Standard & Poor's Global Ratings UK Limited and Fitch Ratings 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, 8001 Zurich, Switzerland, telephone +41 44 234 1111; and Aeschenvorstadt 1, 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 2022.

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. On 19 March 2023, UBS announced its plan to acquire Credit Suisse. UBS expects further changes to the Group's legal structure following such acquisition.

UBS Group AG's interests in subsidiaries and other entities as of 31 December 2022, including interests in significant subsidiaries, are discussed in "Note 28 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 2022 published on 06 March 2023 ("**Annual Report 2022**").

UBS AG's interests in subsidiaries and other entities as of 31 December 2022, including interests in significant subsidiaries, are discussed in "Note 28 Interests in subsidiaries and other entities" to the UBS AG's consolidated financial statements included in the Annual Report 2022.

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 businesse*s" in the "*Our strategy, business model and environment*" section of the Annual Report 2022.

– *Global Wealth Management* provides financial services, advice and solutions to private wealth clients. Its offering ranges from investment management to estate planning and corporate finance advice, in addition to specific wealth management and banking products and services.

– *Personal & Corporate Banking* serves its private, corporate, and institutional clients' needs, from banking to retirement, financing, investments and strategic transactions, in Switzerland, through its branch network and digital channels.

– *Asset Management* is a global, large-scale and diversified 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.

– *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 offering includes research, 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 Chief Digital and Information Office, Communications & Branding, Compliance, Finance, Group Sustainability and Impact, Human Resources, Group Legal, Regulatory & Governance, and Risk Control), Group Treasury and Non-core and Legacy Portfolio.

3.3 Competition

The financial services industry is characterised 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 2022, 2021, and 2020 from the Annual Report 2022, 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 2022, 2021, and 2020 which is indicated as being unaudited in the table below was included in the Annual Report 2022, 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 and the Annual Report 2022 and should not rely solely on the summarized information set out below.

	As of or for the year ended		
USD million, except where indicated	31.12.22	31.12.21	31.12.20
	audited, except where indicated		
Results			
Income statement			
Total revenues [1]	34,915	35,828	33,474
Net interest income	6,517	6,605	5,788
Net fee and commission income	19,023	22,438	19,207
Other net income from financial instruments measured at fair value through profit or loss	7,493	5,844	6,930
Credit loss expense / (release)	29	(148)	695
Operating expenses	25,927	27,012	25,081
Operating profit / (loss) before tax	8,960	8,964	7,699
Net profit / (loss) attributable to shareholders	7,084	7,032	6,196
Balance sheet			
Total assets	1,105,436	1,116,145	1,125,327

Total financial liabilities measured at amortized cost	705,442	744,762	732,364
of which: customer deposits	527,171	544,834	527,929
of which: debt issued measured at amortized cost	59,499	82,432	85,351
of which: subordinated debt [2]	2,968	5,163	7,744
Total financial liabilities measured at fair value through profit or loss	333,382	300,916	325,080
of which: debt issued designated at fair value	71,842	71,460	59,868
Loans and advances to customers	390,027	398,693	380,977
Total equity	56,940	58,442	58,073
Equity attributable to shareholders	56,598	58,102	57,754
Profitability and growth			
Return on equity (%) [3]	12.6*	12.3*	10.9*
Return on tangible equity (%) [4]	14.2*	13.9*	12.4*
Return on common equity tier 1 capital (%) [5]	16.8*	17.6*	16.6*
Return on leverage ratio denominator, gross (%) [6, 7]	3.4*	3.4*	3.4*
Cost / income ratio (%) [8]	74.3*	75.4*	74.9*
Net profit growth (%) [9]	0.7*	13.5*	56.3*
Resources			
Common equity tier 1 capital [10]	42,929	41,594	38,181
Risk-weighted assets [10]	317,823*	299,005*	286,743*
Common equity tier 1 capital ratio (%) [10]	13.5*	13.9*	13.3*
Going concern capital ratio (%) [10]	17.2*	18.5*	18.3*
Total loss-absorbing capacity ratio (%) [10]	32.0*	33.3*	34.2*
Leverage ratio denominator [6, 10]	1,029,561*	1,067,679*	1,036,771*
Common equity tier 1 leverage ratio (%) [6, 10]	4.17*	3.90*	3.68*
Other			
Invested assets (USD billion) [11]	3,957	4,596	4,187
Personnel (full-time equivalents)	47,628*	47,067*	47,546*

* unaudited

[1] Effective from the second quarter of 2022, *Operating income* has been renamed *Total revenues* and excludes *Credit loss expense / (release)*, which is now presented separately on the Income statement. Prior-period information reflects the new presentation structure, with no effect on *Operating profit / (loss) before tax* and *Net profit / (loss) attributable to shareholders*.
[2] Information for year ended 31 December 2020 is derived from the Annual Report 2021.
[3] Calculated as annualized net profit attributable to shareholders divided by average equity attributable to shareholders. This measure provides information about the profitability of the business in relation to equity.
[4] Calculated as annualized net profit attributable to shareholders 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.
[5] Calculated as annualized net profit attributable to shareholders 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.
[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 annualized total revenues divided by average leverage ratio denominator. This measure provides information about the revenues of the business in relation to the leverage ratio denominator.

[8] Calculated as operating expenses divided by total revenues. This measure provides information about the efficiency of the business by comparing operating expenses with gross income.
[9] Calculated as the 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 the comparison period. This measure provides information about profit growth since the comparison 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

On 19 March 2023, UBS announced plans to acquire Credit Suisse. The combination is expected to create a business with more than USD 5 trillion in total invested assets. Accordingly, the merger is expected to further strengthen UBS's position as the leading Swiss-based global wealth manager with more than USD 3.4 trillion in invested assets on a combined basis, operating in the most attractive growth markets. The transaction reinforces UBS's position as the leading universal bank in Switzerland. The combined businesses would be a leading asset manager in Europe, with invested assets of more than USD 1.5 trillion. Under the terms of the all-share transaction, Credit Suisse Group AG shareholders will receive 1 UBS Group AG share for every 22.48 Credit Suisse Group AG shares held, equivalent to CHF 0.76/share for a total consideration of CHF 3 billion. UBS benefits from CHF 25 billion of downside protection from the Swiss government for the transaction to support marks, purchase price adjustments and restructuring costs.

Refer to "*Our environment*" and "*Regulatory and legal developments*" in the Annual Report 2022, for further information on key regulatory, legal and other developments.

3.5 Trend Information

For information on trends, refer to "*Outlook*" under "*Group performance*" in the Fourth Quarter 2022 Report, as well as to the "*Our environment*" section, and to "*Top and emerging risks*" in the "*Risk management and control*" section of the Annual Report 2022. 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.

UBS AG operates under a strict dual board structure, as mandated by Swiss banking law. The Board of Directors of UBS AG ("**BoD**") exercises ultimate supervision over management, whereas the Executive Board of UBS AG ("**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, leading to 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.

Member	Title	Term of office	Current principal activities outside UBS AG
Colm Kelleher	Chairman	2023	Chairman of the Board of Directors of UBS Group AG; member of the board of Norfolk Southern Corporation (chair of the risk and finance committee); member of the Board of Directors of the Bretton Woods Committee; member of the board of the Swiss Finance Council; member of the board of Americans for Oxford; member of the Oxford Chancellor's Court of Benefactors; member of the Advisory Council of the British Museum; member of the International Advisory Council of the China Securities Regulatory Commission; member of the European Financial Services Round Table; member of the European Banking Group; member of the International Monetary Conference.
Lukas Gähwiler	Vice Chairman	2023	Vice Chairman of the Board of Directors of UBS Group AG; vice chairman of the Board of Directors of Pilatus Aircraft Ltd; member of the Board of Directors of Ringier AG; vice chairman of the Swiss Bankers Association; chairman of the Employers Association of Banks in Switzerland; member of the Board of Directors of the Swiss Employers Association; member of the Board of economiesuisse; chairman of the Foundation Board of the UBS Pension Fund; member of the board of the Swiss Finance Council; member of the Board of Trustees of Avenir Suisse.
Jeremy Anderson	Member	2023	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	2023	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	2023	Member of the Board of Directors of UBS Group AG; member of the board of Treliant 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; Opinion writer and consultant to Bloomberg Economics, Bloomberg.

Patrick Firmenich	Member	2023	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.
Fred Hu	Member	2023	Member of the Board of Directors of UBS Group AG; founder, chairman and CEO of Primavera Capital Group; 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; trustee of the China Medical Board; Governor of the Chinese International School in Hong Kong SAR; co-chairman of the Nature Conservancy Asia Pacific Council; member of the Board of Trustees of the Institute for Advanced Study; director and member of the Executive Committee of China Venture Capital and Private Equity Association Ltd.
Mark Hughes	Member	2023	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	2023	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	2023	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); member of the Board of Fivetran; member of the Board of Coalition, Inc; member of the Board of Checkout.com.
Dieter Wemmer	Member	2023	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, Malta and subsidiaries; member of the Berlin Center of Corporate Governance.
Jeanette Wong	Member	2023	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.

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, UBS has announced that Christian Bluhm will step down from the EB at the beginning of May 2023. At the same time, Damian Vogel will become a member of the EB and succeed Christian Bluhm as Chief Risk Officer.

Member and business address	**Function**	**Current principal activities outside UBS AG**
Ralph Hamers UBS AG, Bahnhofstrasse 45, 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 Financial Services/Banking Community of the World Economic Forum ; member of the International Advisory Panel, Monetary Authority of Singapore; member of the Board of the Institute of International Finance.
Christian Bluhm UBS AG, Bahnhofstrasse 45, 8001 Zurich	Chief Risk Officer	Member of the Group Executive Board and Group Chief Risk Officer of UBS Group AG; chairman of the Board of Christian Bluhm Photography 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, 8001 Zurich	Chief Digital and Information Officer	Member of the Group Executive Board and Group 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 UBS Optimus Foundation; member of the Board of Directors of Done Next Holdings AG; member of the Board of Trustees of the Inter-Community School Zurich.
Suni Harford UBS AG, 1285 Avenue of the Americas, New York, NY 10019 USA	President Asset Management	Member of the Group Executive Board and President 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.
Naureen Hassan UBS AG, 1285 Avenue of the Americas, New York, NY 10019 USA	President UBS Americas	Member of the Group Executive Board and President UBS Americas of UBS Group AG; CEO and member of the Board of UBS Americas Holding LLC; member of the Board of the Securities Industry and Financial Markets Association.
Robert Karofsky UBS AG, 1285 Avenue of the Americas, New York, NY 10019, USA	President Investment Bank	Member of the Group Executive Board and President Investment Bank of UBS Group AG; 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.

Iqbal Khan UBS AG, Bahnhofstrasse 45, 8001 Zurich	President Global Wealth Management and President UBS Europe, Middle East and Africa	Member of the Group Executive Board, 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.
Edmund Koh UBS AG, One Raffles Quay North Tower, Singapore 048583	President UBS Asia Pacific	Member of the Group Executive Board and President UBS Asia Pacific of UBS Group AG; 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; board member of Curbside Pte Ltd; 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; trustee of the Cultural Matching Fund, Singapore; member of University of Toronto's International Leadership Council for Asia.
Barbara Levi UBS AG, Bahnhofstrasse 45, 8001 Zurich	General Counsel	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; member of the Legal Committee of the Swiss-American Chamber of Commerce.
Markus Ronner UBS AG, Bahnhofstrasse 45, 8001 Zurich	Chief Compliance and Governance Officer	Member of the Group Executive Board and Group Chief Compliance and Governance Officer of UBS Group AG; chairman of the Board of Directors of UBS Switzerland AG.
Sarah Youngwood UBS AG, Bahnhofstrasse 45, 8001 Zurich	Chief Financial Officer	Member of the Group Executive Board and Group Chief Financial Officer of UBS Group AG; member of the Board of UBS Business Solutions AG; 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 27 April 2020, 7 April 2021 and 5 April 2022, Ernst & Young Ltd., Aeschengraben 27, 4051 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 2022 is available in the section "*UBS AG consolidated financial statements*" of the Annual Report 2022 and in the UBS AG's standalone financial statements for the year ended 31 December 2022 (the "**Standalone Financial Statements 2022**"), respectively; and for financial year 2021 it is available in the "*UBS AG consolidated financial statements*" section of the UBS Group AG and UBS AG annual report 2021, published on 6 March 2022 ("**Annual Report 2021**") and in the UBS AG's standalone financial statements for the year ended 31 December 2021 published on 6 March 2022 (the "**Standalone Financial Statements 2021**"). 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 2022 and 2021 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 377-382 (inclusive) of the Annual Report 2022. 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 35-39 (inclusive) of the Standalone Financial Statements 2022.

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 2022.

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 17 Provisions and contingent liabilities*" to the UBS AG consolidated financial statements included in of the Annual Report 2022. 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 2022.

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 2022

UBS AG consolidated key figures

	As of or for the year ended		
USD m, except where indicated	31.12.22	31.12.21	31.12.20
Results			
Total revenues	34,915	35,828	33,474
Credit loss expense / (release)	29	(148)	695
Operating expenses	25,927	27,012	25,081
Operating profit / (loss) before tax	8,960	8,964	7,699
Net profit / (loss) attributable to shareholders	7,084	7,032	6,196
Profitability and growth[1]			
Return on equity (%)	12.6	12.3	10.9
Return on tangible equity (%)	14.2	13.9	12.4
Return on common equity tier 1 capital (%)	16.8	17.6	16.6
Return on leverage ratio denominator, gross (%)[2]	3.4	3.4	3.4
Cost / income ratio (%)	74.3	75.4	74.9
Net profit growth (%)	0.7	13.5	56.3
Resources[1]			
Total assets	1,105,436	1,116,145	1,125,327
Equity attributable to shareholders	56,598	58,102	57,754
Common equity tier 1 capital[3]	42,929	41,594	38,181
Risk-weighted assets[3]	317,823	299,005	286,743
Common equity tier 1 capital ratio (%)[3]	13.5	13.9	13.3
Going concern capital ratio (%)[3]	17.2	18.5	18.3
Total loss-absorbing capacity ratio (%)[3]	32.0	33.3	34.2
Leverage ratio denominator[2,3]	1,029,561	1,067,679	1,036,771
Common equity tier 1 leverage ratio (%)[2,3]	4.17	3.90	3.68
Other			
Invested assets (USD bn)[4]	3,957	4,596	4,187
Personnel (full-time equivalents)	47,628	47,067	47,546

1 Refer to the "Targets, aspirations and capital guidance" section of this report for more information about our performance measurement. 2 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. Refer to the "Regulatory and legal developments" section of our Annual Report 2020 for more information. 3 Based on the Swiss systemically relevant bank framework as of 1 January 2020. Refer to the "Capital, liquidity and funding, and balance sheet" section of this report for more information. 4 Consists of invested assets for Global Wealth Management, Asset Management and Personal & Corporate Banking. Refer to "Note 31 Invested assets and net new money" in the "Consolidated financial statements" section of this report for more information.

Comparison between UBS Group AG consolidated and UBS AG consolidated

	As of or for the year ended 31.12.22			As of or for the year ended 31.12.21		
USD m, except where indicated	UBS Group AG consolidated	UBS AG consolidated	Difference (absolute)	UBS Group AG consolidated	UBS AG consolidated	Difference (absolute)
Income statement						
Total revenues	34,563	34,915	(353)	35,393	35,828	(434)
Credit loss expense / (release)	29	29	0	(148)	(148)	0
Operating expenses	24,930	25,927	(997)	26,058	27,012	(955)
Operating profit / (loss) before tax	9,604	8,960	644	9,484	8,964	520
of which: Global Wealth Management	*4,977*	*4,894*	*83*	*4,783*	*4,706*	*77*
of which: Personal & Corporate Banking	*1,812*	*1,790*	*21*	*1,731*	*1,726*	*4*
of which: Asset Management	*1,397*	*1,396*	*1*	*1,030*	*1,023*	*7*
of which: Investment Bank	*1,897*	*1,839*	*58*	*2,630*	*2,592*	*38*
of which: Group Functions	*(480)*	*(960)*	*480*	*(689)*	*(1,083)*	*394*
Net profit / (loss)	7,661	7,116	546	7,486	7,061	425
of which: net profit / (loss) attributable to shareholders	*7,630*	*7,084*	*546*	*7,457*	*7,032*	*425*
of which: net profit / (loss) attributable to non-controlling interests	*32*	*32*	*0*	*29*	*29*	*0*
Statement of comprehensive income						
Other comprehensive income	(4,494)	(4,396)	(98)	(2,367)	(2,235)	(131)
of which: attributable to shareholders	*(4,481)*	*(4,383)*	*(98)*	*(2,351)*	*(2,220)*	*(131)*
of which: attributable to non-controlling interests	*(14)*	*(14)*	*0*	*(16)*	*(16)*	*0*
Total comprehensive income	3,167	2,719	448	5,119	4,826	293
of which: attributable to shareholders	*3,149*	*2,701*	*448*	*5,106*	*4,813*	*293*
of which: attributable to non-controlling interests	*18*	*18*	*0*	*13*	*13*	*0*
Balance sheet						
Total assets	1,104,364	1,105,436	(1,072)	1,117,182	1,116,145	1,037
Total liabilities	1,047,146	1,048,496	(1,349)	1,056,180	1,057,702	(1,522)
Total equity	57,218	56,940	278	61,002	58,442	2,559
of which: equity attributable to shareholders	*56,876*	*56,598*	*278*	*60,662*	*58,102*	*2,559*
of which: equity attributable to non-controlling interests	*342*	*342*	*0*	*340*	*340*	*0*
Capital information						
Common equity tier 1 capital	45,457	42,929	2,528	45,281	41,594	3,687
Going concern capital	58,321	54,770	3,551	60,488	55,434	5,054
Risk-weighted assets	319,585	317,823	1,762	302,209	299,005	3,204
Common equity tier 1 capital ratio (%)	14.2	13.5	0.7	15.0	13.9	1.1
Going concern capital ratio (%)	18.2	17.2	1.0	20.0	18.5	1.5
Total loss-absorbing capacity ratio (%)	33.0	32.0	0.9	34.7	33.3	1.3
Leverage ratio denominator	1,028,461	1,029,561	(1,100)	1,068,862	1,067,679	1,183
Common equity tier 1 leverage ratio (%)	4.42	4.17	0.25	4.24	3.90	0.34

Management's report on internal control over financial reporting

Management's responsibility for internal control over financial reporting

The Board of Directors and management of UBS AG are responsible for establishing and maintaining adequate internal control over financial reporting. UBS AG's internal control over financial reporting is designed to provide reasonable assurance regarding the preparation and fair presentation of published financial statements in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB).

UBS AG's internal control over financial reporting includes those policies and procedures that:
- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect transactions and dispositions of assets;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation and fair presentation of financial statements, and that receipts and expenditures of the company are being made only in accordance with authorizations of UBS AG management; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management's assessment of internal control over financial reporting as of 31 December 2022

UBS AG management has assessed the effectiveness of UBS AG's internal control over financial reporting as of 31 December 2022 based on the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control – Integrated Framework (2013 Framework). Based on this assessment, management believes that, as of 31 December 2022, UBS AG's internal control over financial reporting was effective.

The effectiveness of UBS AG's internal control over financial reporting as of 31 December 2022 has been audited by Ernst & Young Ltd, UBS AG's independent registered public accounting firm, as stated in their ***Report of the independent registered public accounting firm on internal control over financial reporting,*** which expresses an unqualified opinion on the effectiveness of UBS AG's internal control over financial reporting as of 31 December 2022.

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Building a better working world

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of UBS AG

Opinion on Internal Control over Financial Reporting

We have audited UBS AG and subsidiaries' internal control over financial reporting as of 31 December 2022, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, UBS AG and subsidiaries ("the Group") maintained, in all material respects, effective internal control over financial reporting as of 31 December 2022, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Group as of 31 December 2022 and 2021, the related consolidated income statements, statements of comprehensive income, statements of changes in equity and statements of cash flows for each of the three years in the period ended 31 December 2022, and the related notes and our report dated 3 March 2023 expressed an unqualified opinion thereon.

Basis for Opinion

The Group's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Group's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Group in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Ernst & Young Ltd

Ernst & Young Ltd
Basel, 3 March 2023

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Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of UBS AG

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of UBS AG and subsidiaries ("the Group") as of 31 December 2022 and 2021, the related consolidated income statements, statements of comprehensive income, statements of changes in equity and statements of cash flows for each of the three years in the period ended 31 December 2022, and the related notes to the consolidated financial statements, including the information identified as "audited" as described in Note 1 (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Group at 31 December 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended 31 December 2022, in conformity with the International Financial Reporting Standards as issued by the International Accounting Standards Board.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Group's internal control over financial reporting as of 31 December 2022, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated 3 March 2023 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Group's Board of Directors. Our responsibility is to express an opinion on the Group's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Group in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Valuation of complex or illiquid instruments at fair value

Description of the Matter	At 31 December 2022, as explained in Notes 1 and 20 to the consolidated financial statements, the Group held financial assets and liabilities measured at fair value of USD 341,858 million and USD 333,382 million, including financial instruments that did not trade in active markets. These instruments are reported within the following accounts: financial assets and liabilities at fair value held for trading, derivative financial instruments, financial assets at fair value not held for trading, debt issued designated at fair value, and other financial liabilities designated at fair value. In determining the fair value of these financial instruments, the Group used valuation techniques, modelling assumptions, and estimates of unobservable market inputs which required significant management judgment. Auditing management's judgments and assumptions used in the estimation of the fair value of these instruments was complex due to the highly judgmental nature of valuation techniques, key modelling assumptions and significant unobservable inputs. Auditing the valuation of complex or illiquid instruments at fair value included consideration of any incremental risks arising from the impact of current macroeconomic influences on valuation techniques and inputs, such as geopolitics, inflation, and the ongoing COVID-19 pandemic. The valuation techniques that required especially complex judgement were comprised of discounted cash flow and earnings-based valuation techniques. Highly judgmental modelling assumptions result from a range of different models or model calibrations used by market participants. Valuation inputs which were particularly complex and subjective included those with a limited degree of observability and the associated extrapolation, interpolation or calibration of curves using limited and proxy data points. Examples of such inputs included unobservable credit spreads and bond prices, volatility, and correlation.
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design and tested the operating effectiveness of the controls over management's financial instruments valuation processes, including controls over market data inputs, model and methodology governance, and valuation adjustments. We tested the valuation techniques, models and methodologies, and the inputs used in those models, as outlined above, by performing an independent revaluation of certain complex or illiquid financial assets and liabilities with the support of specialists. We used independent models and inputs, and compared inputs to available market data among other procedures. We also independently challenged key judgments in relation to a sample of fair value adjustments. We also assessed management's disclosures regarding fair value measurement (within Notes 1 and 20 to the consolidated financial statements).

Recognition of deferred tax assets

Description of the Matter	At 31 December 2022, the Group's deferred tax assets ("DTA") were USD 9,354 million (see Note 8 to the consolidated financial statements). DTAs are recognized to the extent it is probable that taxable profits will be available, against which, the applicable deductible temporary differences or the carryforward of unused tax losses within the loss carryforward period can be utilized. There is significant judgment exercised when estimating future taxable income that is not based on the reversal of taxable temporary differences. Management's estimate of future taxable profits is based on its strategic plan that is sensitive to the assumptions made in estimating future taxable income. Auditing management's assessment of the recognition of the Group's DTAs was complex due to the highly judgmental nature of estimating future taxable profits over the life of underlying tax loss carryforwards. Estimating future profitability is inherently subjective as it is sensitive to future economic, market and other conditions, which are difficult to predict, such as the impact of geopolitics, inflation, interest rates, and the ongoing COVID-19 pandemic. Specifically, some of the more subjective key macro-economic assumptions used included gross domestic product growth rates, equity market performance, and interest rate expectations.
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design, and tested the operating effectiveness of management's controls over DTA valuation, which included the assumptions used in developing the strategic plans and estimating future taxable income. We assessed the completeness and accuracy of the data used for the estimations of future taxable income. This included recalculating the outputs of models applied to the recognition process for DTAs. We involved specialists to assist in assessing the key economic assumptions embedded in the strategic plans. We compared key assumptions used to forecast future taxable income to externally available historical and prospective data and assumptions, and assessed the sensitivity of the outcomes using reasonably possible changes in assumptions. We also assessed management's disclosure regarding recognized and unrecognized deferred tax assets (within Note 8 to the consolidated financial statements).

Expected credit losses

Description of the Matter	At 31 December 2022, the Group's allowances and provisions for expected credit losses ("ECL") were USD 1,091 million. As explained in Notes 1, 9 and 19 to the consolidated financial statements, ECL is recognized for financial assets measured at amortized cost, financial assets measured at fair value through other comprehensive income, fee and lease receivables, financial guarantees and irrevocable loan commitments. ECL is also recognized on the undrawn portion of revolving revocable credit lines, which include the Group's credit card limits and master credit facilities. The allowances and provisions for ECL consists of exposures that are in default which are individually evaluated for impairment (stage 3), as well

as losses inherent in the loan portfolio that are not specifically identified (stage 1 and stage 2). Management's ECL estimates represent the difference between contractual cash flows and those the Group expects to receive, discounted at the effective interest rate. The method used to calculate ECL is based on a combination of the following principal factors: probability of default ("PD"), loss given default ("LGD") and exposure at default ("EAD").

Auditing management's estimate of the allowances and provisions for ECL was complex due to the highly judgmental nature of forward-looking economic scenarios that form the basis of the ECL calculation, their probability weightings, and the credit risk models used to estimate stage 1 and stage 2 ECL. The geopolitical tensions and macroeconomic developments during 2022, such as the Russian invasion into Ukraine, US/China developments, inflation, including emerging stagflation risks and monetary policy challenges, and continued restrictions in certain locations due to the ongoing COVID-19 pandemic contribute to further uncertainty, and as a consequence additional complexity in estimating ECL. As a result, the ECL estimation requires higher management judgement, specifically within the following two areas: (i) scenario selection, including assumptions about the scenario severity, the possible geopolitical developments and macroeconomic and market developments and the number of scenarios necessary to sufficiently cover the bandwidth of potential outcomes, as well as related scenario weights and post-model adjustments; and, (ii) credit risk models, since the output from historic data based models may not be indicative of current or future conditions.

Additionally, auditing the measurement of individual ECL for stage 3 was complex due to the high degree of judgment involved in management's process for estimating ECL based on assumptions. These assumptions take into account expected future cash flows from collateral and other credit enhancements or expected payouts from bankruptcy proceedings for unsecured claims and, where applicable, time to realization of collateral and the seniority of claims.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design and tested the operating effectiveness of management's controls over the ECL estimate, including management's choice of forward-looking economic scenarios used to measure ECL and the probability weighting assigned to such scenarios. We evaluated management's methodologies and governance controls for developing and monitoring the economic scenarios used and the probability weightings assigned to them, and related post-model adjustment. Supported by specialists, we assessed the key macroeconomic variables used in the forward-looking scenarios, such as real gross domestic product growth, unemployment rate, interest rates and house price indices, and evaluated the modelled correlation and translation of those macroeconomic factors to the ECL estimate. We further assessed the appropriateness of the post-model adjustments by considering management's governance process, assumptions used and sensitivity analysis.

We also obtained an understanding, evaluated the design and tested the operating effectiveness of controls over credit risk models used in the ECL estimate, including controls over the completeness and accuracy of model input data, calculation logic, and output data used in the overall ECL calculation. With the support of specialists, on a sample basis, we performed an evaluation of management's models and tested the model outcomes by inspecting model documentation, reperforming model calculations, and comparing data used as inputs to management's forecast to external sources, among other procedures.

For the measurement of stage 3, we obtained an understanding, evaluated the design and tested the operating effectiveness of controls over management's process, including an evaluation of the assumptions used by management regarding the future cash flows from debtors' continuing operations and/or the liquidation of collateral. Supported by specialists in certain areas, we additionally tested collateral valuation, cash flow assumptions and exit strategies by performing inquiries of management, inspecting underlying documents, such as loan contracts, financial statements, covenants, budgets and business plans, and by re-performing discounted cash flow calculations among other procedures, on a sample basis.

We also assessed management's disclosures regarding financial assets at amortized cost and other positions in scope of expected credit loss measurement (within Notes 1, 9 and 19 to the consolidated financial statements).

Ernst & Young Ltd

Ernst & Young Ltd

We have served as the Group's auditor since 1998.

Basel, Switzerland

3 March 2023

Building a better working world

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To the General Meeting of

UBS AG, Zurich & Basel

Basel, 3 March 2023

Statutory auditor's report on the audit of the consolidated financial statements

Opinion

We have audited the consolidated financial statements of UBS AG and its subsidiaries ("the Group"), which comprise the consolidated balance sheets as of 31 December 2022 and 31 December 2021, and the consolidated income statements, statements of comprehensive income, statements of changes in equity and statements of cash flows for each of the three years in the period ended 31 December 2022, and the related notes to the consolidated financial statements, including the information identified as "audited" as described in Note 1 (collectively referred to as the "consolidated financial statements").

In our opinion, the accompanying consolidated financial statements give a true and fair view of the consolidated financial position of the Group as at 31 December 2022 and 31 December 2021, and the consolidated financial performance and its consolidated cash flows for each of the three years in the period ended 31 December 2022 in accordance with International Financial Reporting Standards (IFRS) and comply with Swiss law.

Basis for opinion

We conducted our audit in accordance with Swiss law, International Standards on Auditing (ISAs) and Swiss Auditing Standards. Our responsibilities under those provisions and standards are further described in the *Auditor's responsibilities for the audit of the consolidated financial statements* section of our report.

We are independent of the Group in accordance with the provisions of Swiss law and the requirements of the Swiss audit profession, as well as the International Code of Ethics for Professional Accountants (including International Independence Standards) of the International Ethics Standards Board for Accountants (IESBA Code), and we have fulfilled our other ethical responsibilities in accordance with these requirements.

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

Key audit matters

Key audit matters are those matters that, in our professional judgment, 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. For each matter below, our description of how our audit addressed the matter is provided in that context.

We have fulfilled the responsibilities described in the *Auditor's responsibilities for the audit of the consolidated financial statements* section of our report, including in relation to these matters. Accordingly, our audit included the performance of procedures designed to respond to our assessment of the risks of material misstatement of the consolidated financial statements. The results of our audit procedures, including the procedures performed to address the matters below, provide the basis for our audit opinion on the accompanying consolidated financial statements.

Valuation of complex or illiquid instruments at fair value

Area of focus

At 31 December 2022, as explained in Notes 1 and 20 to the consolidated financial statements, the Group held financial assets and liabilities measured at fair value of USD 341,858 million and USD 333,382 million, including financial instruments that did not trade in active markets. These instruments are reported within the following accounts: financial assets and liabilities at fair value held for trading, derivative financial instruments, financial assets at fair value not held for trading, debt issued designated at fair value, and other financial liabilities designated at fair value. In determining the fair value of these financial instruments, the Group used valuation techniques, modelling assumptions, and estimates of unobservable market inputs which required significant management judgment.

Auditing management's judgments and assumptions used in the estimation of the fair value of these instruments was complex due to the highly judgmental nature of valuation techniques, key modelling assumptions and significant unobservable inputs. Auditing the valuation of complex or illiquid instruments at fair value included consideration of any incremental risks arising from the impact of current macroeconomic influences on valuation techniques and inputs, such as geopolitics, inflation, and the ongoing COVID-19 pandemic. The valuation techniques that required especially complex judgement were comprised of discounted cash flow and earnings-based valuation techniques. Highly judgmental modelling assumptions result from a range of different models or model calibrations used by market participants. Valuation inputs which were particularly complex and subjective included those with a limited degree of observability and the associated extrapolation, interpolation or calibration of curves using limited and proxy data points. Examples of such inputs included unobservable credit spreads and bond prices, volatility, and correlation.

Our audit response

We obtained an understanding, evaluated the design and tested the operating effectiveness of the controls over management's financial instruments valuation processes, including controls over market data inputs, model and methodology governance, and valuation adjustments.

We tested the valuation techniques, models and methodologies, and the inputs used in those models, as outlined above, by performing an independent revaluation of certain complex or illiquid financial assets and liabilities with the support of specialists. We used independent models and inputs, and compared inputs to available market data among other procedures. We also independently challenged key judgments in relation to a sample of fair value adjustments.

We also assessed management's disclosures regarding fair value measurement (within Notes 1 and 20 to the consolidated financial statements).

Recognition of deferred tax assets

Area of focus

At 31 December 2022, the Group's deferred tax assets ("DTA") were USD 9,354 million (see Note 8 to the consolidated financial statements). DTAs are recognized to the extent it is probable that taxable profits will be available, against which, the applicable deductible temporary differences or the carryforward of unused tax losses within the loss carryforward period can be utilized. There is significant judgment exercised when estimating future taxable income that is not based on the reversal of taxable temporary differences. Management's estimate of future taxable profits is based on its strategic plan that is sensitive to the assumptions made in estimating future taxable income.

Auditing management's assessment of the recognition of the Group's DTAs was complex due to the highly judgmental nature of estimating future taxable profits over the life of underlying tax loss carryforwards. Estimating future profitability is inherently subjective as it is sensitive to future economic, market and other conditions, which are difficult to predict, such as the impact of geopolitics, inflation, interest rates, and the ongoing COVID-19 pandemic. Specifically, some of the more subjective key macro-economic assumptions used included gross domestic product growth rates, equity market performance, and interest rate expectations.

Our audit response

We obtained an understanding, evaluated the design, and tested the operating effectiveness of management's controls over DTA valuation, which included the assumptions used in developing the strategic plans and estimating future taxable income.

We assessed the completeness and accuracy of the data used for the estimations of future taxable income. This included recalculating the outputs of models applied to the recognition process for DTAs.

We involved specialists to assist in assessing the key economic assumptions embedded in the strategic plans. We compared key assumptions used to forecast future taxable income to externally available historical and prospective data and assumptions, and assessed the sensitivity of the outcomes using reasonably possible changes in assumptions.

We also assessed management's disclosure regarding recognized and unrecognized deferred tax assets (within Note 8 to the consolidated financial statements).

Expected credit losses

Area of focus

At 31 December 2022, the Group's allowances and provisions for expected credit losses ("ECL") were USD 1,091 million. As explained in Notes 1, 9 and 19 to the consolidated financial statements, ECL is recognized for financial assets measured at amortized cost, financial assets measured at fair value through other comprehensive income, fee and lease receivables, financial guarantees and irrevocable loan commitments. ECL is also recognized on the undrawn portion of revolving revocable credit lines, which include the Group's credit card limits and master credit facilities. The allowances and provisions for ECL consists of exposures that are in default which are individually evaluated for impairment (stage 3), as well as losses inherent in the loan portfolio that are not specifically identified (stage 1 and stage 2). Management's ECL estimates represent the difference between contractual cash flows and those the Group expects to receive, discounted at the effective interest rate. The method used to calculate ECL is based on a combination of the following principal factors: probability of default ("PD"), loss given default ("LGD") and exposure at default ("EAD").

Auditing management's estimate of the allowances and provisions for ECL was complex due to the highly judgmental nature of forward-looking economic scenarios that form the basis of the ECL calculation, their probability weightings, and the credit risk models used to estimate stage 1 and stage 2 ECL. The geopolitical tensions and macroeconomic developments during 2022, such as the Russian invasion into Ukraine, US/China developments, inflation, including emerging stagflation risks and monetary policy challenges, and continued restrictions in certain locations due to the ongoing COVID-19 pandemic contribute to further uncertainty, and as a consequence additional complexity in estimating ECL. As a result, the ECL estimation requires higher management judgement, specifically within the following two areas: (i) scenario selection, including assumptions about the scenario severity, the possible geopolitical developments and macroeconomic and market developments, and the number of scenarios necessary to sufficiently cover the bandwidth of potential outcomes, as well as related scenario weights and post-model adjustments; and, (ii) credit risk models, since the output from historic data based models may not be indicative of current or future conditions.

Additionally, auditing the measurement of individual ECL for stage 3 was complex due to the high degree of judgment involved in management's process for estimating ECL based on assumptions. These assumptions take into account expected future cash flows from collateral and other credit enhancements or expected payouts from bankruptcy proceedings for unsecured claims and, where applicable, time to realization of collateral and the seniority of claims.

Our audit response

We obtained an understanding, evaluated the design and tested the operating effectiveness of management's controls over the ECL estimate, including management's choice of forward-looking economic scenarios used to measure ECL and the probability weighting assigned to such scenarios. We evaluated management's methodologies and governance controls for developing and monitoring the economic scenarios used and the probability weightings assigned to them, and related post-model adjustments. Supported by specialists, we assessed the key macroeconomic variables used in the forward-looking scenarios, such as real gross domestic product growth, unemployment rate, interest rates and house price indices, and evaluated the modelled correlation and translation of those macroeconomic factors to the ECL estimate. We further assessed the appropriateness of the post-model adjustments by considering management's governance process, assumptions used and sensitivity analysis.

We also obtained an understanding, evaluated the design and tested the operating effectiveness of controls over credit risk models used in the ECL estimate, including controls over the completeness and accuracy of model input data, calculation logic, and output data used in the overall ECL calculation. With the support of specialists, on a sample basis, we performed an evaluation of management's models and tested the model outcomes by inspecting model documentation, reperforming model calculations, and comparing data used as inputs to management's forecast to external sources, among other procedures.

For the measurement of stage 3, we obtained an understanding, evaluated the design and tested the operating effectiveness of controls over management's process, including an evaluation of the assumptions used by management regarding the future cash flows from debtors' continuing operations and/or the liquidation of collateral. Supported by specialists in certain areas, we additionally tested collateral valuation, cash flow assumptions and exit strategies by performing inquiries of management, inspecting underlying documents, such as loan contracts, financial statements, covenants, budgets and business plans, and by re-performing discounted cash flow calculations among other procedures, on a sample basis.

We also assessed management's disclosures regarding financial assets at amortized cost and other positions in scope of expected credit loss measurement (within Notes 1, 9 and 19 to the consolidated financial statements).

Other information in the annual report

The Board of Directors is responsible for the other information in the annual report. The other information comprises all information included in the annual report, but does not include the consolidated financial statements, the stand-alone financial statements of UBS AG, the compensation report[1], and our auditor's reports thereon.

Our opinions on the consolidated financial statements, the standalone financial statements of UBS AG and the compensation report[1] do not cover the other information in the annual report 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 in the annual report 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.

Responsibility of the Board of Directors for the consolidated financial statements

The Board of Directors is responsible for the preparation of the consolidated financial statements that give a true and fair view in accordance with IFRS and the provisions of Swiss law, and for such internal control as the Board of Directors determines 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 Board of Directors is 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 Board of Directors either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

[1] Specifically, the following tables in the compensation report: "Share ownership/entitlements of GEB members," "Total of all vested and unvested shares of GEB members," "Number of shares of BoD members," and "Total of all blocked and unblocked shares of BoD Members."

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. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Swiss law, ISAs and Swiss Auditing Standards 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.

A further description of our responsibilities for the audit of the consolidated financial statements is located at the website of EXPERTsuisse: http://www.expertsuisse.ch/en/audit-report-for-public-companies. This description forms part of our auditor's report.

Report on other legal and regulatory requirements

In accordance with article 728a para. 1 item 3 CO and the Swiss Auditing Standard 890, we confirm that an internal control system exists, which has been designed for the preparation of consolidated financial statements according to the instructions of the Board of Directors.

We recommend that the consolidated financial statements submitted to you be approved.

Ernst & Young Ltd

Maurice McCormick Licensed audit expert (Auditor in charge)	Robert E. Jacob, Jr. Certified Public Accountant (U.S.)

UBS AG consolidated financial statements

Primary financial statements and share information

Audited |

Income statement

		For the year ended		
USD m	Note	31.12.22	31.12.21	31.12.20
Interest income from financial instruments measured at amortized cost and fair value through other comprehensive income	3	11,803	8,534	8,816
Interest expense from financial instruments measured at amortized cost	3	(6,696)	(3,366)	(4,333)
Net interest income from financial instruments measured at fair value through profit or loss and other	3	1,410	1,437	1,305
Net interest income	3	6,517	6,605	5,788
Other net income from financial instruments measured at fair value through profit or loss	3	7,493	5,844	6,930
Fee and commission income	4	20,846	24,422	20,982
Fee and commission expense	4	(1,823)	(1,985)	(1,775)
Net fee and commission income	4	19,023	22,438	19,207
Other income	5	1,882	941	1,549
Total revenues		34,915	35,828	33,474
Credit loss expense / (release)	19	29	(148)	695
Personnel expenses	6	15,080	15,661	14,686
General and administrative expenses	7	9,001	9,476	8,486
Depreciation, amortization and impairment of non-financial assets	11,12	1,845	1,875	1,909
Operating expenses		25,927	27,012	25,081
Operating profit / (loss) before tax		8,960	8,964	7,699
Tax expense / (benefit)	8	1,844	1,903	1,488
Net profit / (loss)		7,116	7,061	6,211
Net profit / (loss) attributable to non-controlling interests		32	29	15
Net profit / (loss) attributable to shareholders		7,084	7,032	6,196

Statement of comprehensive income

USD m	Note	For the year ended 31.12.22	31.12.21	31.12.20
Comprehensive income attributable to shareholders				
Net profit / (loss)		7,084	7,032	6,196
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		(869)	(1,046)	2,040
Effective portion of changes in fair value of hedging instruments designated as net investment hedges, before tax		319	492	(938)
Foreign currency translation differences on foreign operations reclassified to the income statement		32	(1)	(7)
Effective portion of changes in fair value of hedging instruments designated as net investment hedges reclassified to the income statement		(4)	10	2
Income tax relating to foreign currency translations, including the effect of net investment hedges		4	35	(67)
Subtotal foreign currency translation, net of tax		(519)	(510)	1,030
Financial assets measured at fair value through other comprehensive income				
Net unrealized gains / (losses), before tax		(440)	(203)	223
Net realized (gains) / losses reclassified to the income statement from equity		1	(9)	(40)
Reclassification of financial assets to Other financial assets measured at amortized cost[1]		449		
Income tax relating to net unrealized gains / (losses)		(3)	55	(48)
Subtotal financial assets measured at fair value through other comprehensive income, net of tax		6	(157)	136
Cash flow hedges of interest rate risk	25			
Effective portion of changes in fair value of derivative instruments designated as cash flow hedges, before tax		(5,758)	(992)	2,012
Net (gains) / losses reclassified to the income statement from equity		(159)	(1,073)	(770)
Income tax relating to cash flow hedges		1,124	390	(231)
Subtotal cash flow hedges, net of tax		(4,793)[2]	(1,675)	1,011
Cost of hedging	25			
Cost of hedging, before tax		45	(32)	(13)
Income tax relating to cost of hedging		0	6	0
Subtotal cost of hedging, net of tax		45	(26)	(13)
Total other comprehensive income that may be reclassified to the income statement, net of tax		(5,260)	(2,368)	2,165
Other comprehensive income that will not be reclassified to the income statement				
Defined benefit plans	26			
Gains / (losses) on defined benefit plans, before tax		40	133	(222)
Income tax relating to defined benefit plans		41	(31)	88
Subtotal defined benefit plans, net of tax		81	102	(134)
Own credit on financial liabilities designated at fair value	20			
Gains / (losses) from own credit on financial liabilities designated at fair value, before tax		867	46	(293)
Income tax relating to own credit on financial liabilities designated at fair value		(71)	0	0
Subtotal own credit on financial liabilities designated at fair value, net of tax		796	46	(293)
Total other comprehensive income that will not be reclassified to the income statement, net of tax		877	148	(427)
Total other comprehensive income		(4,383)	(2,220)	1,738
Total comprehensive income attributable to shareholders		2,701	4,813	7,934
Comprehensive income attributable to non-controlling interests				
Net profit / (loss)		32	29	15
Total other comprehensive income that will not be reclassified to the income statement, net of tax		(14)	(16)	21
Total comprehensive income attributable to non-controlling interests		18	13	36
Total comprehensive income				
Net profit / (loss)		7,116	7,061	6,211
Other comprehensive income		(4,396)	(2,235)	1,759
of which: other comprehensive income that may be reclassified to the income statement		*(5,260)*	*(2,368)*	*2,165*
of which: other comprehensive income that will not be reclassified to the income statement		*864*	*132*	*(406)*
Total comprehensive income		2,719	4,826	7,970

1 Effective 1 April 2022, a portfolio of assets previously classified as Financial assets measured at fair value through other comprehensive income was reclassified to Other financial assets measured at amortized cost. Refer to Note 1b for more information. 2 Mainly reflects net unrealized losses on US dollar hedging derivatives resulting from significant increases in the relevant US dollar long-term interest rates.

Balance sheet

USD m	Note	31.12.22	31.12.21
Assets			
Cash and balances at central banks		169,445	192,817
Loans and advances to banks	9	14,671	15,360
Receivables from securities financing transactions measured at amortized cost	9, 21	67,814	75,012
Cash collateral receivables on derivative instruments	9, 21	35,033	30,514
Loans and advances to customers	9	390,027	398,693
Other financial assets measured at amortized cost	9, 13a	53,389	26,236
Total financial assets measured at amortized cost		730,379	738,632
Financial assets at fair value held for trading	20	108,034	131,033
of which: assets pledged as collateral that may be sold or repledged by counterparties		*36,742*	*43,397*
Derivative financial instruments	10, 20, 21	150,109	118,145
Brokerage receivables	20	17,576	21,839
Financial assets at fair value not held for trading	20	59,408	59,642
Total financial assets measured at fair value through profit or loss		335,127	330,659
Financial assets measured at fair value through other comprehensive income	19, 20	2,239	8,844
Investments in associates	28b	1,101	1,243
Property, equipment and software	11	11,316	11,712
Goodwill and intangible assets	12	6,267	6,378
Deferred tax assets	8	9,354	8,839
Other non-financial assets	13b	9,652	9,836
Total assets		1,105,436	1,116,145
Liabilities			
Amounts due to banks		11,596	13,101
Payables from securities financing transactions measured at amortized cost	21	4,202	5,533
Cash collateral payables on derivative instruments	21	36,436	31,801
Customer deposits	14	527,171	544,834
Funding from UBS Group AG measured at amortized cost	14b	56,147	57,295
Debt issued measured at amortized cost	16	59,499	82,432
Other financial liabilities measured at amortized cost	18a	10,391	9,765
Total financial liabilities measured at amortized cost		705,442	744,762
Financial liabilities at fair value held for trading	20	29,515	31,688
Derivative financial instruments	10, 20, 21	154,906	121,309
Brokerage payables designated at fair value	20	45,085	44,045
Debt issued designated at fair value	15, 20	71,842	71,460
Other financial liabilities designated at fair value	18b, 20	32,033	32,414
Total financial liabilities measured at fair value through profit or loss		333,382	300,916
Provisions	17a	3,183	3,452
Other non-financial liabilities	18c	6,489	8,572
Total liabilities		1,048,496	1,057,702
Equity			
Share capital		338	338
Share premium		24,648	24,653
Retained earnings		31,746	27,912
Other comprehensive income recognized directly in equity, net of tax		(133)	5,200
Equity attributable to shareholders		56,598	58,102
Equity attributable to non-controlling interests		342	340
Total equity		56,940	58,442
Total liabilities and equity		1,105,436	1,116,145

Statement of changes in equity

USD m	Share capital	Share premium	Retained earnings
Balance as of 31 December 2019	**338**	**24,659**	**23,419**
Premium on shares issued and warrants exercised		(4)[2]	
Tax (expense) / benefit		1	
Dividends			(3,848)
Translation effects recognized directly in retained earnings			(49)
Share of changes in retained earnings of associates and joint ventures			(40)
New consolidations / (deconsolidations) and other increases / (decreases)[3]		(76)	
Total comprehensive income for the year			5,769
of which: net profit / (loss)			*6,196*
of which: OCI, net of tax			*(427)*
Balance as of 31 December 2020	**338**	**24,580**	**25,251**
Premium on shares issued and warrants exercised		(7)[2]	
Tax (expense) / benefit		(102)	
Dividends			(4,539)
Translation effects recognized directly in retained earnings			18
Share of changes in retained earnings of associates and joint ventures			1
New consolidations / (deconsolidations) and other increases / (decreases)[4]		182	
Total comprehensive income for the year			7,180
of which: net profit / (loss)			*7,032*
of which: OCI, net of tax			*148*
Balance as of 31 December 2021	**338**	**24,653**	**27,912**
Premium on shares issued and warrants exercised		(14)[2]	
Tax (expense) / benefit		5	
Dividends			(4,200)
Translation effects recognized directly in retained earnings			69
Share of changes in retained earnings of associates and joint ventures			0
New consolidations / (deconsolidations) and other increases / (decreases)		4	3
Total comprehensive income for the year			7,961
of which: net profit / (loss)			*7,084*
of which: OCI, net of tax			*877*
Balance as of 31 December 2022	338	24,648	31,746

1 Excludes other comprehensive income related to defined benefit plans and own credit, which is recorded directly in Retained earnings. 2 Includes decreases related to recharges by UBS Group AG for share-based compensation awards granted to employees of UBS AG or its subsidiaries. 3 Mainly relates to the establishment of a banking partnership with Banco do Brasil. In 2020, UBS AG issued a 49.99% stake in UBS Brasil Serviços in exchange for exclusive access to Banco do Brasil's corporate clients. Upon completion of the transaction in 2020, equity attributable to non-controlling interests increased by USD 115m, with no material effect on equity attributable to shareholders. 4 Includes the effects related to the launch of UBS AG's new operational partnership entity with Sumitomo Mitsui Trust Holdings, Inc in 2021.

Other comprehensive income recognized directly in equity, net of tax[1]	*of which: foreign currency translation*	*of which: financial assets at fair value through OCI*	*of which: cash flow hedges*	Total equity attributable to shareholders	Non-controlling interests	Total equity
5,306	***4,032***	***14***	***1,260***	**53,722**	**174**	**53,896**
				(4)		(4)
				1		1
				(3,848)	(6)	(3,854)
49		*0*	*49*	0		0
				(40)		(40)
65	*65*			(12)	115	103
2,165	*1,030*	*136*	*1,011*	7,934	36	7,970
				6,196	*15*	*6,211*
2,165	*1,030*	*136*	*1,011*	*1,738*	*21*	*1,759*
7,585	***5,126***	***151***	***2,321***	**57,754**	**319**	**58,073**
				(7)		(7)
				(102)		(102)
				(4,539)	(4)	(4,542)
(18)		*0*	*(18)*	0		0
				1		1
				182	12	193
(2,368)	*(510)*	*(157)*	*(1,675)*	4,813	13	4,826
				7,032	*29*	*7,061*
(2,368)	*(510)*	*(157)*	*(1,675)*	*(2,220)*	*(16)*	*(2,235)*
5,200	***4,617***	***(7)***	***628***	**58,102**	**340**	**58,442**
				(14)		(14)
				5		5
				(4,200)	(9)	(4,209)
(69)		*0*	*(69)*	0		0
				0		0
(3)		*(3)*		4	(7)	(3)
(5,260)	*(519)*	*6*	*(4,793)*	2,701	18	2,719
				7,084	*32*	*7,116*
(5,260)	*(519)*	*6*	*(4,793)*	*(4,383)*	*(14)*	*(4,396)*
(133)	*4,098*	*(4)*	*(4,234)*	56,598	342	56,940

Ordinary share capital

As of 31 December 2022, UBS AG had 3,858,408,466 issued shares (31 December 2021: 3,858,408,466 shares) with a nominal value of CHF 0.10 each, leading to a share capital of CHF 385,840,846.60. The shares were entirely held by UBS Group AG.

Following revisions to Swiss Corporate Law that are effective from 1 January 2023, the Board of Directors (the BoD) will propose at the 2023 Annual General Meeting (the AGM) that the shareholders approve the conversion of the share capital currency of UBS AG from the Swiss franc to the US dollar. This would align the share capital currency with the financial statement presentation currency of UBS AG. If the change is approved, the share capital of UBS AG will be slightly reduced to a nominal value per share of USD 0.10 (from CHF 0.10 currently), with the amount of the reduction allocated to the capital contribution reserve (presented as *Share premium* in the consolidated financial statements). Total equity reported for UBS AG consolidated will not change.

Conditional share capital

As of 31 December 2022, the following conditional share capital was available to UBS AG's BoD:

– A maximum of CHF 38,000,000 represented by up to 380,000,000 fully paid registered shares with a nominal value of CHF 0.10 each, to be issued through the voluntary or mandatory exercise of conversion rights and / or warrants granted in connection with the issuance of bonds or similar financial instruments on national or international capital markets. This conditional capital allowance was approved at the AGM of UBS AG on 14 April 2010. The BoD has not made use of such allowance.

Authorized share capital

UBS AG had no authorized capital available to issue on 31 December 2022.

Earnings per share

In 2015, UBS AG shares were delisted from the SIX Swiss Exchange and the New York Stock Exchange. As of 31 December 2022, 100% of UBS AG's issued shares were held by UBS Group AG and therefore were not publicly traded. Accordingly, earnings per share information is not provided for UBS AG.

Statement of cash flows

	For the year ended		
USD m	31.12.22	31.12.21	31.12.20
Cash flow from / (used in) operating activities			
Net profit / (loss)	7,116	7,061	6,211
Non-cash items included in net profit and other adjustments:			
Depreciation, amortization and impairment of non-financial assets	1,845	1,875	1,909
Credit loss expense / (release)	29	(148)	695
Share of net profits of associates and joint ventures and impairment related to associates	(32)	(105)	(84)
Deferred tax expense / (benefit)	491	432	355
Net loss / (gain) from investing activities	(1,515)	(230)	(698)
Net loss / (gain) from financing activities	(16,587)	100	3,246
Other net adjustments	5,792	3,790	(8,061)
Net change in operating assets and liabilities:			
Loans and advances to banks and amounts due to banks	(1,088)	2,148	3,586
Securities financing transactions measured at amortized cost	4,444	(2,316)	9,588
Cash collateral on derivative instruments	73	(3,311)	(3,486)
Loans and advances to customers and customer deposits	(7,756)	2,406	18,934
Financial assets and liabilities at fair value held for trading and derivative financial instruments	8,173	(10,635)	11,326
Brokerage receivables and payables	6,019	8,115	(5,199)
Financial assets at fair value not held for trading and other financial assets and liabilities	5,557	19,793	392
Provisions and other non-financial assets and liabilities	(437)	2,617	(1,213)
Income taxes paid, net of refunds	(1,495)	(1,026)	(919)
Net cash flow from / (used in) operating activities	10,630	30,563	36,581
Cash flow from / (used in) investing activities			
Purchase of subsidiaries, associates and intangible assets	(3)	(1)	(46)
Disposal of subsidiaries, associates and intangible assets	1,729[1]	593	674
Purchase of property, equipment and software	(1,478)	(1,581)	(1,573)
Disposal of property, equipment and software	161	295	364
Purchase of financial assets measured at fair value through other comprehensive income	(4,783)	(5,802)	(6,290)
Disposal and redemption of financial assets measured at fair value through other comprehensive income	4,084	5,052	4,530
Net (purchase) / redemption of debt securities measured at amortized cost	(11,993)	(415)	(4,166)
Net cash flow from / (used in) investing activities	(12,283)	(1,860)	(6,506)

Table continues below.

Statement of cash flows (continued)

Table continued from above.

	For the year ended		
USD m	31.12.22	31.12.21	31.12.20
Cash flow from / (used in) financing activities			
Net short-term debt issued / (repaid)	(12,249)	(3,093)	23,845
Distributions paid on UBS AG shares	(4,200)	(4,539)	(3,848)
Issuance of debt designated at fair value and long-term debt measured at amortized cost[2]	79,457	98,619	80,153
Repayment of debt designated at fair value and long-term debt measured at amortized cost[2]	(67,670)	(79,799)	(87,099)
Net cash flows from other financing activities	(595)	(261)	(553)
Net cash flow from / (used in) financing activities	(5,257)	10,927	12,498
Total cash flow			
Cash and cash equivalents at the beginning of the year	207,755	173,430	119,804
Net cash flow from / (used in) operating, investing and financing activities	(6,911)	39,630	42,573
Effects of exchange rate differences on cash and cash equivalents	(5,645)	(5,306)	11,053
Cash and cash equivalents at the end of the year[3]	195,200	207,755	173,430
of which: cash and balances at central banks[4]	*169,363*	*192,706*	*158,088*
of which: loans and advances to banks	*13,329*	*13,822*	*13,928*
of which: money market paper[5]	*12,508*	*1,227*	*1,415*
Additional information			
Net cash flow from / (used in) operating activities includes:			
Interest received in cash	15,730	11,170	11,929
Interest paid in cash	8,315	4,802	6,414
Dividends on equity investments, investment funds and associates received in cash[6]	1,907	2,531	1,901

1 Includes cash proceeds from the sales of: UBS AG's shareholding in Mitsubishi Corp.-UBS Realty Inc.; UBS AG's wholly owned subsidiary UBS Swiss Financial Advisers AG; UBS AG's US alternative investments administration business; and UBS AG's domestic wealth management business in Spain. Refer to Note 29 for more information. Also includes dividends received from associates. 2 Includes funding from UBS Group AG measured at amortized cost (recognized in Funding from UBS Group AG measured at amortized cost in the balance sheet) and measured at fair value (recognized in Other financial liabilities designated at fair value in the balance sheet). 3 USD 4,253m, USD 3,408m and USD 3,828m of cash and cash equivalents (mainly reflected in Loans and advances to banks) were restricted as of 31 December 2022, 31 December 2021 and 31 December 2020, respectively. Refer to Note 22 for more information. 4 Includes only balances with an original maturity of three months or less. 5 Money market paper is included in the balance sheet under Financial assets at fair value held for trading (31 December 2022: USD 2m; 31 December 2021: USD 20m; 31 December 2020: USD 117m), Financial assets measured at fair value through other comprehensive income (31 December 2022: USD 0m; 31 December 2021: USD 0m; 31 December 2020: USD 178m), Financial assets at fair value not held for trading (31 December 2022: USD 6,048m; 31 December 2021: USD 1,066m; 31 December 2020: USD 536m), and Other financial assets measured at amortized cost (31 December 2022: USD 6,459m; 31 December 2021: USD 141m; 31 December 2020: USD 584m). 6 Includes dividends received from associates reported within Net cash flow from / (used in) investing activities.

Changes in liabilities arising from financing activities

USD m	Debt issued measured at amortized cost	*of which: short-term[1]*	*of which: long-term[2]*	Debt issued designated at fair value	Over-the-counter debt instruments[3]	Funding from UBS Group AG[4]	Total
Balance as of 1 January 2021	85,351	*46,666*	*38,685*	59,868	2,060	55,354	202,633
Cash flows	(550)	*(3,093)*	*2,543*	9,075	126	7,076	15,727
Non-cash changes	(2,369)	*(475)*	*(1,894)*	2,516	(58)	(2,795)	(2,705)
of which: foreign currency translation	*(1,841)*	*(475)*	*(1,366)*	*(1,611)*	*(65)*	*(1,340)*	*(4,857)*
of which: fair value changes				*4,127*	*7*	*(30)*	*4,104*
of which: hedge accounting and other effects	*(528)*		*(528)*			*(1,425)*	*(1,953)*
Balance as of 31 December 2021	82,432	*43,098*	*39,334*	71,460	2,128	59,635	215,655
Cash flows	(19,390)	*(12,249)*	*(7,141)*	13,277	(251)	5,903	(461)
Non-cash changes	(3,543)	*(1,173)*	*(2,370)*	(12,895)	(193)	(7,595)	(24,225)
of which: foreign currency translation	*(2,233)*	*(1,173)*	*(1,061)*	*(1,405)*	*(113)*	*(1,285)*	*(5,036)*
of which: fair value changes				*(11,490)*	*(80)*	*(1,060)*	*(12,629)*
of which: hedge accounting and other effects	*(1,310)*		*(1,310)*			*(5,250)*	*(6,560)*
Balance as of 31 December 2022	59,499	*29,676*	*29,823*	71,842	1,684	57,943	190,968

1 Debt with an original contractual maturity of less than one year. 2 Debt with an original maturity greater than or equal to one year. The classification of debt issued into short-term and long-term does not consider any early redemption features. 3 Included in balance sheet line Other financial liabilities designated at fair value. 4 Includes funding from UBS Group AG measured at amortized cost (refer to Note 14b) and measured at fair value (refer to Note 18b).

Notes to the UBS AG consolidated financial statements

Note 1 Summary of material accounting policies

The following table provides an overview of information included in this Note.

a) Material accounting policies

This Note describes the material accounting policies applied in the preparation of the consolidated financial statements (the Financial Statements) of UBS AG and its subsidiaries (UBS AG). On 23 February 2023, the Financial Statements were authorized for issue by the Board of Directors (the BoD).

Basis of accounting

The Financial Statements have been prepared in accordance with International Financial Reporting Standards (IFRS), as issued by the International Accounting Standards Board (the IASB), and are presented in US dollars (USD).

Disclosures marked as audited in the "Risk, capital, liquidity and funding, and balance sheet" section of this report form an integral part of the Financial Statements. These disclosures relate to requirements under IFRS 7, *Financial Instruments: Disclosures,* and IAS 1, *Presentation of Financial Statements,* and are not repeated in this section.

The accounting policies described in this Note have been applied consistently in all years presented unless otherwise stated in Note 1b.

Critical accounting estimates and judgments

Preparation of these Financial Statements under IFRS requires management to apply judgment and make estimates and assumptions that affect reported amounts of assets, liabilities, income and expenses and disclosure, of contingent assets and liabilities, and may involve significant uncertainty at the time they are made. Such estimates and assumptions are based on the best available information. UBS AG regularly reassesses such estimates and assumptions, which encompass historical experience, expectations of the future and other pertinent factors, to determine their continuing relevance based on current conditions, updating them as necessary. Changes in those estimates and assumptions may have a significant effect on the Financial Statements. Furthermore, actual results may differ significantly from UBS AG's estimates, which could result in significant losses to UBS AG, beyond what was anticipated or provided for.

The following areas contain estimation uncertainty or require critical judgment and have a significant effect on amounts recognized in the Financial Statements:

- expected credit loss measurement (refer to item 2g in this Note and to Note 19);
- fair value measurement (refer to item 2f in this Note and to Note 20);
- income taxes (refer to item 6 in this Note and to Note 8);
- provisions and contingent liabilities (refer to item 9 in this Note and to Note 17);
- post-employment benefit plans (refer to item 5 in this Note and to Note 26);
- goodwill (refer to item 8 in this Note and to Note 12); and
- consolidation of structured entities (refer to item 1 in this Note and to Note 28).

1) Consolidation

The Financial Statements include the financial statements of the UBS AG and its subsidiaries, presented as a single economic entity; intercompany transactions and balances have been eliminated. UBS AG consolidates all entities that it controls, including structured entities (SEs), which is the case when it has: (i) power over the relevant activities of the entity; (ii) exposure to an entity's variable returns; and (iii) the ability to use its power to affect its own returns.

Consideration is given to all facts and circumstances to determine whether UBS AG has power over another entity, i.e., the current ability to direct the relevant activities of an entity when decisions about those activities need to be made.

Subsidiaries, including SEs, are consolidated from the date when control is gained and deconsolidated from the date when control ceases. Control, or the lack thereof, is reassessed if facts and circumstances indicate that there is a change to one or more elements required to establish that control is present.

Business combinations are accounted for using the acquisition method. The amount of any non-controlling interest is measured at the non-controlling interest's proportionate share of the acquiree's identifiable net assets.

› **Refer to Note 28 for more information**

Critical accounting estimates and judgments

Each individual entity is assessed for consolidation in line with the aforementioned consolidation principles. The assessment of control can be complex and requires the use of significant judgment, in particular in determining whether UBS AG has power over the entity. As the nature and extent of UBS AG's involvement is unique for each entity, there is no uniform consolidation outcome by entity. Certain entities within a class may be consolidated while others may not. When carrying out the consolidation assessment, judgment is exercised considering all the relevant facts and circumstances, including the nature and activities of the investee, as well as the substance of voting and similar rights.

› **Refer to Note 28 for more information**

2) Financial instruments

a. Recognition

UBS AG recognizes financial instruments when it becomes a party to contractual provisions of an instrument. UBS AG applies settlement date accounting to all standard purchases and sales of non-derivative financial instruments.

In transactions where UBS AG acts as a transferee, to the extent the financial asset transfer does not qualify for derecognition by the transferor, UBS AG does not recognize the transferred instrument as its asset.

UBS AG also acts in a fiduciary capacity, which results in it holding or placing assets on behalf of individuals, trusts, retirement benefit plans and other institutions. Unless these items meet the definition of an asset and the recognition criteria are satisfied, they are not recognized on UBS AG's balance sheet and the related income is excluded from the Financial Statements.

Client cash balances associated with derivatives clearing and execution services are not recognized on the balance sheet if, through contractual agreement, regulation or practice, UBS AG neither obtains benefits from nor controls such cash balances.

b. Classification, measurement and presentation

Financial assets

Where the contractual terms of a debt instrument result in cash flows that are solely payments of principal and interest (SPPI) on the principal amount outstanding, the debt instrument is classified as measured at amortized cost if it is held within a business model that has an objective of holding financial assets to collect contractual cash flows, or at fair value through other comprehensive income (FVOCI) if it is held within a business model with the objective being achieved by both collecting contractual cash flows and selling financial assets.

All other financial assets are measured at fair value through profit or loss (FVTPL), including those held for trading or those managed on a fair value basis, except for derivatives designated in a hedge relationship, in which case hedge accounting requirements apply (refer to item 2j in this Note for more information).

Business model assessment and contractual cash flow characteristics

UBS AG determines the nature of a business model by considering the way financial assets are managed to achieve a particular business objective.

In assessing whether contractual cash flows are SPPI, the UBS AG considers whether the contractual terms of the financial asset contain a term that could change the timing or amount of contractual cash flows arising over the life of the instrument. This assessment includes contractual cash flows that may vary due to environmental, social and governance (ESG) triggers.

Financial liabilities

Financial liabilities measured at amortized cost

Financial liabilities measured at amortized cost include *Debt issued measured at amortized cost* and *Funding from UBS Group AG measured at amortized cost*. The latter includes contingent capital instruments issued to UBS Group AG containing contractual provisions under which the principal amounts would be written down or converted into equity upon either a specified common equity tier 1 (CET1) ratio breach or a determination by the Swiss Financial Market Supervisory Authority (FINMA) that a viability event has occurred. Such contractual provisions are not derivatives, as the underlying is deemed to be a non-financial variable specific to a party to the contract.

If a debt were to be written down or converted into equity in a future period, it would be partially or fully derecognized, with the difference between its carrying amount and the fair value of any equity issued recognized in the income statement.

A gain or loss is recognized in *Other income* when debt issued is subsequently repurchased for market-making or other activities. A subsequent sale of own bonds in the market is treated as a reissuance of debt.

Financial liabilities measured at fair value through profit or loss

UBS AG designates certain issued debt instruments as financial liabilities at fair value through profit or loss, on the basis that such financial instruments include non-closely-related embedded derivatives that significantly impact the cash flows of the instrument and / or are managed on a fair value basis (refer to the table below for more information). Financial instruments including embedded derivatives arise predominantly from the issuance of certain structured debt instruments.

Measurement and presentation

After initial recognition, UBS AG classifies, measures and presents its financial assets and liabilities in accordance with IFRS 9, as described in the table below.

Classification, measurement and presentation of financial assets

Financial assets classification		Significant items included	Measurement and presentation
Measured at amortized cost		This classification includes: – cash and balances at central banks; – loans and advances to banks; – receivables from securities financing transactions; – cash collateral receivables on derivative instruments; – residential and commercial mortgages; – corporate loans; – secured loans, including Lombard loans, and unsecured loans; – loans to financial advisors; and – debt securities held as high-quality liquid assets (HQLA).	Measured at amortized cost using the effective interest method less allowances for expected credit losses (ECL) (refer to items 2d and 2g in this Note for more information). The following items are recognized in the income statement: – interest income, which is accounted for in accordance with item 2d in this Note; – ECL and reversals; and – foreign exchange (FX) translation gains and losses. When a financial asset at amortized cost is derecognized, the gain or loss is recognized in the income statement. For amounts arising from settlement of certain derivatives, see below in this table.
Measured at FVOCI	Debt instruments measured at FVOCI	This classification primarily includes debt securities and certain asset-backed securities held as HQLA.	Measured at fair value, with unrealized gains and losses reported in *Other comprehensive income,* net of applicable income taxes, until such investments are derecognized. Upon derecognition, any accumulated balances in *Other comprehensive income* are reclassified to the income statement and reported within *Other income*. The following items, which are determined on the same basis as for financial assets measured at amortized cost, are recognized in the income statement: – interest income, which is accounted for in accordance with item 2d in this Note; – ECL and reversals; and – FX translation gains and losses.

Classification, measurement and presentation of financial assets

<table>
<tr><th colspan="2">Financial assets classification</th><th>Significant items included</th><th>Measurement and presentation</th></tr>
<tr><td rowspan="2">Measured at FVTPL</td><td>Held for trading</td><td>Financial assets held for trading include:
– all derivatives with a positive replacement value, except those that are designated and effective hedging instruments; and
– other financial assets acquired principally for the purpose of selling or repurchasing in the near term, or that are part of a portfolio of identified financial instruments that are managed together and for which there is evidence of a recent actual pattern of short-term profit taking. Included in this category are debt instruments (including those in the form of securities, money market paper, and traded corporate and bank loans) and equity instruments.</td><td rowspan="2">Measured at fair value, with changes recognized in the income statement.

Derivative assets (including derivatives that are designated and effective hedging instruments) are generally presented as Derivative financial instruments, except those exchange-traded derivatives (ETD) and over-the-counter (OTC)-cleared derivatives that are legally settled on a daily basis or economically net settled on a daily basis, which are presented within Cash collateral receivables on derivative instruments.

Changes in fair value, initial transaction costs, dividends and gains and losses arising on disposal or redemption are recognized in Other net income from financial instruments measured at fair value through profit or loss, except interest income on instruments other than derivatives (refer to item 2d in this Note), interest on derivatives designated as hedging instruments in hedges of interest rate risk and forward points on certain short- and long-duration FX contracts acting as economic hedges, which are reported in Net interest income.

Changes in the fair value of derivatives that are designated and effective hedging instruments are presented either in the income statement or Other comprehensive income, depending on the type of hedge relationship (refer to item 2j in this Note for more information).</td></tr>
<tr><td>Mandatorily measured at FVTPL – Other</td><td>This classification includes financial assets mandatorily measured at FVTPL that are not held for trading, as follows:
– certain structured loans, certain commercial loans, and receivables from securities financing transactions that are managed on a fair value basis;
– loans managed on a fair value basis, including those hedged with credit derivatives;
– certain debt securities held as HQLA and managed on a fair value basis;
– certain investment fund holdings and assets held to hedge delivery obligations related to cash-settled employee compensation plans;
– brokerage receivables, for which contractual cash flows do not meet the SPPI criterion because the aggregate balance is accounted for as a single unit of account, with interest being calculated on the individual components;
– auction rate securities, for which contractual cash flows do not meet the SPPI criterion because interest may be reset at rates that contain leverage;
– equity instruments; and
– assets held under unit-linked investment contracts.</td></tr>
</table>

Classification, measurement and presentation of financial liabilities

<table>
<tr><th colspan="2">Financial liabilities classification</th><th>Significant items included</th><th>Measurement and presentation</th></tr>
<tr><td colspan="2">Measured at amortized cost</td><td>This classification includes:
– demand and time deposits;
– retail savings / deposits;
– sweep deposits;
– payables from securities financing transactions;
– non-structured debt issued;
– subordinated debt;
– commercial paper and certificates of deposit;
– obligations against funding from UBS Group AG; and
– cash collateral payables on derivative instruments.</td><td>Measured at amortized cost using the effective interest method.

When a financial liability at amortized cost is derecognized, the gain or loss is recognized in the income statement.

Interest Income generated from client deposits derecognized pursuant to certain deposit sweep programs is presented within Net interest income from financial instruments measured at fair value through profit or loss and other.</td></tr>
<tr><td rowspan="2">Measured at FVTPL</td><td>Held for trading</td><td>Financial liabilities held for trading include:
– all derivatives with a negative replacement value (including certain loan commitments), except those that are designated and effective hedging instruments; and
– obligations to deliver financial instruments, such as debt and equity instruments, that UBS AG has sold to third parties but does not own (short positions).</td><td rowspan="2">Measurement and presentation of financial liabilities classified at FVTPL follow the same principles as for financial assets classified at FVTPL, except that the amount of change in the fair value of a financial liability designated at FVTPL that is attributable to changes in UBS AG's own credit risk is presented in Other comprehensive income directly within Retained earnings and is never reclassified to the income statement.

Derivative liabilities (including derivatives that are designated and effective hedging instruments) are generally presented as Derivative financial instruments, except those exchange-traded and OTC-cleared derivatives that are legally settled on a daily basis or economically net settled on a daily basis, which are presented within Cash collateral payables on derivative instruments.</td></tr>
<tr><td>Designated at FVTPL</td><td>UBS AG designates at FVTPL the following financial liabilities:
– issued hybrid debt instruments that primarily include equity-linked, credit-linked and rates-linked bonds or notes;
– issued debt instruments managed on a fair value basis;
– obligations against funding from UBS Group AG managed on a fair value basis;
– certain payables from securities financing transactions;
– amounts due under unit-linked investment contracts, the cash flows of which are linked to financial assets measured at FVTPL and eliminate an accounting mismatch; and
– brokerage payables, which arise in conjunction with brokerage receivables and are measured at FVTPL to achieve measurement consistency.</td></tr>
</table>

c. Loan commitments and financial guarantees

Loan commitments are arrangements to provide credit under defined terms and conditions. Irrevocable loan commitments are classified as: (i) derivative loan commitments measured at fair value through profit or loss; (ii) loan commitments designated at fair value through profit or loss; or (iii) loan commitments not measured at fair value. Financial guarantee contracts are contracts that require UBS AG to make specified payments to reimburse the holder for an incurred loss because a specified debtor fails to make payments when due in accordance with the terms of a specified debt instrument.

d. Interest income and expense

Interest income and expense are recognized in the income statement based on the effective interest method. When calculating the effective interest rate (the EIR) for financial instruments (other than credit-impaired financial instruments), UBS AG estimates future cash flows considering all contractual terms of the instrument, but not expected credit losses, with the EIR applied to the gross carrying amount of the financial asset or the amortized cost of a financial liability. However, when a financial asset becomes credit-impaired after initial recognition, interest income is determined by applying the EIR to the amortized cost of the instrument, which represents the gross carrying amount adjusted for any credit loss allowance.

Upfront fees, including fees on loan commitments not measured at fair value where a loan is expected to be issued, and direct costs are included within the initial measurement of a financial instrument measured at amortized cost or FVOCI and recognized over the expected life of the instrument as part of its EIR.

Fees related to loan commitments where no loan is expected to be issued, as well as loan syndication fees where UBS AG does not retain a portion of the syndicated loan or where UBS AG does retain a portion of the syndicated loan at the same effective yield for comparable risk as other participants, are included in *Net fee and commission income* and either recognized over the life of the commitment or when syndication occurs.

› **Refer to item 3 in this Note for more information**

Interest income on financial assets, excluding derivatives, is included in interest income when positive and in interest expense when negative. Similarly, interest expense on financial liabilities, excluding derivatives, is included in interest expense, except when interest rates are negative, in which case it is included in interest income.

› **Refer to item 2b in this Note and Note 3 for more information**

e. Derecognition

Financial assets

UBS AG derecognizes a transferred financial asset, or a portion of a financial asset, if the purchaser has received substantially all the risks and rewards of the asset or a significant part of the risks and rewards combined with a practical ability to sell or pledge the asset.

Where financial assets have been pledged as collateral or in similar arrangements, they are considered to have been transferred if the counterparty has received the contractual rights to the cash flows of the pledged assets, as may be evidenced by, for example, the counterparty's right to sell or repledge the assets. In transfers where control over the financial asset is retained, UBS AG continues to recognize the asset to the extent of its continuing involvement, determined by the extent to which it is exposed to changes in the value of the transferred asset following the transfer.

› **Refer to Note 22 for more information**

Financial liabilities

UBS AG derecognizes a financial liability when it is extinguished, i.e., when the obligation specified in the contract is discharged, canceled or expires. When an existing financial liability is exchanged for a new one from the same lender on substantially different terms, or the terms of an existing liability are substantially modified, the original liability is derecognized and a new liability recognized with any difference in the respective carrying amounts recorded in the income statement.

Certain OTC derivative contracts and most exchange-traded futures and option contracts cleared through central clearing counterparties and exchanges are considered to be settled on a daily basis, as the payment or receipt of variation margin on a daily basis represents legal or economic settlement, which results in derecognition of the associated derivatives.

› **Refer to Note 21 for more information**

f. Fair value of financial instruments

UBS AG accounts for a significant portion of its assets and liabilities at fair value. Fair value is the price on the measurement date that would be received for the sale of an asset or paid to transfer a liability in an orderly transaction between market participants in the principal market, or in the most advantageous market in the absence of a principal market.

› **Refer to Note 20 for more information**

Critical accounting estimates and judgments

The use of valuation techniques, modeling assumptions and estimates of unobservable market inputs in the fair valuation of financial instruments requires significant judgment and could affect the amount of gain or loss recorded for a particular position. Valuation techniques that rely more heavily on unobservable inputs and sophisticated models inherently require a higher level of judgment and may require adjustment to reflect factors that market participants would consider in estimating fair value, such as close-out costs, which are presented in Note 20d.

UBS AG's governance framework over fair value measurement is described in Note 20b, and UBS AG provides a sensitivity analysis of the estimated effects arising from changing significant unobservable inputs in Level 3 financial instruments to reasonably possible alternative assumptions in Note 20f.

› **Refer to Note 20 for more information**

g. Allowances and provisions for expected credit losses

ECL are recognized for financial assets measured at amortized cost, financial assets measured at FVOCI, fee and lease receivables, financial guarantees, and loan commitments not measured at fair value. ECL are also recognized on the undrawn portion of committed unconditionally revocable credit lines, which include UBS AG's credit card limits and master credit facilities, as UBS AG is exposed to credit risk because the borrower has the ability to draw down funds before UBS AG can take credit risk mitigation actions.

Recognition of expected credit losses

ECL are recognized on the following basis.

- Stage 1 instruments: Maximum 12-month ECL are recognized from initial recognition, reflecting the portion of lifetime cash shortfalls that would result if a default occurs in the 12 months after the reporting date, weighted by the risk of a default occurring.
- Stage 2 instruments: Lifetime ECL are recognized if a significant increase in credit risk (an SICR) is observed subsequent to the instrument's initial recognition, reflecting lifetime cash shortfalls that would result from all possible default events over the expected life of a financial instrument, weighted by the risk of a default occurring. When an SICR is no longer observed, the instrument will move back to stage 1.
- Stage 3 instruments: Lifetime ECL are always recognized for credit-impaired financial instruments, as determined by the occurrence of one or more loss events, by estimating expected cash flows based on a chosen recovery strategy. Credit-impaired exposures may include positions for which no allowance has been recognized, for example because they are expected to be fully recoverable through collateral held.
- Changes in lifetime ECL since initial recognition are also recognized for assets that are purchased or originated credit-impaired (POCI). POCI financial instruments include those that are purchased at a deep discount or newly originated with a defaulted counterparty; they remain a separate category until derecognition.

All or part of a financial asset is written off if it is deemed uncollectible or forgiven. Write-offs reduce the principal amount of a claim and are charged against related allowances for credit losses. Recoveries, in part or in full, of amounts previously written off are generally credited to *Credit loss expense / (release)*.

ECL are recognized in the income statement in *Credit loss expense / (release)*. A corresponding ECL allowance is reported as a decrease in the carrying amount of financial assets measured at amortized cost on the balance sheet. For financial assets that are measured at FVOCI, the carrying amount is not reduced, but an accumulated amount is recognized in *Other comprehensive income*. For off-balance sheet financial instruments and other credit lines, provisions for ECL are presented in *Provisions.*

Default and credit impairment

UBS AG applies a single definition of default for credit risk management purposes, regulatory reporting and ECL, with a counterparty classified as defaulted based on quantitative and qualitative criteria.

› **Refer to "Credit policies for distressed assets" in the "Risk management and control" section of this report for more information**

Measurement of expected credit losses

IFRS 9 ECL reflect an unbiased, probability-weighted estimate based on loss expectations resulting from default events. The method used to calculate ECL applies the following principal factors: probability of default (PD), loss given default (LGD) and exposure at default (EAD). Parameters are generally determined on an individual financial asset level. Based on the materiality of the portfolio, for credit card exposures and personal account overdrafts in Switzerland, a portfolio approach is applied that derives an average PD and LGD for the entire portfolio. PDs and LGDs used in the ECL calculation are point-in-time (PIT)-based for key portfolios and consider both current conditions and expected cyclical changes. For material portfolios, PDs and LGDs are determined for different scenarios, whereas EAD projections are treated as scenario independent.

For the purpose of determining the ECL-relevant parameters, UBS AG leverages its Basel III advanced internal ratings-based (A-IRB) models that are also used in determining expected loss (EL) and risk-weighted assets under the Basel III framework and Pillar 2 stress loss models. Adjustments have been made to these models and IFRS 9-related models have been developed that consider the complexity, structure and risk profile of relevant portfolios and take account of the fact that PDs and LGDs used in the ECL calculation are PIT-based, as opposed to the corresponding Basel III through-the-cycle (TTC) parameters. All models that are relevant for measuring expected credit losses are subject to UBS AG's model validation and oversight processes.

Probability of default: PD represents the probability of a default over a specified time period. A 12-month PD represents the probability of default determined for the next 12 months and a lifetime PD represents the probability of default over the remaining lifetime of the instrument. PIT PDs are derived from TTC PDs and scenario forecasts. The modeling is region, industry and client segment specific and considers both macroeconomic scenario dependencies and client-idiosyncratic information.

Exposure at default: EAD represents an estimate of the exposure to credit risk at the time of a potential default occurring, considering expected repayments, interest payments and accruals, discounted at the EIR. Future drawdowns on facilities are considered through a credit conversion factor (a CCF) that is reflective of historical drawdown and default patterns and the characteristics of the respective portfolios.

Loss given default: LGD represents an estimate of the loss at the time of a potential default occurring, taking into account expected future cash flows from collateral and other credit enhancements, or expected payouts from bankruptcy proceedings for unsecured claims and, where applicable, time to realization of collateral and the seniority of claims. LGD is commonly expressed as a percentage of EAD.

Estimation of expected credit losses

Number of scenarios and estimation of scenario weights
Determination of probability-weighted ECL requires evaluating a range of diverse and relevant future economic conditions, especially with a view to modeling the non-linear effect of assumptions about macroeconomic factors on the estimate.

To accommodate this requirement, UBS AG uses different economic scenarios in the ECL calculation. Each scenario is represented by a specific scenario narrative, which is relevant considering the exposure of key portfolios to economic risks, and for which a set of consistent macroeconomic variables is determined. The estimation of the appropriate weights for these scenarios is predominantly judgment-based. The assessment is based on a holistic review of the prevailing economic or political conditions, which may exhibit different levels of uncertainty. It takes into account the impact of changes in the nature and severity of the underlying scenario narratives and the projected economic variables.

The determined weights constitute the probabilities that the respective set of macroeconomic conditions will occur and not that the chosen particular narratives with the related macroeconomic variables will materialize.

Macroeconomic and other factors
The range of macroeconomic, market and other factors that is modeled as part of the scenario determination is wide, and historical information is used to support the identification of the key factors. As the forecast horizon increases, the availability of information decreases, requiring an increase in judgment. For cycle-sensitive PD and LGD determination purposes, UBS AG projects the relevant economic factors for a period of three years before reverting, over a specified period, to cycle-neutral PD and LGD for longer-term projections.

Factors relevant for ECL calculation vary by type of exposure. Regional and client-segment characteristics are generally taken into account, with specific focus on Switzerland and the US, considering UBS AG's key ECL-relevant portfolios.

For UBS AG, the following forward-looking macroeconomic variables represent the most relevant factors for ECL calculation:
- GDP growth rates, given their significant effect on borrowers' performance;
- unemployment rates, given their significant effect on private clients' ability to meet contractual obligations;
- house price indices, given their significant effect on mortgage collateral valuations;
- interest rates, given their significant effect on counterparties' abilities to service debt;
- consumer price indices, given their overall relevance for companies' performance, private clients' purchasing power and economic stability; and
- equity indices, given that they are an important factor in our corporate rating tools.

Scenario generation, review process and governance
A team of economists, which is part of Group Risk Control, develop the forward-looking macroeconomic assumptions with involvement from a broad range of experts.

The scenarios, their weight and the key macroeconomic and other factors are subject to a critical assessment by the IFRS 9 Scenario Sounding Sessions and ECL Management Forum, which include senior management from Group Risk and Group Finance. Important aspects for the review include whether there may be particular credit risk concerns that may not be capable of being addressed systematically and require post-model adjustments for stage allocation and ECL allowance.

The Group Model Governance Committee (the GMGC), as the highest authority under UBS AG's model governance framework, ratifies the decisions taken by the ECL Management Forum.

› **Refer to Note 19 for more information**

ECL measurement period

The period for which lifetime ECL are determined is based on the maximum contractual period that UBS AG is exposed to credit risk, taking into account contractual extension, termination and prepayment options. For irrevocable loan commitments and financial guarantee contracts, the measurement period represents the maximum contractual period for which UBS AG has an obligation to extend credit.

Additionally, some financial instruments include both an on-demand loan and a revocable undrawn commitment, where the contractual cancellation right does not limit UBS AG's exposure to credit risk to the contractual notice period, as the client has the ability to draw down funds before UBS AG can take risk-mitigating actions. In such cases UBS AG is required to estimate the period over which it is exposed to credit risk. This applies to UBS AG's credit card limits, which do not have a defined contractual maturity date, are callable on demand and where the drawn and undrawn components are managed as one exposure. The exposure arising from UBS AG's credit card limits is not significant and is managed at a portfolio level, with credit actions triggered when balances are past due. An ECL measurement period of seven years is applied for credit card limits, capped at 12 months for stage 1 balances, as a proxy for the period that UBS AG is exposed to credit risk.

Customary master credit agreements in the Swiss corporate market also include on-demand loans and revocable undrawn commitments. For smaller commercial facilities, a risk-based monitoring (RbM) approach is in place that highlights negative trends as risk events, at an individual facility level, based on a combination of continuously updated risk indicators. The risk events trigger additional credit reviews by a risk officer, enabling informed credit decisions to be taken. Larger corporate facilities are not subject to RbM, but are reviewed at least annually through a formal credit review. UBS AG has assessed these credit risk management practices and considers both the RbM approach and formal credit reviews as substantive credit reviews resulting in a re-origination of the given facility. Following this, a 12-month measurement period from the reporting date is used for both types of facilities as an appropriate proxy of the period over which UBS AG is exposed to credit risk, with 12 months also used as a look-back period for assessing SICR, always from the respective reporting date.

Significant increase in credit risk

Financial instruments subject to ECL are monitored on an ongoing basis. To determine whether the recognition of a maximum 12-month ECL continues to be appropriate, an assessment is made as to whether an SICR has occurred since initial recognition of the financial instrument, applying both quantitative and qualitative factors.

Primarily, UBS AG assesses changes in an instrument's risk of default on a quantitative basis by comparing the annualized forward-looking and scenario-weighted lifetime PD of an instrument determined at two different dates:
– at the reporting date; and
– at inception of the instrument.

If, based on UBS AG's quantitative modeling, an increase exceeds a set threshold, an SICR is deemed to have occurred and the instrument is transferred to stage 2 with lifetime ECL recognized.

The threshold applied varies depending on the original credit quality of the borrower, with a higher SICR threshold set for those instruments with a low PD at inception. The SICR assessment based on PD changes is made at an individual financial asset level. A high-level overview of the SICR trigger, which is a multiple of the annualized remaining lifetime PIT PD expressed in rating downgrades, is provided in the "SICR thresholds" table below. The actual SICR thresholds applied are defined on a more granular level by interpolating between the values shown in the table.

SICR thresholds

Internal rating at origination of the instrument	Rating downgrades / SICR trigger
0–3	3
4–8	2
9–13	1

› **Refer to the "Risk management and control" section of this report for more details about UBS AG's internal grading system**

Irrespective of the SICR assessment based on default probabilities, credit risk is generally deemed to have significantly increased for an instrument if the contractual payments are more than 30 days past due. For certain less material portfolios, specifically the Swiss credit card portfolio, the 30-day past due criterion is used as the primary indicator of an SICR. Where instruments are transferred to stage 2 due to the 30-day past due criterion, a minimum period of six months is applied before a transfer back to stage 1 can be triggered. For instruments in Personal & Corporate Banking and Global Wealth Management Region Switzerland that are between 90 and 180 days past due but have not been reclassified to stage 3, a one-year period is applied before a transfer back to stage 1 can be triggered.

Additionally, based on individual counterparty-specific indicators, external market indicators of credit risk or general economic conditions, counterparties may be moved to a watch list, which is used as a secondary qualitative indicator for an SICR. Exception management is further applied, allowing for individual and collective adjustments on exposures sharing the same credit risk characteristics to take account of specific situations that are not otherwise fully reflected.

In general, the overall SICR determination process does not apply to Lombard loans, securities financing transactions and certain other asset-based lending transactions, because of the risk management practices adopted, including daily monitoring processes with strict margining. If margin calls are not satisfied, a position is closed out and classified as a stage 3 position. In exceptional cases, an individual adjustment and a transfer into stage 2 may be made to take account of specific facts.

Credit risk officers are responsible for the identification of an SICR, which for accounting purposes is in some respects different from internal credit risk management processes. This difference mainly arises because ECL accounting requirements are instrument-specific, such that a borrower can have multiple exposures allocated to different stages, and maturing loans in stage 2 will migrate to stage 1 upon renewal irrespective of the actual credit risk at that time. Under a risk-based approach, a holistic counterparty credit assessment and the absolute level of risk at any given date will determine what risk-mitigating actions may be warranted.

› **Refer to the “Risk management and control” section of this report for more information**

Critical accounting estimates and judgments

The calculation of ECL requires management to apply significant judgment and make estimates and assumptions that can result in significant changes to the timing and amount of ECL recognized.

Determination of a significant increase in credit risk
IFRS 9 does not include a definition of what constitutes an SICR, with UBS AG's assessment considering qualitative and quantitative criteria. An IFRS 9 ECL Management Forum has been established to review and challenge the SICR results.

Scenarios, scenario weights and macroeconomic variables
ECL reflect an unbiased and probability-weighted amount, which UBS AG determines by evaluating a range of possible outcomes. Management selects forward-looking scenarios that include relevant macroeconomic variables and management's assumptions around future economic conditions. IFRS 9 Scenario Sounding Sessions, in addition to the IFRS 9 ECL Management Forum, are in place to derive, review and challenge the scenario selection and weights, and to determine whether any additional post-model adjustments are required that may significantly affect ECL.

ECL measurement period
Lifetime ECL are generally determined based upon the contractual maturity of the transaction, which significantly affects ECL. For credit card limits and Swiss callable master credit facilities, judgment is required, as UBS AG must determine the period over which it is exposed to credit risk. A seven-year period is applied for credit card limits, capped at 12 months for stage 1 positions, and a 12-month period applied for master credit facilities.

Modeling and post-model adjustments
A number of complex models have been developed or modified to calculate ECL, with additional post-model adjustments required which may significantly affect ECL. The models are governed by UBS AG's model validation controls and approved by the GMGC. The post-model adjustments are approved by the ECL Management Forum and endorsed by the GMGC.

A sensitivity analysis covering key macroeconomic variables, scenario weights and SICR trigger points on ECL measurement is provided in Note 19f.

› **Refer to Note 19 for more information**

h. Restructured and modified financial assets

When payment default is expected, or where default has already occurred, UBS AG may grant concessions to borrowers in financial difficulties that it would not consider in the normal course of its business, such as preferential interest rates, extension of maturity, modifying the schedule of repayments, debt / equity swap, subordination, etc.

› **Refer to the “Risk management and control” section of this report for more information**

Modifications result in an alteration of future contractual cash flows and can occur within UBS AG's normal risk tolerance or as part of a credit restructuring where a counterparty is in financial difficulties. The restructuring or modification of a financial asset could lead to a substantial change in the terms and conditions, resulting in the original financial asset being derecognized and a new financial asset being recognized. Where the modification does not result in a derecognition, any difference between the modified contractual cash flows discounted at the original EIR and the existing gross carrying amount of the given financial asset is recognized in the income statement as a modification gain or loss.

i. Offsetting

UBS AG presents financial assets and liabilities on its balance sheet net if (i) it has a legally enforceable right to set off the recognized amounts and (ii) it intends either to settle on a net basis or to realize the asset and settle the liability simultaneously. Netted positions include, for example, certain derivatives and repurchase and reverse repurchase transactions with various counterparties, exchanges and clearing houses.

In assessing whether UBS AG intends to either settle on a net basis, or to realize the asset and settle the liability simultaneously, emphasis is placed on the effectiveness of operational settlement mechanics in eliminating substantially all credit and liquidity exposure between the counterparties. This condition precludes offsetting on the balance sheet for substantial amounts of UBS AG's financial assets and liabilities, even though they may be subject to enforceable netting arrangements. Repurchase arrangements and securities financing transactions are presented net only to the extent that the settlement mechanism eliminates, or results in insignificant, credit and liquidity risk, and processes the receivables and payables in a single settlement process or cycle.

› **Refer to Note 21 for more information**

j. Hedge accounting

UBS AG applies hedge accounting requirements of IFRS 9 where the criteria for documentation and hedge effectiveness are met. If a hedge relationship no longer meets the criteria for hedge accounting, hedge accounting is discontinued. Voluntary discontinuation of hedge accounting is not permitted under IFRS 9.

Fair value hedges of interest rate risk related to debt instruments and loan assets
The fair value change of the hedged item attributable to a hedged risk is reflected as an adjustment to the carrying amount of the hedged item and recognized in the income statement along with the change in the fair value of the hedging instrument.

Fair value hedges of FX risk related to debt instruments
The fair value change of the hedged item attributable to the hedged risk is reflected in the measurement of the hedged item and recognized in the income statement along with the change in the fair value of the hedging instrument. The foreign currency basis spread of cross-currency swaps designated as hedging derivatives is excluded from the designation and accounted for as a cost of hedging with amounts deferred in *Other comprehensive income* within *Equity*. These amounts are released to the income statement over the term of the hedged item.

Discontinuation of fair value hedges
Discontinuations for reasons other than derecognition of the hedged item result in an adjustment to the carrying amount, which is amortized to the income statement over the remaining life of the hedged item using the effective interest method. If the hedged item is derecognized, the unamortized fair value adjustment or deferred cost of hedging amount is recognized immediately in the income statement as part of any derecognition gain or loss.

Cash flow hedges of forecast transactions
Fair value gains or losses associated with the effective portion of derivatives designated as cash flow hedges for cash flow repricing risk are recognized initially in *Other comprehensive income* within *Equity* and reclassified to *Interest income from financial instruments measured at amortized cost and fair value through other comprehensive income* or *Interest expense from financial instruments measured at amortized cost* in the periods when the hedged forecast cash flows affect profit or loss, including discontinued hedges for which forecast cash flows are expected to occur. If the forecast transactions are no longer expected to occur, the deferred gains or losses are immediately reclassified to the income statement.

Hedges of net investments in foreign operations
Gains or losses on the hedging instrument relating to the effective portion of a hedge are recognized directly in *Other comprehensive income* within *Equity,* while any gains or losses relating to the ineffective and / or undesignated portion (for example, the interest element of a forward contract) are recognized in the income statement. Upon disposal or partial disposal of the foreign operation, the cumulative value of any such gains or losses recognized in *Equity* associated with the entity is reclassified to *Other income*.

Interest Rate Benchmark Reform
UBS AG continues hedge accounting during the period of uncertainty before existing interest rate benchmarks are replaced with alternative risk-free interest rates. During this period, UBS AG assumes that the current benchmark rates will continue to exist, such that forecast transactions are considered highly probable and hedge relationships remain, with little or no consequential impact on the financial statements. Upon replacement of existing interest rate benchmarks by alternative risk-free interest rates, UBS AG applies the requirements of *Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16 (Interest Rate Benchmark Reform – Phase 2),* where applicable.

› **Refer to Note 25 for more information**

3) Fee and commission income and expenses

UBS AG earns fee income from the diverse range of services it provides to its clients. Fee income can be divided into two broad categories: fees earned from services that are provided over a certain period of time, such as management of clients' assets, custody services and certain advisory services; and fees earned from point-in-time services, such as underwriting fees, deal-contingent merger and acquisitions fees, and brokerage fees (e.g., securities and derivatives execution and clearing). UBS AG recognizes fees earned from PIT services when it has fully provided the service to the client. Where the contract requires services to be provided over time, income is recognized on a systematic basis over the life of the agreement.

Consideration received is allocated to the separately identifiable performance obligations in a contract. Owing to the nature of UBS AG's business, contracts that include multiple performance obligations are typically those that are considered to include a series of similar performance obligations fulfilled over time with the same pattern of transfer to the client, e.g., management of client assets and custodial services. As a consequence, UBS AG is not required to apply significant judgment in allocating the consideration received across the various performance obligations.

PIT services are generally for a fixed price or dependent on deal size, e.g., a fixed number of basis points of trade size, where the amount of revenue is known when the performance obligation is met. Fixed-over-time fees are recognized on a straight-line basis over the performance period. Custodial and asset management fees can be variable through reference to the size of the customer portfolio. However, they are generally billed on a monthly or quarterly basis once the customer's portfolio size is known or known with near certainty and therefore also recognized ratably over the performance period. UBS AG does not recognize performance fees related to management of clients' assets or fees related to contingencies beyond UBS AG's control until such uncertainties are resolved.

UBS AG's fees are generally earned from short-term contracts. As a result, UBS AG's contracts do not include a financing component or result in the recognition of significant receivables or prepayment assets. Furthermore, due to the short-term nature of such contracts, UBS AG has not capitalized any material costs to obtain or fulfill a contract or generated any significant contract assets or liabilities.

UBS AG presents expenses primarily in line with their nature in the income statement, differentiating between expenses that are directly attributable to the satisfaction of specific performance obligations associated with the generation of revenues, which are generally presented within *Total revenues* as *Fee and commission expense*, and those that are related to personnel, general and administrative expenses, which are presented within *Operating expenses*. For derivatives execution and clearing services (where UBS AG acts as an agent), UBS AG only records its specific fees in the income statement, with fees payable to other parties not recognized as an expense but instead directly offset against the associated income collected from the given client.

› **Refer to Note 4 for more information, including the disaggregation of revenues**

4) Share-based and other deferred compensation plans

UBS AG recognizes expenses for deferred compensation awards over the period that the employee is required to provide service to become entitled to the award. Where the service period is shortened, for example in the case of employees affected by restructuring programs or mutually agreed termination provisions, recognition of such expense is accelerated to the termination date. Where no future service is required, such as for employees who are eligible for retirement or who have met certain age and length-of-service criteria, the services are presumed to have been received and compensation expense is recognized over the performance year or, in the case of off-cycle awards, immediately on the grant date.

Share-based compensation plans

UBS Group AG is the grantor of and maintains the obligation to settle share-based compensation plans that are awarded to employees of UBS AG. As a consequence, UBS AG classifies the awards of UBS Group AG shares as equity-settled share-based payment transactions. UBS AG recognizes the fair value of awards granted to its employees by reference to the fair value of UBS Group AG's equity instruments on the date of grant, taking into account the terms and conditions inherent in the award, including, where relevant, dividend rights, transfer restrictions in effect beyond the vesting date, market conditions, and non-vesting conditions.

For equity-settled awards, fair value is not remeasured unless the terms of the award are modified such that there is an incremental increase in value. Expenses are recognized, on a per-tranche basis, over the service period based on an estimate of the number of instruments expected to vest and are adjusted to reflect the actual outcomes of service or performance conditions.

For equity-settled awards, forfeiture events resulting from a breach of a non-vesting condition (i.e., one that does not relate to a service or performance condition) do not result in any adjustment to the share-based compensation expense.

For cash-settled share-based awards, fair value is remeasured at each reporting date, so that the cumulative expense recognized equals the cash distributed.

Other deferred compensation plans

Compensation expense for other deferred compensation plans is recognized on a per-tranche or straight-line basis, depending on the nature of the plan. The amount recognized is measured based on the present value of the amount expected to be paid under the plan and is remeasured at each reporting date, so that the cumulative expense recognized equals the cash or the fair value of respective financial instruments distributed.

› **Refer to Note 27 for more information**

5) Post-employment benefit plans

Defined benefit plans

Defined benefit plans specify an amount of benefit that an employee will receive, which usually depends on one or more factors, such as age, years of service and compensation. The defined benefit liability recognized in the balance sheet is the present value of the defined benefit obligation, measured using the projected unit credit method, less the fair value of the plan's assets at the balance sheet date, with changes resulting from remeasurements recorded immediately in *Other comprehensive income*. If the fair value of the plan's assets is higher than the present value of the defined benefit obligation, the recognition of the resulting net asset is limited to the present value of economic benefits available in the form of refunds from the plan or reductions in future contributions to the plan. Calculation of the net defined benefit obligation or asset takes into account the specific features of each plan, including risk sharing between employee and employer, and is calculated periodically by independent qualified actuaries.

Critical accounting estimates and judgments

The net defined benefit liability or asset at the balance sheet date and the related personnel expense depend on the expected future benefits to be provided, determined using a number of economic and demographic assumptions. A range of assumptions could be applied, and different assumptions could significantly alter the defined benefit liability or asset and pension expense recognized. The most significant assumptions include life expectancy, discount rate, expected salary increases, pension increases and interest credits on retirement savings account balances. Sensitivity analysis for reasonable possible movements in each significant assumption for UBS AG's post-employment obligations is provided in Note 26.

› **Refer to Note 26 for more information**

Defined contribution plans

A defined contribution plan pays fixed contributions into a separate entity from which post-employment and other benefits are paid. UBS AG has no legal or constructive obligation to pay further amounts if the plan does not hold sufficient assets to pay employees the benefits relating to employee service in the current and prior periods. Compensation expense is recognized when the employees have rendered services in exchange for contributions. This is generally in the year of contribution. Prepaid contributions are recognized as an asset to the extent that a cash refund or a reduction in future payments is available.

6) Income taxes

UBS AG is subject to the income tax laws of Switzerland and those of the non-Swiss jurisdictions in which UBS AG has business operations.

UBS AG's provision for income taxes is composed of current and deferred taxes. Current income taxes represent taxes to be paid or refunded for the current period or previous periods.

Deferred tax assets (DTAs) and deferred tax liabilities (DTLs) are recognized for temporary differences between the carrying amounts and tax bases of assets and liabilities that will result in deductible or taxable amounts, respectively in future periods. DTAs may also arise from other sources, including unused tax losses and unused tax credits. DTAs and DTLs are measured using the applicable tax rates and laws that have been enacted or substantively enacted by the end of the reporting period and that will be in effect when such differences are expected to reverse.

DTAs are recognized only to the extent it is probable that sufficient taxable profits will be available against which these differences can be used. When an entity or tax group has a history of recent losses, DTAs are only recognized to the extent there are sufficient taxable temporary differences or there is convincing other evidence that sufficient taxable profit will be available against which the unused tax losses can be utilized.

Deferred and current tax assets and liabilities are offset when: (i) they arise in the same tax reporting group; (ii) they relate to the same tax authority; (iii) the legal right to offset exists; and (iv) with respect to current taxes they are intended to be settled net or realized simultaneously.

Current and deferred taxes are recognized as income tax benefit or expense in the income statement, except for current and deferred taxes recognized in relation to: (i) the acquisition of a subsidiary (for which such amounts would affect the amount of goodwill arising from the acquisition); (ii) gains and losses on the sale of treasury shares (for which the tax effects are recognized directly in *Equity*); (iii) unrealized gains or losses on financial instruments that are classified at FVOCI; (iv) changes in fair value of derivative instruments designated as cash flow hedges; (v) remeasurements of defined benefit plans; or (vi) certain foreign currency translations of foreign operations. Amounts relating to points (iii) through (vi) above are recognized in *Other comprehensive income* within *Equity*.

UBS AG reflects the potential effect of uncertain tax positions for which acceptance by the relevant tax authority is not considered probable by adjusting current or deferred taxes, as applicable, using either the most likely amount or expected value methods, depending on which method is deemed a better predictor of the basis on which, and extent to which, the uncertainty will be resolved.

Critical accounting estimates and judgments

Tax laws are complex, and judgment and interpretations about the application of such laws are required when accounting for income taxes. UBS AG considers the performance of its businesses and the accuracy of historical forecasts and other factors when evaluating the recoverability of its DTAs, including the remaining tax loss carry-forward period, and its assessment of expected future taxable profits in the forecast period used for recognizing DTAs. Estimating future profitability and business plan forecasts is inherently subjective and is particularly sensitive to future economic, market and other conditions.

Forecasts are reviewed annually, but adjustments may be made at other times, if required. If recent losses have been incurred, convincing evidence is required to prove there is sufficient future profitability given that the value of UBS AG's DTAs may be affected, with effects primarily recognized through the income statement.

In addition, judgment is required to assess the expected value of uncertain tax positions and the related probabilities, including interpretation of tax laws, the resolution of any income tax-related appeals and litigation.

› **Refer to Note 8 for more information**

7) Property, equipment and software

Property, equipment and software is measured at cost less accumulated depreciation and impairment losses. Software development costs are capitalized only when the costs can be measured reliably and it is probable that future economic benefits will arise. Depreciation of property, equipment and software begins when they are available for use and is calculated on a straight line basis over an asset's estimated useful life.

Property, equipment and software are generally tested for impairment at the appropriate cash-generating unit level, alongside goodwill and intangible assets as described in item 8 in this Note. An impairment charge is recognized for such assets if the recoverable amount is below its carrying amount. The recoverable amounts of such assets, other than property that has a market price, are generally determined using a replacement cost approach that reflects the amount that would be currently required by a market participant to replace the service capacity of the asset. If such assets are no longer used, they are tested individually for impairment.

› **Refer to Note 11 for more information**

8) Goodwill

Goodwill represents the excess of the consideration over the fair value of identifiable assets, liabilities and contingent liabilities acquired that arises in a business combination. Goodwill is not amortized, but is assessed for impairment at the end of each reporting period, or when indicators of impairment exist. UBS AG tests goodwill for impairment annually, irrespective of whether there is any indication of impairment.

An impairment charge is recognized in the income statement if the carrying amount exceeds the recoverable amount of a cash-generating unit.

Critical accounting estimates and judgments

UBS AG's methodology for goodwill impairment testing is based on a model that is most sensitive to the following key assumptions: (i) forecasts of earnings available to shareholders in years one to three; (ii) changes in the discount rates; and (iii) changes in the long-term growth rate.

Earnings available to shareholders are estimated on the basis of forecast results, which are part of the business plan approved by the BoD. The discount rates and growth rates are determined using external information, and also considering inputs from both internal and external analysts and the view of management.

The key assumptions used to determine the recoverable amounts of each cash-generating unit are tested for sensitivity by applying reasonably possible changes to those assumptions.

› **Refer to Notes 2 and 12 for more information**

9) Provisions and contingent liabilities

Provisions are liabilities of uncertain timing or amount, and are generally recognized in accordance with IAS 37, *Provisions, Contingent Liabilities and Contingent Assets*, when: (i) UBS AG has a present obligation as a result of a past event; (ii) it is probable that an outflow of resources will be required to settle the obligation; and (iii) a reliable estimate of the amount of the obligation can be made.

The majority of UBS AG's provisions relate to litigation, regulatory and similar matters, restructuring, and employee benefits. Restructuring provisions are generally recognized as a consequence of management agreeing to materially change the scope of the business or the manner in which it is conducted, including changes in management structures. Provisions for employee benefits relate mainly to service anniversaries and sabbatical leave, and are recognized in accordance with measurement principles set out in item 4 in this Note. In addition, UBS AG presents expected credit loss allowances within *Provisions* if they relate to a loan commitment, financial guarantee contract or a revolving revocable credit line.

IAS 37 provisions are measured considering the best estimate of the consideration required to settle the present obligation at the balance sheet date.

When conditions required to recognize a provision are not met, a contingent liability is disclosed, unless the likelihood of an outflow of resources is remote. Contingent liabilities are also disclosed for possible obligations that arise from past events, the existence of which will be confirmed only by uncertain future events not wholly within the control of UBS AG.

Critical accounting estimates and judgments

Recognition of provisions often involves significant judgment in assessing the existence of an obligation that results from past events and in estimating the probability, timing and amount of any outflows of resources. This is particularly the case for litigation, regulatory and similar matters, which, due to their nature, are subject to many uncertainties, making their outcome difficult to predict.

The amount of any provision recognized is sensitive to the assumptions used and there could be a wide range of possible outcomes for any particular matter.

Management regularly reviews all the available information regarding such matters, including legal advice, to assess whether the recognition criteria for provisions have been satisfied and to determine the timing and amount of any potential outflows.

› **Refer to Note 17 for more information**

10) Foreign currency translation

Transactions denominated in a foreign currency are translated into the functional currency of the reporting entity at the spot exchange rate on the date of the transaction. At the balance sheet date, all monetary assets, including those at FVOCI, and monetary liabilities denominated in foreign currency are translated into the functional currency using the closing exchange rate. Translation differences are reported in *Other net income from financial instruments measured at fair value through profit or loss*.

Non-monetary items measured at historical cost are translated at the exchange rate on the date of the transaction.

Upon consolidation, assets and liabilities of foreign operations are translated into US dollars, UBS AG's presentation currency, at the closing exchange rate on the balance sheet date, and income and expense items and other comprehensive income are translated at the average rate for the period. The resulting foreign currency translation differences are recognized in *Equity* and reclassified to the income statement when UBS AG disposes of, partially or in its entirety, the foreign operation and UBS AG no longer controls the foreign operation.

Share capital issued, share premium and treasury shares held are translated at the historic average rate, with the difference between the historic average rate and the spot rate realized upon repayment of share capital or disposal of treasury shares reported as *Share premium.* Cumulative amounts recognized in *Other comprehensive income* in respect of cash flow hedges and financial assets measured at FVOCI are translated at the closing exchange rate as of the balance sheet dates, with any translation effects adjusted through *Retained earnings*.

› **Refer to Note 32 for more information**

11) Contracts on UBS Group AG shares

Contracts involving UBS Group AG shares that require net cash settlement, or provide the counterparty or UBS AG with a settlement option that includes a choice of settling net in cash, are classified as derivatives held for trading.

b) Changes in accounting policies, comparability and other adjustments

Changes to the presentation of the financial statements

During 2022, UBS AG made several changes to simplify the presentation of the income statement alongside other primary financial statements and disclosure notes, and to align them with management information. In particular, *Total operating income* has been renamed *Total revenues* and excludes *Credit loss expense / (release)*, which is now separately presented below *Total revenues*.

Reclassification of a portfolio from *Financial assets measured at fair value through other comprehensive income* to *Other financial assets measured at amortized cost*

Effective from 1 April 2022, UBS AG has reclassified a portfolio of financial assets from *Financial assets measured at fair value through other comprehensive income* with a fair value of USD 6.9bn (the Portfolio) to *Other financial assets measured at amortized cost*, in line with the principles in IFRS 9, *Financial Instruments*, which require a reclassification when an entity changes its business model for managing financial assets.

The Portfolio's cumulative fair value losses of USD 449m pre-tax and USD 333m post-tax, previously recognized in *Other comprehensive income*, have been removed from equity and adjusted against the value of the assets on the reclassification date, so that the Portfolio is measured as if the assets had always been classified at amortized cost, with a value of USD 7.4bn as on 1 April 2022. The reclassification had no effect on the income statement.

The reclassified Portfolio is made up of high-quality liquid assets, primarily US government treasuries and US government agency mortgage-backed securities, held and separately managed by UBS Bank USA (BUSA).

The accounting reclassification has arisen as a direct result of the transformation of UBS AG's Global Wealth Management Americas business, which has significantly impacted BUSA. This includes initiatives approved by the Group Executive Board to significantly grow and extend the business, as disclosed on 1 February 2022 during UBS's fourth quarter 2021 earnings presentation. Over the two years preceding the reclassification date, BUSA's deposit base grew by more than 100% generating substantial cash balances, with a number of new products being launched, including new deposit types that are longer in duration, additional lending and a broader range of customer segments targeted.

Following the commencement of these activities and the announcement made in the first quarter of 2022, the Portfolio is no longer held in a business model to collect the contractual cash flows and sell the assets, but is instead solely held to collect the contractual cash flows until the assets mature, requiring a reclassification of the Portfolio in line with IFRS 9 with effect from 1 April 2022.

The fair value of the Portfolio as on 31 December 2022 was USD 5.8bn. A pre-tax fair value loss of USD 981m would have been recognized in *Other comprehensive income* during 2022 if the Portfolio had not been reclassified.

› **Refer to the Statement of changes in equity and Note 20 for more information about the effects from the reclassification of the Portfolio**

Accounting for obligations to safeguard crypto-assets an entity holds for platform users (SAB 121)

In March 2022, the US Security and Exchange Commission (the SEC) issued Staff Accounting Bulletin (SAB) 121, "Accounting for obligations to safeguard crypto-assets an entity holds for platform users." SAB 121 adds interpretive guidance requiring SEC registrants, including foreign private issuers that apply IFRS, to recognize a liability on their balance sheets to reflect the obligation to safeguard any digital asset that is issued or transferred using distributed ledger or blockchain technology and held for their platform users, along with a corresponding asset. The guidance is effective for UBS AG for annual reporting from 2022 onwards. Amounts that would be recognized as liabilities, with corresponding assets, under this guidance are not material to UBS AG.

c) International Financial Reporting Standards and Interpretations to be adopted in 2023 and later and other changes

IFRS 17, *Insurance Contracts*

In May 2017, the IASB issued IFRS 17, *Insurance Contracts*, which sets out the accounting requirements for contractual rights and obligations that arise from insurance contracts issued and reinsurance contracts held. IFRS 17 is effective from 1 January 2023. Adoption on 1 January 2023 will have no effect on UBS AG's financial statements. UBS AG does not provide insurance services in any market.

Other amendments to IFRS

The IASB has issued a number of minor amendments to IFRS, effective from 1 January 2023 and in later years. These amendments are not expected to have a significant effect on UBS AG when they are adopted.

Note 2a Segment reporting

UBS AG's businesses are organized 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 and qualify as reportable segments for the purpose of segment reporting. Together with Group Functions, the four business divisions reflect the management structure of UBS AG.

- **Global Wealth Management** provides financial services, advice and solutions to private wealth clients. Its offering ranges from investment management to estate planning and corporate finance advice, in addition to specific wealth management and banking products and services.
- **Personal & Corporate Banking** serves its private, corporate, and institutional clients' needs, from banking to retirement, financing, investments and strategic transactions, in Switzerland, through its branch network and digital channels.
- **Asset Management** is a global, large-scale and diversified 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.
- 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 offering includes research, 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 Chief Digital and Information Office, Communications & Branding, Compliance, Finance, Group Sustainability and Impact, Human Resources, Group Legal, Regulatory & Governance, and Risk Control), Group Treasury and Non-core and Legacy Portfolio.

Financial information about the four business divisions and Group Functions is presented separately in internal management reports to the Executive Board, which is considered the "chief operating decision maker" pursuant to IFRS 8, *Operating Segments*.

UBS AG's internal accounting policies, which include management accounting policies and service level agreements, determine the revenues and expenses directly attributable to each reportable segment. Transactions between the reportable segments are carried out at internally agreed rates and are reflected in the operating results of the reportable segments. Revenue-sharing agreements are used to allocate external client revenues to reportable segments where several reportable segments are involved in the value creation chain. Total intersegment revenues for UBS AG are immaterial, as the majority of the revenues are allocated across the segments by means of revenue-sharing agreements. Interest income earned from managing UBS AG's consolidated equity is allocated to the reportable segments based on average attributed equity and currency composition. Assets and liabilities of the reportable segments are funded through and invested with Group Functions, and the net interest margin is reflected in the results of each reportable segment.

Segment assets are based on a third-party view and do not include intercompany balances. This view is in line with internal reporting to management. If one operating segment is involved in an external transaction together with another operating segment or Group Functions, additional criteria are considered to determine the segment that will report the associated assets. This will include a consideration of which segment's business needs are being addressed by the transaction and which segment is providing the funding and / or resources. Allocation of liabilities follows the same principles.

Non-current assets disclosed for segment reporting purposes represent assets that are expected to be recovered more than 12 months after the reporting date, excluding financial instruments, deferred tax assets and post-employment benefits.

Note 2a Segment reporting (continued)

USD m	Global Wealth Management	Personal & Corporate Banking	Asset Management	Investment Bank	Group Functions	UBS AG
For the year ended 31 December 2022						
Net interest income	5,274	2,192	(19)	(241)	(688)	6,517
Non-interest income	13,689	2,113	2,980[1]	8,958	659	28,398
Total revenues	18,963	4,304	2,961	8,717	(30)	34,915
Credit loss expense / (release)	0	39	0	(12)	3	29
Operating expenses	14,069	2,475	1,565	6,890	928	25,927
Operating profit / (loss) before tax	**4,894**	**1,790**	**1,396**	**1,839**	**(960)**	**8,960**
Tax expense / (benefit)						1,844
Net profit / (loss)						**7,116**
Additional information						
Total assets	388,624	235,330	16,971	391,495	73,016	1,105,436
Additions to non-current assets	42	13	1	33	1,773	1,862

USD m	Global Wealth Management	Personal & Corporate Banking	Asset Management	Investment Bank	Group Functions	UBS AG
For the year ended 31 December 2021						
Net interest income	4,244	2,120	(15)	481	(226)	6,605
Non-interest income	15,175	2,144	2,632	8,978	294	29,222
Total revenues	19,419	4,264	2,617	9,459	68	35,828
Credit loss expense / (release)	(29)	(86)	1	(34)	0	(148)
Operating expenses	14,743	2,623	1,593	6,902	1,151	27,012
Operating profit / (loss) before tax	**4,706**	**1,726**	**1,023**	**2,592**	**(1,083)**	**8,964**
Tax expense / (benefit)						1,903
Net profit / (loss)						**7,061**
Additional information						
Total assets[2]	395,235	225,425	25,202	346,641	123,641	1,116,145
Additions to non-current assets	56	16	1	30	1,689	1,791

USD m	Global Wealth Management	Personal & Corporate Banking	Asset Management	Investment Bank	Group Functions	UBS AG
For the year ended 31 December 2020						
Net interest income	4,027	2,049	(17)	284	(555)	5,788
Non-interest income[3]	13,107	1,859	2,993	9,224	504	27,686
Total revenues	17,134	3,908	2,975	9,508	(52)	33,474
Credit loss expense / (release)	88	257	2	305	42	695
Operating expenses	13,080	2,390	1,520	6,762	1,329	25,081
Operating profit / (loss) before tax	**3,965**	**1,261**	**1,454**	**2,441**	**(1,423)**	**7,699**
Tax expense / (benefit)						1,488
Net profit / (loss)						**6,211**
Additional information						
Total assets	367,714	231,710	28,266	369,778	127,858	1,125,327
Additions to non-current assets	5	12	385	150	1,971	2,524

1 Includes an USD 848m gain in Asset Management related to the sale of UBS AG's shareholding in Mitsubishi Corp.-UBS Realty Inc. 2 During 2022, UBS AG refined the methodology applied to allocate balance sheet resources from Group Functions to the business divisions, with prospective effect. If the new methodology had been applied as of 31 December 2021, balance sheet assets allocated to business divisions would have been USD 26bn higher, of which USD 14bn related to the Investment Bank. 3 Includes a USD 631m net gain on the sale of a majority stake in Fondcenter AG (now Clearstream Fund Centre AG), of which USD 571m was recognized in Asset Management and USD 60m was recognized in Global Wealth Management.

Note 2b Segment reporting by geographic location

The operating regions shown in the table below correspond to the regional management structure of UBS AG. The allocation of total revenues to these regions reflects, and is consistent with, the basis on which the business is managed and its performance is evaluated. These allocations involve assumptions and judgments that management considers to be reasonable, and may be refined to reflect changes in estimates or management structure. The main principles of the allocation methodology are that client revenues are attributed to the domicile of the given client and trading and portfolio management revenues are attributed to the country where the risk is managed. This revenue attribution is consistent with the mandate of the regional Presidents. Certain revenues, such as those related to Non-core and Legacy Portfolio in Group Functions, are managed at a Group level. These revenues are included in the *Global* line.

The geographic analysis of non-current assets is based on the location of the entity in which the given assets are recorded.

For the year ended 31 December 2022

	Total revenues[1]		Total non-current assets	
	USD bn	Share %	USD bn	Share %
Americas[2]	13.8	40	9.0	48
Asia Pacific	5.6	16	1.5	8
Europe, Middle East and Africa (excluding Switzerland)	7.0	20	2.6	14
Switzerland	7.7	22	5.6	30
Global	0.8	2	0.0	0
Total	34.9	100	18.7	100

For the year ended 31 December 2021

	Total revenues[1]		Total non-current assets	
	USD bn	Share %	USD bn	Share %
Americas[2]	14.5	40	9.0	47
Asia Pacific	6.5	18	1.4	7
Europe, Middle East and Africa (excluding Switzerland)	7.0	20	2.6	13
Switzerland	7.8	22	6.3	33
Global	0.1	0	0.0	0
Total	**35.8**	**100**	**19.3**	**100**

For the year ended 31 December 2020

	Total revenues[1]		Total non-current assets	
	USD bn	Share %	USD bn	Share %
Americas[2]	13.2	39	9.0	45
Asia Pacific	6.1	18	1.4	7
Europe, Middle East and Africa (excluding Switzerland)	6.5	20	2.7	14
Switzerland	7.1	21	6.9	34
Global	0.5	2	0.0	0
Total	**33.5**	**100**	**20.0**	**100**

1 During 2022, UBS AG changed the presentation of its Income statement. Total operating income was renamed Total revenues and excludes Credit loss expense / (release). Note 2b, including prior-period information, has been updated to reflect the new presentation structure, with the disclosure of Total revenues instead of Total operating income. Refer to Note 1b for more information. 2 Predominantly related to the USA.

Note 3 Net interest income and other net income from financial instruments measured at fair value through profit or loss

	For the year ended		
USD m	31.12.22	31.12.21	31.12.20
Net interest income from financial instruments measured at fair value through profit or loss and other	1,410	1,437	1,305
Other net income from financial instruments measured at fair value through profit or loss	7,493	5,844	6,930
of which: net gains / (losses) from financial liabilities designated at fair value [1]	*17,036*	*(6,457)*	*1,625*
Total net income from financial instruments measured at fair value through profit or loss and other	**8,903**	**7,281**	**8,235**

Net interest income			
Interest income from loans and deposits[2]	9,634	6,489	6,696
Interest income from securities financing transactions measured at amortized cost[3]	1,378	513	862
Interest income from other financial instruments measured at amortized cost	545	284	335
Interest income from debt instruments measured at fair value through other comprehensive income	74	115	101
Interest income from derivative instruments designated as cash flow hedges	173	1,133	822
Total interest income from financial instruments measured at amortized cost and fair value through other comprehensive income	**11,803**	**8,534**	**8,816**
Interest expense on loans and deposits[4]	4,488	1,655	2,440
Interest expense on securities financing transactions measured at amortized cost[5]	1,089	1,102	870
Interest expense on debt issued	1,031	512	918
Interest expense on lease liabilities	88	98	105
Total interest expense from financial instruments measured at amortized cost	**6,696**	**3,366**	**4,333**
Total net interest income from financial instruments measured at amortized cost and fair value through other comprehensive income	**5,108**	**5,168**	**4,483**
Total net interest income from financial instruments measured at fair value through profit or loss and other	**1,410**	**1,437**	**1,305**
Total net interest income	**6,517**	**6,605**	**5,788**

1 Excludes fair value changes of hedges related to financial liabilities designated at fair value and foreign currency translation effects arising from translating foreign currency transactions into the respective functional currency, both of which are reported within Other net income from financial instruments measured at fair value through profit or loss. 2022 included net gains of USD 4,112m (net losses of USD 2,068m and USD 72m in 2021 and 2020, respectively), driven by financial liabilities related to unit-linked investment contracts, which are designated at fair value through profit or loss. This was offset by net losses of USD 4,112m (net gains of USD 2,068m and USD 72m in 2021 and 2020, respectively), related to financial assets for unit-linked investment contracts that are mandatorily measured at fair value through profit or loss not held for trading. 2 Consists of interest income from cash and balances at central banks, loans and advances to banks and customers, and cash collateral receivables on derivative instruments, as well as negative interest on amounts due to banks, customer deposits, and cash collateral payables on derivative instruments. 3 Includes negative interest, including fees, on payables from securities financing transactions measured at amortized cost. 4 Consists of interest expense on amounts due to banks, cash collateral payables on derivative instruments, customer deposits, and funding from UBS Group AG measured at amortized cost, as well as negative interest on cash and balances at central banks, loans and advances to banks, and cash collateral receivables on derivative instruments. 5 Includes negative interest, including fees, on receivables from securities financing transactions measured at amortized cost.

Note 4 Net fee and commission income

	For the year ended		
USD m	31.12.22	31.12.21	31.12.20
Underwriting fees	633	1,512	1,104
M&A and corporate finance fees	804	1,102	736
Brokerage fees	3,487	4,383	4,132
Investment fund fees	4,942	5,790	5,289
Portfolio management and related services	9,059	9,762	8,009
Other	1,921	1,874	1,712
Total fee and commission income[1]	**20,846**	**24,422**	**20,982**
of which: recurring	*14,229*	*15,410*	*13,010*
of which: transaction-based	*6,550*	*8,743*	*7,512*
of which: performance-based	*68*	*269*	*461*
Fee and commission expense	**1,823**	**1,985**	**1,775**
Net fee and commission income	**19,023**	**22,438**	**19,207**

1 For the year ended 31 December 2022, reflects third-party fee and commission income of USD 12,990m for Global Wealth Management, USD 1,657m for Personal & Corporate Banking, USD 2,840m for Asset Management, USD 3,350m for the Investment Bank and USD 10m for Group Functions (for the year ended 31 December 2021: USD 14,545m for Global Wealth Management, USD 1,645m for Personal & Corporate Banking, USD 3,337m for Asset Management, USD 4,863m for the Investment Bank and USD 33m for Group Functions; for the year ended 31 December 2020: USD 12,475m for Global Wealth Management, USD 1,427m for Personal & Corporate Banking, USD 3,129m for Asset Management, USD 3,901m for the Investment Bank and USD 50m for Group Functions).

Note 5 Other income

USD m	For the year ended 31.12.22	31.12.21	31.12.20
Associates, joint ventures and subsidiaries			
Net gains / (losses) from acquisitions and disposals of subsidiaries[1]	148	(11)	635[2]
Net gains / (losses) from disposals of investments in associates and joint ventures	844[3]	41	0
Share of net profits of associates and joint ventures	32	105	84
Total	1,024	134	719
Net gains / (losses) from disposals of financial assets measured at fair value through other comprehensive income	(1)	9	40
Income from properties[4]	20	22	25
Net gains / (losses) from properties held for sale	71	100[5]	76[6]
Income from shared services provided to UBS Group AG or its subsidiaries	460	451	422
Other	308[7]	224[8]	267[9]
Total other income	1,882	941	1,549

1 Includes foreign exchange gains / (losses) reclassified from other comprehensive income related to the disposal or closure of foreign operations. Refer to Note 29 for more information about UBS AG's acquisitions and disposals of subsidiaries and businesses. 2 Includes a USD 631m net gain on the sale of a majority stake in Fondcenter AG (now Clearstream Fund Centre AG). 3 Includes an USD 848m gain related to the sale of UBS AG's shareholding in Mitsubishi Corp.-UBS Realty Inc. Refer to Note 28b for more information. 4 Includes rent received from third parties. 5 Mainly relates to the sale of a property in Basel. 6 Includes net gains of USD 140m arising from sale-and-leaseback transactions, primarily related to a property in Geneva, partly offset by remeasurement losses relating to properties that were reclassified as held for sale. 7 Mainly relates to a portion of the total USD 133m gain on the sale of UBS AG's domestic wealth management business in Spain of USD 111m (with the remaining amount disclosed within Net gains / (losses) from acquisitions and disposals of subsidiaries), income of USD 111m related to a legacy litigation settlement and a legacy bankruptcy claim, as well as gains of USD 23m related to the repurchase of UBS's own debt instruments (compared with losses of USD 17m in 2021). 8 Includes a gain of USD 100m from the sale of UBS AG's domestic wealth management business in Austria. 9 Includes a USD 215m gain on the sale of intellectual property rights associated with the Bloomberg Commodity Index family.

Note 6 Personnel expenses

USD m	For the year ended 31.12.22	31.12.21	31.12.20
Salaries[1]	5,528	5,723	5,535
Variable compensation[2]	7,636	7,973	7,246
of which: performance awards	*2,910*	*2,916*	*2,953[3]*
of which: financial advisors[4]	*4,508*	*4,860*	*4,091*
of which: other	*217*	*196*	*201*
Contractors	119	142	138
Social security	730	762	704[3]
Post-employment benefit plans[5]	555	582	597
of which: defined benefit plans	*256*	*280*	*306*
of which: defined contribution plans	*299*	*303*	*291*
Other personnel expenses	513	479	466[3]
Total personnel expenses	15,080	15,661	14,686

1 Includes role-based allowances. 2 Refer to Note 27 for more information. 3 During 2020, UBS AG modified the conditions for continued vesting of certain outstanding deferred compensation awards for qualifying employees, resulting in an expense of approximately USD 270m, of which USD 240m is disclosed within Variable compensation – performance awards, USD 20m within Social security and USD 10m within Other personnel expenses. 4 Consists of cash and deferred compensation awards and is based on compensable revenues and firm tenure using a formulaic approach. It also includes expenses related to compensation commitments with financial advisors entered into at the time of recruitment that are subject to vesting requirements. 5 Refer to Note 26 for more information. Includes curtailment gains of USD 13m for the year ended 31 December 2022 (for the year ended 31 December 2021: USD 49m; for the year ended 31 December 2020: USD 0m), which represent a reduction in the defined benefit obligation related to the Swiss pension plan resulting from a decrease in headcount following restructuring activities.

Note 7 General and administrative expenses

USD m	For the year ended 31.12.22	31.12.21	31.12.20
Outsourcing costs	451	426	466
Technology costs	502	490	449
Consulting, legal and audit fees	494	465	566
Real estate and logistics costs	507	530	563
Market data services	367	367	361
Marketing and communication	195	171	162
Travel and entertainment	156	66	77
Litigation, regulatory and similar matters[1]	348	910	197
Other	5,981	6,051	5,646
of which: shared services costs charged by UBS Group AG or its subsidiaries	*5,264*	*5,321*	*4,939*
Total general and administrative expenses	9,001	9,476	8,486

1 Reflects the net increase in provisions for litigation, regulatory and similar matters recognized in the income statement. Refer to Note 17 for more information.

Note 8 Income taxes

USD m	For the year ended 31.12.22	31.12.21	31.12.20
Tax expense / (benefit)			
Swiss			
Current	664	614	417
Deferred	(22)	26	107
Total Swiss	642	640	524
Non-Swiss			
Current	689	857	715
Deferred	513	406	248
Total non-Swiss	1,202	1,263	963
Total income tax expense / (benefit) recognized in the income statement	1,844	1,903	1,488

Income tax recognized in the income statement

The Swiss current tax expenses related to taxable profits of UBS Switzerland AG and other Swiss entities.

The non-Swiss current tax expenses related to taxable profits of non-Swiss subsidiaries and branches. The non-Swiss deferred tax expenses include expenses of USD 678m that primarily related to the amortization of deferred tax assets (DTAs) previously recognized in relation to tax losses carried forward and deductible temporary differences of UBS Americas Inc., which were partly offset by a benefit of USD 169m in respect of net upward revaluations of DTAs for certain entities, primarily in connection with our business planning process.

The effective tax rate for the year of 20.6% is lower than our projected rate for the year of 24%, primarily as a result of the aforementioned deferred tax benefit of USD 169m in respect of net upward revaluations of DTAs and because no tax expenses were recognized in respect of pre-tax gains from dispositions of UBS subsidiaries in 2022.

› **Refer to Note 29 for more information about disposals of subsidiaries**

USD m	For the year ended 31.12.22	31.12.21	31.12.20
Operating profit / (loss) before tax	8,960	8,964	7,699
of which: Swiss	*4,052*	*2,983*	*3,042*
of which: non-Swiss	*4,907*	*5,981*	*4,657*
Income taxes at Swiss tax rate of 18% for 2022, 18.5% for 2021 and 19.5% for 2020	1,613	1,658	1,501
Increase / (decrease) resulting from:			
Non-Swiss tax rates differing from Swiss tax rate	267	217	96
Tax effects of losses not recognized	74	124	144
Previously unrecognized tax losses now utilized	(217)	(179)	(212)
Non-taxable and lower-taxed income	(316)	(252)	(381)
Non-deductible expenses and additional taxable income	414	487	373
Adjustments related to prior years, current tax	(33)	(38)	(66)
Adjustments related to prior years, deferred tax	19	(3)	18
Change in deferred tax recognition	(217)	(341)	(383)
Adjustments to deferred tax balances arising from changes in tax rates	0	(1)	235
Other items	240	230	163
Income tax expense / (benefit)	1,844	1,903	1,488

Note 8 Income taxes (continued)

The components of operating profit before tax, and the differences between income tax expense reflected in the financial statements and the amounts calculated at the Swiss tax rate, are provided in the table above and explained below.

Component	Description
Non-Swiss tax rates differing from the Swiss tax rate	To the extent that UBS AG profits or losses arise outside Switzerland, the applicable local tax rate may differ from the Swiss tax rate. This item reflects, for such profits, an adjustment from the tax expense that would arise at the Swiss tax rate to the tax expense that would arise at the applicable local tax rate. Similarly, it reflects, for such losses, an adjustment from the tax benefit that would arise at the Swiss tax rate to the tax benefit that would arise at the applicable local tax rate.
Tax effects of losses not recognized	This item relates to tax losses of entities arising in the year that are not recognized as DTAs and where no tax benefit arises in relation to those losses. Therefore, the tax benefit calculated by applying the local tax rate to those losses as described above is reversed.
Previously unrecognized tax losses now utilized	This item relates to taxable profits of the year that are offset by tax losses of previous years for which no DTAs were previously recorded. Consequently, no current tax or deferred tax expense arises in relation to those taxable profits and the tax expense calculated by applying the local tax rate on those profits is reversed.
Non-taxable and lower-taxed income	This item relates to tax deductions for the year in respect of permanent differences. These include deductions in respect of profits that are either not taxable or are taxable at a lower rate of tax than the local tax rate. They also include deductions made for tax purposes, which are not reflected in the accounts.
Non-deductible expenses and additional taxable income	This item relates to additional taxable income for the year in respect of permanent differences. These include income that is recognized for tax purposes by an entity but is not included in its profit that is reported in the financial statements, as well as expenses for the year that are non-deductible (e.g., client entertainment costs are not deductible in certain locations).
Adjustments related to prior years, current tax	This item relates to adjustments to current tax expense for prior years (e.g., if the tax payable for a year is agreed with the tax authorities in an amount that differs from the amount previously reflected in the financial statements).
Adjustments related to prior years, deferred tax	This item relates to adjustments to deferred tax positions recognized in prior years (e.g., if a tax loss for a year is fully recognized and the amount of the tax loss agreed with the tax authorities is expected to differ from the amount previously recognized as DTAs in the accounts).
Change in deferred tax recognition	This item relates to changes in DTAs, including changes in DTAs previously recognized resulting from reassessments of expected future taxable profits. It also includes changes in temporary differences in the year, for which deferred tax is not recognized.
Adjustments to deferred tax balances arising from changes in tax rates	This item relates to remeasurements of DTAs and liabilities recognized due to changes in tax rates. These have the effect of changing the future tax saving that is expected from tax losses or deductible tax differences and therefore the amount of DTAs recognized or, alternatively, changing the tax cost of additional taxable income from taxable temporary differences and therefore the deferred tax liability.
Other items	Other items include other differences between profits or losses at the local tax rate and the actual local tax expense or benefit, including movements in provisions for uncertain positions in relation to the current year and other items.

Income tax recognized directly in equity

A net tax benefit of USD 1,095m was recognized in *Other comprehensive income* (2021: net benefit of USD 455m) and a net tax benefit of USD 5m was recognized in *Share premium* (2021: net expense of USD 102m).

Deferred tax assets and liabilities

UBS AG has gross DTAs, valuation allowances and recognized DTAs related to tax loss carry-forwards and deductible temporary differences, as well as deferred tax liabilities in respect of taxable temporary differences, as shown in the table below. The valuation allowances reflect DTAs that were not recognized because, as of the last remeasurement period, management did not consider it probable that there would be sufficient future taxable profits available to utilize the related tax loss carry-forwards and deductible temporary differences.

The recognition of DTAs is supported by forecasts of taxable profits for the entities concerned. In addition, tax planning opportunities are available that would result in additional future taxable income and these would be utilized, if necessary.

Deferred tax liabilities are recognized in respect of investments in subsidiaries, branches and associates, and interests in joint arrangements, except to the extent that UBS AG can control the timing of the reversal of the associated taxable temporary difference and it is probable that such will not reverse in the foreseeable future. However, as of 31 December 2022, this exception was not considered to apply to any taxable temporary differences.

USD m	31.12.22			31.12.21		
Deferred tax assets[1]	Gross	Valuation allowance	Recognized	Gross	Valuation allowance	Recognized
Tax loss carry-forwards	12,708	(8,720)	3,988	13,636	(9,193)	4,443
Temporary differences	5,774	(408)	5,365	5,092	(696)	4,396
of which: related to real estate costs capitalized for US tax purposes	*2,485*	*0*	*2,485*	*2,272*	*0*	*2,272*
of which: related to compensation and benefits	*1,169*	*(175)*	*993*	*1,200*	*(209)*	*991*
of which: related to cash flow hedges	*947*	*0*	*947*	*3*	*0*	*3*
of which: other	*1,173*	*(233)*	*940*	*1,620*	*(487)*	*1,133*
Total deferred tax assets	18,482	(9,128)	9,354[2]	18,728	(9,889)	8,839[2]
of which: related to the US			*8,294*			*8,521*
of which: related to other locations			*1,060*			*318*
Deferred tax liabilities						
Cash flow hedges			0			118
Other			233			179
Total deferred tax liabilities			233			297

1 After offset of DTLs, as applicable. 2 As of 31 December 2022, UBS AG recognized DTAs of USD 471m (31 December 2021: USD 77m) in respect of entities that incurred losses in either the current or preceding year.

In general, US federal tax losses incurred prior to 31 December 2017 can be carried forward for 20 years. US federal tax losses incurred after that date can be carried forward indefinitely, although the utilization of such losses is limited to 80% of the entity's future year taxable profits. UK tax losses can also be carried forward indefinitely; they can shelter up to either 25% or 50% of future year taxable profits, depending on when the tax losses arose. The amounts of US tax loss carry-forwards that are included in the table below are based on their amount for federal tax purposes rather than for state and local tax purposes.

Unrecognized tax loss carry-forwards

USD m	31.12.22	31.12.21
Within 1 year	231	141
From 2 to 5 years	2,184	1,026
From 6 to 10 years	11,106	13,283
From 11 to 20 years	1,610	2,093
No expiry	16,960	18,147
Total	32,091	34,690
of which: related to the US[1]	*13,350*	*14,870*
of which: related to the UK	*14,332*	*14,909*
of which: related to other locations	*4,409*	*4,911*

1 Related to UBS AG's US branch.

Note 9 Financial assets at amortized cost and other positions in scope of expected credit loss measurement

The tables below provide information about financial instruments and certain credit lines that are subject to expected credit loss (ECL) requirements. UBS AG's ECL disclosure segments, or "ECL segments" are aggregated portfolios based on shared risk characteristics and on the same or similar rating methods applied. The key segments are presented in the table below.

› **Refer to Note 19 for more information about expected credit loss measurement**

Segment	Segment description	Description of credit risk sensitivity	Business division
Private clients with mortgages	Lending to private clients secured by owner-occupied real estate and personal account overdrafts of those clients	Sensitive to the interest rate environment, unemployment levels, real estate collateral values and other regional aspects	– Personal & Corporate Banking – Global Wealth Management
Real estate financing	Rental or income-producing real estate financing to private and corporate clients secured by real estate	Sensitive to unemployment levels, the interest rate environment, real estate collateral values and other regional aspects	– Personal & Corporate Banking – Global Wealth Management – Investment Bank
Large corporate clients	Lending to large corporate and multi-national clients	Sensitive to GDP developments, unemployment levels, seasonality, business cycles and collateral values (diverse collateral, including real estate and other collateral types)	– Personal & Corporate Banking – Investment Bank
SME clients	Lending to small and medium-sized corporate clients	Sensitive to GDP developments, unemployment levels, the interest rate environment and, to some extent, seasonality, business cycles and collateral values (diverse collateral, including real estate and other collateral types)	– Personal & Corporate Banking
Lombard	Loans secured by pledges of marketable securities, guarantees and other forms of collateral (including concentration in hedge funds, private equity and unlisted equities), as well as unsecured recourse lending	Sensitive to equity and debt markets (e.g., changes in collateral values)	– Global Wealth Management
Credit cards	Credit card solutions in Switzerland and the US	Sensitive to unemployment levels	– Personal & Corporate Banking – Global Wealth Management
Commodity trade finance	Working capital financing of commodity traders, generally extended on a self-liquidating transactional basis	Sensitive primarily to the strength of individual transaction structures and collateral values (price volatility of commodities), as the primary source for debt service is directly linked to the shipments financed	– Personal & Corporate Banking
Financial intermediaries and hedge funds	Lending to financial institutions and pension funds, including exposures to broker-dealers and clearing houses	Sensitive to GDP development, the interest rate environment, price and volatility risks in financial markets, and regulatory and political risk	– Personal & Corporate Banking – Investment Bank

› **Refer to Note 19f for more details regarding sensitivity**

Note 9 Financial assets at amortized cost and other positions in scope of expected credit loss measurement (continued)

The tables below provide ECL exposure and ECL allowance and provision information about financial instruments and certain non-financial instruments that are subject to ECLs.

USD m	31.12.22							
	Carrying amount[1]				ECL allowances			
Financial instruments measured at amortized cost	Total	Stage 1	Stage 2	Stage 3	Total	Stage 1	Stage 2	Stage 3
Cash and balances at central banks	169,445	169,402	44	0	(12)	0	(12)	0
Loans and advances to banks	14,671	14,670	1	0	(6)	(5)	(1)	0
Receivables from securities financing transactions measured at amortized cost	67,814	67,814	0	0	(2)	(2)	0	0
Cash collateral receivables on derivative instruments	35,033	35,033	0	0	0	0	0	0
Loans and advances to customers	390,027	372,903	15,587	1,538	(783)	(129)	(180)	(474)
of which: Private clients with mortgages	*156,930*	*147,651*	*8,579*	*699*	*(161)*	*(27)*	*(107)*	*(28)*
of which: Real estate financing	*46,470*	*43,112*	*3,349*	*9*	*(41)*	*(17)*	*(23)*	*0*
of which: Large corporate clients	*12,226*	*10,733*	*1,189*	*303*	*(130)*	*(24)*	*(14)*	*(92)*
of which: SME clients	*13,903*	*12,211*	*1,342*	*351*	*(251)*	*(26)*	*(22)*	*(203)*
of which: Lombard	*132,287*	*132,196*	*0*	*91*	*(26)*	*(9)*	*0*	*(17)*
of which: Credit cards	*1,834*	*1,420*	*382*	*31*	*(36)*	*(7)*	*(10)*	*(19)*
of which: Commodity trade finance	*3,272*	*3,261*	*0*	*11*	*(96)*	*(6)*	*0*	*(90)*
Other financial assets measured at amortized cost	53,389	52,829	413	147	(86)	(17)	(6)	(63)
of which: Loans to financial advisors	*2,611*	*2,357*	*128*	*126*	*(59)*	*(7)*	*(2)*	*(51)*
Total financial assets measured at amortized cost	**730,379**	**712,651**	**16,044**	**1,685**	**(890)**	**(154)**	**(199)**	**(537)**
Financial assets measured at fair value through other comprehensive income	**2,239**	**2,239**	**0**	**0**	**0**	**0**	**0**	**0**
Total on-balance sheet financial assets within the scope of ECL requirements	**732,618**	**714,889**	**16,044**	**1,685**	**(890)**	**(154)**	**(199)**	**(537)**

	Total exposure				ECL provisions			
Off-balance sheet (within the scope of ECL)	Total	Stage 1	Stage 2	Stage 3	Total	Stage 1	Stage 2	Stage 3
Guarantees	22,167	19,805	2,254	108	(48)	(13)	(9)	(26)
of which: Large corporate clients	*3,663*	*2,883*	*721*	*58*	*(26)*	*(2)*	*(3)*	*(21)*
of which: SME clients	*1,337*	*1,124*	*164*	*49*	*(5)*	*(1)*	*(1)*	*(3)*
of which: Financial intermediaries and hedge funds	*11,833*	*10,513*	*1,320*	*0*	*(12)*	*(8)*	*(4)*	*0*
of which: Lombard	*2,376*	*2,376*	*0*	*1*	*(1)*	*0*	*0*	*(1)*
of which: Commodity trade finance	*2,121*	*2,121*	*0*	*0*	*(1)*	*(1)*	*0*	*0*
Irrevocable loan commitments	39,996	37,531	2,341	124	(111)	(59)	(52)	0
of which: Large corporate clients	*23,611*	*21,488*	*2,024*	*99*	*(93)*	*(49)*	*(45)*	*0*
Forward starting reverse repurchase and securities borrowing agreements	3,801	3,801	0	0	0	0	0	0
Committed unconditionally revocable credit lines	43,677	41,809	1,833	36	(40)	(32)	(8)	0
of which: Real estate financing	*8,711*	*8,528*	*183*	*0*	*(6)*	*(6)*	*0*	*0*
of which: Large corporate clients	*4,578*	*4,304*	*268*	*5*	*(4)*	*(1)*	*(2)*	*0*
of which: SME clients	*4,723*	*4,442*	*256*	*26*	*(19)*	*(16)*	*(3)*	*0*
of which: Lombard	*7,855*	*7,854*	*0*	*1*	*0*	*0*	*0*	*0*
of which: Credit cards	*9,390*	*8,900*	*487*	*3*	*(7)*	*(5)*	*(2)*	*0*
of which: Commodity trade finance	*327*	*327*	*0*	*0*	*0*	*0*	*0*	*0*
Irrevocable committed prolongation of existing loans	4,696	4,600	94	2	(2)	(2)	0	0
Total off-balance sheet financial instruments and credit lines	**114,337**	**107,545**	**6,522**	**270**	**(201)**	**(106)**	**(69)**	**(26)**
Total allowances and provisions					**(1,091)**	**(260)**	**(267)**	**(564)**

1 The carrying amount of financial assets measured at amortized cost represents the total gross exposure net of the respective ECL allowances.

Note 9 Financial assets at amortized cost and other positions in scope of expected credit loss measurement (continued)

USD m	31.12.21							
	Carrying amount[1]				ECL allowances			
Financial instruments measured at amortized cost	Total	Stage 1	Stage 2	Stage 3	Total	Stage 1	Stage 2	Stage 3
Cash and balances at central banks	192,817	192,817	0	0	0	0	0	0
Loans and advances to banks	15,360	15,333	26	1	(8)	(7)	(1)	0
Receivables from securities financing transactions measured at amortized cost	75,012	75,012	0	0	(2)	(2)	0	0
Cash collateral receivables on derivative instruments	30,514	30,514	0	0	0	0	0	0
Loans and advances to customers	398,693	381,496	15,620	1,577	(850)	(126)	(152)	(572)
of which: Private clients with mortgages	*152,479*	*143,505*	*8,262*	*711*	*(132)*	*(28)*	*(71)*	*(33)*
of which: Real estate financing	*43,945*	*40,463*	*3,472*	*9*	*(60)*	*(19)*	*(40)*	*0*
of which: Large corporate clients	*13,990*	*12,643*	*1,037*	*310*	*(170)*	*(22)*	*(16)*	*(133)*
of which: SME clients	*14,004*	*12,076*	*1,492*	*436*	*(259)*	*(19)*	*(15)*	*(225)*
of which: Lombard	*149,283*	*149,255*	*0*	*27*	*(33)*	*(6)*	*0*	*(28)*
of which: Credit cards	*1,716*	*1,345*	*342*	*29*	*(36)*	*(10)*	*(9)*	*(17)*
of which: Commodity trade finance	*3,813*	*3,799*	*7*	*7*	*(114)*	*(6)*	*0*	*(108)*
Other financial assets measured at amortized cost	26,236	25,746	302	189	(109)	(27)	(7)	(76)
of which: Loans to financial advisors	*2,453*	*2,184*	*106*	*163*	*(86)*	*(19)*	*(3)*	*(63)*
Total financial assets measured at amortized cost	**738,632**	**720,917**	**15,948**	**1,767**	**(969)**	**(161)**	**(160)**	**(647)**
Financial assets measured at fair value through other comprehensive income	**8,844**	**8,844**	**0**	**0**	**0**	**0**	**0**	**0**
Total on-balance sheet financial assets within the scope of ECL requirements	**747,477**	**729,762**	**15,948**	**1,767**	**(969)**	**(161)**	**(160)**	**(647)**

	Total exposure				ECL provisions			
Off-balance sheet (within the scope of ECL)	Total	Stage 1	Stage 2	Stage 3	Total	Stage 1	Stage 2	Stage 3
Guarantees	20,972	19,695	1,127	150	(41)	(18)	(8)	(15)
of which: Large corporate clients	*3,464*	*2,567*	*793*	*104*	*(6)*	*(3)*	*(3)*	*0*
of which: SME clients	*1,353*	*1,143*	*164*	*46*	*(8)*	*(1)*	*(1)*	*(7)*
of which: Financial intermediaries and hedge funds	*9,575*	*9,491*	*84*	*0*	*(17)*	*(13)*	*(4)*	*0*
of which: Lombard	*2,454*	*2,454*	*0*	*0*	*(1)*	*0*	*0*	*(1)*
of which: Commodity trade finance	*3,137*	*3,137*	*0*	*0*	*(1)*	*(1)*	*0*	*0*
Irrevocable loan commitments	39,478	37,097	2,335	46	(114)	(72)	(42)	0
of which: Large corporate clients	*23,922*	*21,811*	*2,102*	*9*	*(100)*	*(66)*	*(34)*	*0*
Forward starting reverse repurchase and securities borrowing agreements	1,444	1,444	0	0	0	0	0	0
Committed unconditionally revocable credit lines	42,373	39,802	2,508	63	(38)	(28)	(10)	0
of which: Real estate financing	*7,328*	*7,046*	*281*	*0*	*(5)*	*(4)*	*(1)*	*0*
of which: Large corporate clients	*5,358*	*4,599*	*736*	*23*	*(7)*	*(4)*	*(3)*	*0*
of which: SME clients	*5,160*	*4,736*	*389*	*35*	*(15)*	*(11)*	*(3)*	*0*
of which: Lombard	*8,670*	*8,670*	*0*	*0*	*0*	*0*	*0*	*0*
of which: Credit cards	*9,466*	*9,000*	*462*	*4*	*(6)*	*(5)*	*(2)*	*0*
of which: Commodity trade finance	*117*	*117*	*0*	*0*	*0*	*0*	*0*	*0*
Irrevocable committed prolongation of existing loans	5,611	5,527	36	48	(3)	(3)	0	0
Total off-balance sheet financial instruments and credit lines	**109,878**	**103,565**	**6,006**	**307**	**(196)**	**(121)**	**(60)**	**(15)**
Total allowances and provisions					**(1,165)**	**(282)**	**(220)**	**(662)**

1 The carrying amount of financial assets measured at amortized cost represents the total gross exposure net of the respective ECL allowances.

Note 9 Financial assets at amortized cost and other positions in scope of expected credit loss measurement (continued)

Coverage ratios are calculated for the core loan portfolio by taking ECL allowances and provisions divided by the gross carrying amount of the exposures. Core loan exposure is defined as the sum of *Loans and advances to customers* and *Loans to financial advisors*.

These ratios are influenced by the following key factors:
- Lombard loans are generally secured with marketable securities in portfolios that are, as a rule, highly diversified, with strict lending policies that are intended to ensure that credit risk is minimal under most circumstances;
- mortgage loans to private clients and real estate financing are controlled by conservative eligibility criteria, including low loan-to-value ratios and strong debt service capabilities;
- the amount of unsecured retail lending (including credit cards) is insignificant;
- lending in Switzerland includes government-backed COVID-19 loans;
- contractual maturities in the loan portfolio, which are a factor in the calculation of ECLs, are generally short, with Lombard lending typically having average contractual maturities of 12 months or less, real estate lending generally between two and three years in Switzerland, with long dated maturities in the US, and corporate lending between one and two years with related loan commitments up to four years; and
- write-offs of ECL allowances against the gross loan balances when all or part of a financial asset is deemed uncollectible or forgiven, reduces the coverage ratios.

The total combined on- and off-balance sheet coverage ratio was at 21 basis points as of 31 December 2022, 1 basis point lower than on 31 December 2021. The combined stage 1 and 2 ratio of 10 basis points was unchanged compared with 31 December 2021; the stage 3 ratio was 22%, 2 percentage points lower than as of 31 December 2021.

	31.12.22								
	Gross carrying amount (USD m)				ECL coverage (bps)				
On-balance sheet	Total	Stage 1	Stage 2	Stage 3	Total	Stage 1	Stage 2	Stage 1&2	Stage 3
Private clients with mortgages	157,091	147,678	8,686	727	10	2	123	9	381
Real estate financing	46,511	43,129	3,372	9	9	4	70	9	232
Total real estate lending	203,602	190,807	12,059	736	10	2	108	9	379
Large corporate clients	12,356	10,757	1,204	395	105	22	120	32	2,325
SME clients	14,154	12,237	1,364	553	177	22	161	36	3,664
Total corporate lending	26,510	22,994	2,567	949	144	22	142	34	3,106
Lombard	132,313	132,205	0	108	2	1	0	1	1,580
Credit cards	1,869	1,427	393	50	190	46	256	91	3,779
Commodity trade finance	3,367	3,266	0	101	285	18	0	18	8,901
Other loans and advances to customers	23,149	22,333	748	68	18	6	38	7	3,769
Loans to financial advisors	2,670	2,364	130	176	221	28	124	33	2,870
Total other lending	163,368	161,595	1,270	503	16	3	114	3	4,016
Total[1]	393,480	375,396	15,896	2,188	21	4	114	8	2,398
	Gross exposure (USD m)				ECL coverage (bps)				
Off-balance sheet	Total	Stage 1	Stage 2	Stage 3	Total	Stage 1	Stage 2	Stage 1&2	Stage 3
Private clients with mortgages	6,535	6,296	236	3	5	4	18	4	1,183
Real estate financing	10,054	9,779	275	0	6	7	0	6	0
Total real estate lending	16,589	16,075	511	3	6	6	2	6	1,288
Large corporate clients	32,126	28,950	3,013	163	38	18	165	32	1,263
SME clients	7,122	6,525	499	98	47	30	214	43	304
Total corporate lending	39,247	35,475	3,513	260	40	20	172	34	903
Lombard	12,919	12,918	0	1	2	1	0	1	0
Credit cards	9,390	8,900	487	3	7	5	36	7	0
Commodity trade finance	2,459	2,459	0	0	3	3	0	3	0
Financial intermediaries and hedge funds	18,128	16,464	1,664	0	7	6	25	7	0
Other off-balance sheet commitments	11,803	11,454	346	3	11	8	68	9	0
Total other lending	54,700	52,195	2,498	7	6	5	33	6	0
Total[2]	110,537	103,745	6,522	270	18	10	106	16	980
Total on- and off-balance sheet[3]	504,016	479,140	22,418	2,458	21	5	112	10	2,242

1 Includes Loans and advances to customers and Loans to financial advisors which are presented on the balance sheet line Other assets measured at amortized cost. 2 Excludes Forward starting reverse repurchase and securities borrowing agreements. 3 Includes on-balance-sheet exposure, gross and off-balance-sheet exposure (notional) and the related ECL coverage ratio.

Note 9 Financial assets at amortized cost and other positions in scope of expected credit loss measurement (continued)

	31.12.21								
	Gross carrying amount (USD m)				ECL coverage (bps)				
On-balance sheet	Total	Stage 1	Stage 2	Stage 3	Total	Stage 1	Stage 2	Stage 1&2	Stage 3
Private clients with mortgages	152,610	143,533	8,333	744	9	2	85	6	446
Real estate financing	44,004	40,483	3,512	10	14	5	114	14	231
Total real estate lending	196,615	184,016	11,845	754	10	3	94	8	443
Large corporate clients	14,161	12,665	1,053	443	120	18	148	28	2,997
SME clients	14,263	12,095	1,507	661	182	16	103	25	3,402
Total corporate lending	28,424	24,760	2,560	1,104	151	17	121	26	3,240
Lombard	149,316	149,261	0	55	2	0	0	0	5,026
Credit cards	1,752	1,355	351	46	204	72	255	109	3,735
Commodity trade finance	3,927	3,805	7	115	290	15	3	15	9,388
Other loans and advances to customers	19,510	18,425	1,010	75	23	9	15	9	3,730
Loans to financial advisors	2,539	2,203	109	226	338	88	303	99	2,791
Total other lending	177,043	175,049	1,477	517	18	3	93	4	4,718
Total[1]	**402,081**	**383,825**	**15,882**	**2,374**	**23**	**4**	**98**	**8**	**2,673**

	Gross exposure (USD m)				ECL coverage (bps)				
Off-balance sheet	Total	Stage 1	Stage 2	Stage 3	Total	Stage 1	Stage 2	Stage 1&2	Stage 3
Private clients with mortgages	9,123	8,798	276	49	3	3	9	3	15
Real estate financing	8,766	8,481	285	0	9	7	88	9	0
Total real estate lending	17,889	17,278	562	49	6	5	49	6	15
Large corporate clients	32,748	28,981	3,630	136	34	25	110	35	1
SME clients	8,077	7,276	688	114	38	19	151	30	585
Total corporate lending	40,826	36,258	4,318	250	35	24	117	34	266
Lombard	14,438	14,438	0	0	1	0	0	0	0
Credit cards	9,466	9,000	462	4	7	5	34	7	0
Commodity trade finance	3,262	3,262	0	0	4	4	0	4	0
Financial intermediaries and hedge funds	13,747	13,379	369	0	13	10	120	13	0
Other off-balance sheet commitments	8,806	8,507	296	4	15	6	30	7	0
Total other lending	49,720	48,585	1,127	8	8	5	61	7	0
Total[2]	**108,434**	**102,121**	**6,006**	**307**	**18**	**12**	**100**	**17**	**486**
Total on- and off-balance sheet[3]	**510,516**	**485,946**	**21,888**	**2,681**	**22**	**5**	**99**	**9**	**2,423**

1 Includes Loans and advances to customers and Loans to financial advisors which are presented on the balance sheet line Other assets measured at amortized cost. 2 Excludes Forward starting reverse repurchase and securities borrowing agreements. 3 Includes on-balance-sheet exposure, gross and off-balance-sheet exposure (notional) and the related ECL coverage ratio.

Note 10 Derivative instruments

Overview

Over-the-counter (OTC) derivative contracts are usually traded under a standardized International Swaps and Derivatives Association (ISDA) master agreement or other recognized local industry-standard master agreements between UBS AG and its counterparties. Terms are negotiated directly with counterparties and the contracts have industry-standard settlement mechanisms prescribed by ISDA or similar industry-standard solutions. Other OTC derivatives are cleared through clearing houses, in particular interest rate swaps with LCH, where a settled-to-market method has been generally adopted, under which cash collateral exchanged on a daily basis is considered to legally settle the market value of the derivatives. Regulators in various jurisdictions have introduced rules requiring the payment and collection of initial and variation margins on certain OTC derivative contracts, which may have a bearing on price and other relevant terms.

Exchange-traded derivatives (ETD) are standardized in terms of their amounts and settlement dates, and are bought and sold on regulated exchanges. Exchanges offer the benefits of pricing transparency, standardized daily settlement of changes in value and, consequently, reduced credit risk.

Most of UBS AG's derivative transactions relate to sales and market-making activity. Sales activities include the structuring and marketing of derivative products to customers to enable them to take, transfer, modify or reduce current or expected risks. Market-making aims to directly support the facilitation and execution of client activity, and involves quoting bid and offer prices to other market participants with the aim of generating revenues based on spread and volume. UBS AG also uses various derivative instruments for hedging purposes.

› **Refer to Notes 15 and 20 for more information about derivative instruments**
› **Refer to Note 25 for more information about derivatives designated in hedge accounting relationships**

Risks of derivative instruments

The derivative financial assets shown on the balance sheet can be an important component of UBS AG's credit exposure; however, the positive replacement values related to a respective counterparty are rarely an adequate reflection of UBS AG's credit exposure in its derivatives business with that counterparty. This is generally the case because, on the one hand, replacement values can increase over time (potential future exposure), while, on the other hand, exposure may be mitigated by entering into master netting agreements and bilateral collateral arrangements. Both the exposure measures used internally by UBS AG to control credit risk and the capital requirements imposed by regulators reflect these additional factors.

› **Refer to Note 21 for more information about derivative financial assets and liabilities after consideration of netting potential permitted under enforceable netting arrangements**

› **Refer to the "Risk management and control" section of this report for more information about the risks arising from derivative instruments**

Derivative instruments

	31.12.22					31.12.21				
USD bn	Derivative financial assets	Notional amounts related to derivative financial assets[2,3]	Derivative financial liabilities	Notional amounts related to derivative financial liabilities[2,3]	Other notional amounts[2,4]	Derivative financial assets	Notional amounts related to derivative financial assets[2,3]	Derivative financial liabilities	Notional amounts related to derivative financial liabilities[2,3]	Other notional amounts[2,4]
Interest rate contracts	39.8	1,057.4	37.5	1,022.9	11,255.4	33.2	991.2	28.7	943.1	8,675.1
of which: forwards (OTC)[1]	*0.2*	*37.7*	*0.0*	*34.6*	*792.7*	*0.1*	*29.4*	*0.2*	*28.6*	*443.6*
of which: swaps (OTC)	*25.2*	*326.1*	*19.8*	*281.0*	*9,728.6*	*26.4*	*394.3*	*19.2*	*344.1*	*7,549.4*
of which: options (OTC)	*14.2*	*687.5*	*17.5*	*705.0*		*6.6*	*545.2*	*9.2*	*553.6*	
of which: futures (ETD)					*606.3*					*525.0*
of which: options (ETD)	*0.0*	*6.1*	*0.0*	*2.2*	*127.7*	*0.0*	*22.4*	*0.0*	*16.8*	*157.1*
Credit derivative contracts	1.0	36.8	1.2	37.1		1.4	44.7	1.8	46.3	
of which: credit default swaps (OTC)	*0.9*	*34.2*	*1.0*	*36.8*		*1.3*	*39.4*	*1.6*	*44.1*	
of which: total return swaps (OTC)	*0.1*	*0.9*	*0.2*	*0.3*		*0.1*	*1.3*	*0.2*	*1.7*	
Foreign exchange contracts	85.5	3,087.3	88.5	2,992.7	40.1	53.3	3,031.0	54.1	2,938.8	1.2
of which: forwards (OTC)	*26.5*	*853.6*	*28.6*	*910.2*		*23.8*	*1,009.1*	*23.8*	*1,043.2*	
of which: swaps (OTC)	*49.6*	*1,679.3*	*50.4*	*1,553.7*	*38.4*	*24.3*	*1,606.4*	*24.9*	*1,480.3*	
of which: options (OTC)	*9.3*	*551.6*	*9.2*	*521.6*		*5.2*	*412.6*	*5.3*	*408.6*	
Equity contracts	22.2	384.5	26.1	501.3	63.4	28.2	456.9	34.9	603.9	80.1
of which: swaps (OTC)	*5.3*	*95.5*	*6.6*	*122.0*		*4.7*	*105.7*	*9.3*	*154.8*	
of which: options (OTC)	*2.8*	*51.6*	*4.4*	*89.0*		*4.6*	*61.4*	*6.5*	*102.3*	
of which: futures (ETD)					*52.2*					*71.2*
of which: options (ETD)	*9.0*	*237.0*	*8.1*	*289.7*	*11.2*	*10.2*	*289.6*	*9.8*	*346.3*	*8.8*
of which: client-cleared transactions (ETD)	*5.1*		*7.0*			*8.6*		*9.4*		
Commodity contracts	1.4	68.1	1.4	64.2	17.6	1.6	57.8	1.6	56.4	14.7
of which: swaps (OTC)	*0.5*	*19.3*	*0.7*	*19.3*		*0.5*	*19.9*	*0.8*	*25.4*	
of which: options (OTC)	*0.4*	*15.8*	*0.3*	*13.3*		*0.4*	*14.0*	*0.2*	*10.4*	
of which: futures (ETD)					*16.4*					*13.9*
of which: forwards (ETD)	*0.0*	*24.5*	*0.0*	*23.2*		*0.0*	*18.1*	*0.0*	*15.2*	
of which: client-cleared transactions (ETD)	*0.2*		*0.3*			*0.6*		*0.4*		
Loan commitments measured at FVTPL (OTC)	0.0	0.9	0.0	3.7		0.0	0.8	0.0	8.2	
Unsettled purchases of non-derivative financial instruments[5]	0.1	12.1	0.1	9.4		0.1	13.3	0.2	10.6	
Unsettled sales of non-derivative financial instruments[5]	0.1	13.0	0.0	10.7		0.2	18.2	0.1	9.4	
Total derivative instruments, based on IFRS netting[6]	150.1	4,660.1	154.9	4,642.0	11,376.5	118.1	4,614.0	121.3	4,616.6	8,771.1

1 Includes certain forward starting repurchase and reverse repurchase agreements that are classified as measured at fair value through profit or loss and are recognized within derivative instruments. 2 In cases where derivative financial instruments are presented on a net basis on the balance sheet, the respective notional amounts of the netted derivative financial instruments are still presented on a gross basis. 3 Notional amounts of client-cleared ETD and OTC transactions through central clearing counterparties are not disclosed, as they have significantly different risk profile. 4 Other notional amounts relate to derivatives that are cleared through either a central counterparty or an exchange. The fair value of these derivatives is presented on the balance sheet net of the corresponding cash margin under Cash collateral receivables on derivative instruments and Cash collateral payables on derivative instruments and was not material for any of the periods presented. 5 Changes in the fair value of purchased and sold non-derivative financial instruments between trade date and settlement date are recognized as derivative financial instruments. 6 Derivative financial assets and liabilities are presented net on the balance sheet if UBS AG has the unconditional and legally enforceable right to offset the recognized amounts, both in the normal course of business and in the event of default, bankruptcy or insolvency of the entity and all of the counterparties, and intends either to settle on a net basis or to realize the asset and settle the liability simultaneously. Refer to Note 21 for more information on netting arrangements.

Note 10 Derivative instruments (continued)

On a notional amount basis, approximately 46% of OTC interest rate contracts held as of 31 December 2022 (31 December 2021: 40%) mature within one year, 32% (31 December 2021: 36%) within one to five years and 22% 31 December 2021: 25%) after five years.

Notional amounts of interest rate contracts cleared through either a central counterparty or an exchange that are legally settled or economically net settled on a daily basis are presented under *Other notional amounts* in the table above and are categorized into maturity buckets on the basis of contractual maturities of the cleared underlying derivative contracts. Other notional amounts related to interest rate contracts increased by USD 2.6trn compared with 31 December 2021, mainly reflecting higher business volumes driven by elevated interest rate volatility and inflation, partly offset by compression activity.

Note 11 Property, equipment and software

At historical cost less accumulated depreciation

USD m	Owned properties and equipment[1]	Leased properties and equipment[2]	Software	Projects in progress	2022[3]	2021[3]
Historical cost						
Balance at the beginning of the year	11,494	3,994	7,924	1,130	24,542	23,785
Additions	90[1]	380	330	1,059	1,859	1,789
Disposals / write-offs[4]	(284)	(48)	(81)	0	(414)	(632)
Reclassifications	(796)	0	1,052	(1,150)	(894)	(18)
Foreign currency translation	(152)	(50)	(5)	7	(200)	(381)
Balance at the end of the year	10,352	4,275	9,220	1,046	24,893	24,542
Accumulated depreciation						
Balance at the beginning of the year	7,178	1,272	4,380		12,830	11,827
Depreciation	463	430	926		1,819	1,835
Impairment[5]	2	0	0		2	9
Disposals / write-offs[4]	(283)	(45)	(81)		(410)	(619)
Reclassifications	(565)	(1)	0		(566)	(12)
Foreign currency translation	(98)	(18)	17		(99)	(210)
Balance at the end of the year	6,697	1,638	5,242		13,577	12,830
Net book value						
Net book value at the beginning of the year	4,316	2,722	3,544	1,130	11,712	11,958
Net book value at the end of the year	**3,655**	**2,637**	**3,978**	**1,046[6]**	**11,316**	**11,712**

1 Includes leasehold improvements and IT hardware. 2 Represents right-of-use assets recognized by UBS AG as lessee. UBS AG predominantly enters into lease contracts, or contracts that include lease components, in relation to real estate, including offices, retail branches and sales offices. The total cash outflow for leases during 2022 was USD 589m (2021: USD 632m). Interest expense on lease liabilities is included within Interest expense from financial instruments measured at amortized cost and Lease liabilities are included within Other financial liabilities measured at amortized cost. Refer to Notes 3 and 18a, respectively. There were no material gains or losses arising from sale-and-leaseback transactions in 2022 and in 2021. 3 The total reclassification amount for the respective periods represents net reclassifications to Properties and other non-current assets held for sale. 4 Includes write-offs of fully depreciated assets. 5 Impairment charges recorded in 2022 generally relate to assets that are no longer used, for which the recoverable amount based on a value in use approach was determined to be zero. 6 Consists of USD 858m related to software and USD 188m related to Owned properties and equipment.

Note 12 Goodwill and intangible assets

Introduction

UBS AG performs an impairment test on its goodwill assets on an annual basis or when indicators of impairment exist.

UBS AG considers Asset Management, as it is reported in Note 2a, as a separate cash-generating unit (a CGU), as that is the level at which the performance of investment (and the related goodwill) is reviewed and assessed by management. Given that a significant amount of goodwill in Global Wealth Management relates to the PaineWebber acquisition in 2000, which mainly affected the Americas portion of the business, this goodwill remains separately monitored by the Americas, despite the formation of Global Wealth Management in 2018. Therefore, goodwill for Global Wealth Management is separately considered for impairment at the level of two CGUs: Americas; and Switzerland and International (consisting of EMEA, Asia Pacific and Global).

The impairment test is performed for each CGU to which goodwill is allocated by comparing the recoverable amount with the carrying amount of the respective CGU. UBS AG determines the recoverable amount of the respective CGUs based on their value in use. An impairment charge is recognized if the carrying amount exceeds the recoverable amount.

As of 31 December 2022, total goodwill recognized on the balance sheet was USD 6.0bn, of which USD 3.7bn was carried by the Global Wealth Management Americas CGU, USD 1.2bn was carried by the Global Wealth Management Switzerland and International CGU, and USD 1.2bn was carried by Asset Management. Based on the impairment testing methodology described below, UBS AG concluded that the goodwill balances as of 31 December 2022 allocated to these CGUs were not impaired.

Methodology for goodwill impairment testing

The recoverable amounts are determined using a discounted cash flow model, which has been adapted to use inputs that consider features of the banking business and its regulatory environment. The recoverable amount of a CGU is the sum of the discounted earnings attributable to shareholders from the first three forecast years and the terminal value, adjusted for the effect of the capital assumed to be needed over the next three years and to support growth beyond that period. The terminal value, which covers all periods beyond the third year, is calculated on the basis of the forecast of the third-year profit, the discount rate and the long-term growth rate, as well as the implied perpetual capital growth.

The carrying amount for each CGU is determined by reference to UBS's equity attribution framework. Within this framework, which is described in the "Capital, liquidity and funding, and balance sheet" section of this report, UBS attributes equity to the businesses on the basis of their risk-weighted assets and leverage ratio denominator (both metrics include resource allocations from Group Functions to the business divisions), their goodwill and their intangible assets, as well as attributed equity related to certain common equity tier 1 deduction items. The framework is primarily used for the purpose of measuring the performance of the businesses and includes certain management assumptions. Attributed equity is equal to the capital a CGU requires to conduct its business and is currently considered a reasonable approximation of the carrying amount of the CGUs. The attributed equity methodology is also applied in the business planning process, the inputs from which are used in calculating the recoverable amounts of the respective CGU.

› **Refer to the "Capital, liquidity and funding, and balance sheet" section of this report for more information about the equity attribution framework**

Assumptions

Valuation parameters used within UBS AG's impairment test model are linked to external market information, where applicable. The model used to determine the recoverable amount is most sensitive to changes in the forecast earnings available to shareholders in years one to three, to changes in the discount rates and to changes in the long-term growth rate. The applied long-term growth rate is based on long-term economic growth rates for different regions worldwide. Earnings available to shareholders are estimated on the basis of forecast results, which are part of the business plan approved by the Board of Directors.

The discount rates are determined by applying a capital asset pricing model-based approach, as well as considering quantitative and qualitative inputs from both internal and external analysts and the view of management. They also take into account regional differences in risk-free rates at the level of the individual CGUs. In line with discount rates, long-term growth rates are determined at the regional level based on nominal GDP growth rate forecasts.

Key assumptions used to determine the recoverable amounts of each CGU are tested for sensitivity by applying a reasonably possible change to those assumptions. Forecast earnings available to shareholders were changed by 20%, the discount rates were changed by 1.5 percentage points, and the long-term growth rates were changed by 0.75 percentage points. Under all scenarios, reasonably possible changes in key assumptions did not result in an impairment of goodwill or intangible assets reported by Global Wealth Management Americas, Global Wealth Management Switzerland and International, and Asset Management.

If the estimated earnings and other assumptions in future periods deviate from the current outlook, the value of goodwill attributable to Global Wealth Management Americas, Global Wealth Management Switzerland and International, and Asset Management may become impaired in the future, giving rise to losses in the income statement. Recognition of any impairment of goodwill would reduce International Financial Reporting Standards equity and net profit. It would not affect cash flows and, as goodwill is required to be deducted from capital under the Basel III capital framework, no effect would be expected on UBS AG's capital ratios.

Discount and growth rates

	Discount rates		Growth rates	
In %	31.12.22	31.12.21	31.12.22	31.12.21
Global Wealth Management Americas	10.5	9.5	3.8	4.0
Global Wealth Management Switzerland and International	9.4	8.5	3.6	3.1
Asset Management	9.5	8.5	3.4	2.9

Note 12 Goodwill and intangible assets (continued)

USD m	Goodwill	Intangible assets[1]	2022	2021
Historical cost				
Balance at the beginning of the year	6,126	1,612	7,739	7,865
Additions	0	0	0	1
Disposals[2]	(22)	0	(22)	(3)
Write-offs	0	0	0	(41)
Foreign currency translation	(61)	(14)	(76)	(83)
Balance at the end of the year	6,043	1,598	7,641	7,739
Accumulated amortization and impairment				
Balance at the beginning of the year		1,360	1,360	1,385
Amortization		26	26	31
Impairment / (reversal of impairment)		(1)	(1)	(1)
Write-offs		0	0	(41)
Foreign currency translation		(11)	(11)	(13)
Balance at the end of the year		1,374	1,374	1,360
Net book value at the end of the year	6,043	224	6,267	6,378
of which: Global Wealth Management Americas	*3,709*	*31*	*3,740*	*3,760*
of which: Global Wealth Management Switzerland and International	*1,166*	*59*	*1,225*	*1,276*
of which: Asset Management	*1,167*	*0*	*1,167*	*1,202*
of which: Investment Bank	*0*	*135*	*135*	*139*

1 Intangible assets mainly include customer relationships, contractual rights and the fully amortized branch network intangible asset recognized in connection with the acquisition of PaineWebber Group, Inc. 2 Reflects the derecognition of goodwill allocated to businesses that have been disposed of, in accordance with IAS 36 requirements.

The table below presents estimated aggregated amortization expenses for intangible assets.

USD m	Intangible assets
Estimated aggregated amortization expenses for:	
2023	26
2024	24
2025	23
2026	23
2027	22
Thereafter	104
Not amortized due to indefinite useful life	2
Total	224

Note 13 Other assets

a) Other financial assets measured at amortized cost

USD m	31.12.22	31.12.21
Debt securities	44,594	18,858
Loans to financial advisors	2,611	2,453
Fee- and commission-related receivables	1,803	1,966
Finance lease receivables	1,314	1,356
Settlement and clearing accounts	1,174	455
Accrued interest income	1,276	521
Other	618	627
Total other financial assets measured at amortized cost	53,389	26,236

Debt securities increased by USD 25.7bn compared with 31 December 2021, largely reflecting shifts from cash into securities within UBS's high-quality liquid asset portfolio as spreads widened. In addition, a portfolio of assets previously classified as Financial assets measured at fair value through other comprehensive income was reclassified to Other financial assets measured at amortized cost in 2022.

› **Refer to Note 1b for more information**

Note 13 Other assets (continued)

b) Other non-financial assets

USD m	31.12.22	31.12.21
Precious metals and other physical commodities	4,471	5,258
Deposits and collateral provided in connection with litigation, regulatory and similar matters[1]	2,205	1,526
Prepaid expenses	709	717
VAT, withholding tax and other tax receivables	1,405	591
Properties and other non-current assets held for sale	279	32
Assets of disposal group held for sale[2]		1,093
Other	583	618
Total other non-financial assets	9,652	9,836

1 Refer to Note 17 for more information. 2 Refer to Note 29 for more information.

Note 14 Customer deposits, and funding from UBS Group AG

a) Customer deposits

USD m	31.12.22	31.12.21
Demand deposits	182,307	247,299
Retail savings / deposits	149,310	133,354
Sweep deposits	69,223	113,870
Time deposits[1]	126,331	50,312
Total customer deposits	527,171	544,834

1 Includes customer deposits in UBS AG Jersey Branch placed by UBS Switzerland AG on behalf of its clients.

Increases in interest rates during the year resulted in significant shifts from demand deposits to time deposits.

b) Funding from UBS Group AG measured at amortized cost

USD m	31.12.22	31.12.21
Senior unsecured debt that contributes to total loss-absorbing capacity (TLAC)	42,073	38,984
Senior unsecured debt other than TLAC	236	4,471
Subordinated debt	13,838	13,840
of which: eligible as high-trigger loss-absorbing additional tier 1 capital instruments	*10,654*	*11,414*
of which: eligible as low-trigger loss-absorbing additional tier 1 capital instruments	*1,187*	*2,426*
Total funding from UBS Group AG measured at amortized cost[1]	56,147	57,295

1 UBS AG has also recognized funding from UBS Group AG that is designated at fair value. Refer to Note 18b for more information.

UBS AG uses interest rate and foreign exchange derivatives to manage the risks inherent in certain debt instruments held at amortized cost. In some cases, UBS AG applies hedge accounting for interest rate risk as discussed in item 2j in Note 1a and Note 25. As a result of applying hedge accounting, the life-to-date adjustment to the carrying amount of *Funding from UBS Group AG measured at amortized cost* was a decrease of USD 5.1bn as of 31 December 2022 and an increase of USD 0.2bn as of 31 December 2021, reflecting changes in fair value due to interest rate movements.

Subordinated debt consists of unsecured debt obligations that are contractually subordinated in right of payment to all other present and future non-subordinated obligations of the respective issuing entity. All of the subordinated debt instruments outstanding as of 31 December 2022 pay a fixed rate of interest.

› **Refer to Note 23 for maturity information**

Note 15 Debt issued designated at fair value

USD m	31.12.22	31.12.21
Issued debt instruments		
Equity-linked[1]	41,901	47,059
Rates-linked	16,276	16,369
Credit-linked	2,170	1,723
Fixed-rate	6,538	2,868
Commodity-linked	4,294	2,911
Other	663	529
Total debt issued designated at fair value	71,842	71,460
of which: issued by UBS AG with original maturity greater than one year[2]	*57,750*	*57,967*

1 Includes investment fund unit-linked instruments issued. 2 Based on original contractual maturity without considering any early redemption features. As of 31 December 2022, 100% of the balance was unsecured (31 December 2021: 100%).

Note 16 Debt issued measured at amortized cost

USD m	31.12.22	31.12.21
Short-term debt[1]	29,676	43,098
Senior unsecured debt	17,892	23,328
of which: issued by UBS AG with original maturity greater than one year	*17,892*	*23,307*
Covered bonds	0	1,389
Subordinated debt	2,968	5,163
of which: eligible as low-trigger loss-absorbing tier 2 capital instruments	*2,422*	*2,596*
of which: eligible as non-Basel III-compliant tier 2 capital instruments	*536*	*547*
Debt issued through the Swiss central mortgage institutions	8,962	9,454
Long-term debt[2]	29,823	39,334
Total debt issued measured at amortized cost[3]	59,499	82,432

1 Debt with an original contractual maturity of less than one year, includes mainly certificates of deposit and commercial paper. 2 Debt with an original contractual maturity greater than or equal to one year. The classification of debt issued into short-term and long-term does not consider any early redemption features. 3 Net of bifurcated embedded derivatives, the fair value of which was not material for the periods presented.

UBS AG uses interest rate and foreign exchange derivatives to manage the risks inherent in certain debt instruments held at amortized cost. In some cases, UBS AG applies hedge accounting for interest rate risk as discussed in item 2j in Note 1a and Note 25. As a result of applying hedge accounting, the life-to-date adjustment to the carrying amount of debt issued was a decrease of USD 1.0bn as of 31 December 2022 and an increase of USD 0.3bn as of 31 December 2021, reflecting changes in fair value due to interest rate movements.

Subordinated debt consists of unsecured debt obligations that are contractually subordinated in right of payment to all other present and future non-subordinated obligations of the respective issuing entity. All of the subordinated debt instruments outstanding as of 31 December 2022 pay a fixed rate of interest.

› **Refer to Note 23 for maturity information**

Note 17 Provisions and contingent liabilities

a) Provisions

The table below presents an overview of total provisions.

USD m	31.12.22	31.12.21
Provisions other than provisions for expected credit losses	2,982	3,256
Provisions for expected credit losses[1]	201	196
Total provisions	3,183	3,452

1 Refer to Note 9 for more information about ECL provisions recognized for off-balance sheet financial instruments and credit lines.

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

USD m	Litigation, regulatory and similar matters[1]	Restructuring	Other[3]	Total 2022
Balance at the beginning of the year	2,798	137	321	3,256
Increase in provisions recognized in the income statement	406	174	49	629
Release of provisions recognized in the income statement	(57)	(19)	(32)	(109)
Provisions used in conformity with designated purpose	(470)	(189)	(31)	(689)
Capitalized reinstatement costs	0	0	1	1
Foreign currency translation / unwind of discount	(90)	(5)	(11)	(106)
Balance at the end of the year	2,586	98[2]	297	2,982

1 Consists of provisions for losses resulting from legal, liability and compliance risks. 2 Consists of personnel-related restructuring provisions of USD 70m as of 31 December 2022 (31 December 2021: USD 90m) and provisions for onerous contracts of USD 28m as of 31 December 2022 (31 December 2021: USD 47m). 3 Mainly includes provisions related to real estate, employee benefits and operational risks.

Restructuring provisions relate to personnel-related provisions and onerous contracts. Personnel-related restructuring provisions are generally used within a short period of time. The level of personnel-related provisions can change when natural staff attrition reduces the number of people affected by a restructuring event, and therefore results in lower 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 Note 17b. There are no material contingent liabilities associated with the other classes of provisions.

b) 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 (which for purposes of this Note may refer to UBS 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 UBS 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 UBS 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. UBS 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 UBS 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 UBS, but are nevertheless expected to be, based on UBS'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.

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 Note 17a 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, liquidity and funding, and balance sheet" section of this report.

Provisions for litigation, regulatory and similar matters by business division and in Group Functions[1]

USD m	Global Wealth Manage-ment	Personal & Corporate Banking	Asset Manage-ment	Investment Bank	Group Functions	Total 2022
Balance at the beginning of the year	1,338	181	8	310	962	2,798
Increase in provisions recognized in the income statement	268	2	1	129	6	406
Release of provisions recognized in the income statement	(23)	(15)	0	(8)	(12)	(57)
Provisions used in conformity with designated purpose	(331)	0	0	(115)	(23)	(470)
Reclassifications	0	0	0	4	(4)	0
Foreign currency translation / unwind of discount	(70)	(9)	0	(11)	0	(90)
Balance at the end of the year	1,182	159	8	308	928	2,586

1 Provisions, if any, for the matters described in items 3 and 4 of this Note 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 of this Note are allocated between Global Wealth Management and Personal & Corporate Banking, provisions, if any, for the matters described in item 5 are allocated between the Investment Bank and Group Functions, and provisions, if any, for the matters described in item 7 are allocated between Global Wealth Management and the Investment Bank.

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.

Since 2013, UBS (France) S.A., UBS AG and certain former employees have been under investigation in France in relation to UBS's cross-border business with French clients. In connection with this investigation, the investigating judges ordered UBS AG to provide bail ("caution") of EUR 1.1bn.

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 3.7bn on UBS AG and UBS (France) S.A. and awarded EUR 800m 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 3.75m, the confiscation of EUR 1bn, and awarded civil damages to the French state of EUR 800m. UBS AG has filed an appeal with the French Supreme Court to preserve its rights. The notice of 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 civil damages award has been paid to the French state (EUR 99m of which was deducted from the bail), subject to the result of UBS's appeal.

Our balance sheet at 31 December 2022 reflected provisions with respect to this matter in an amount of EUR 1.1bn (USD 1.2bn). 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.

Our balance sheet at 31 December 2022 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 in February 2019. In December 2019, the district court denied UBS's motion to dismiss.

Our balance sheet at 31 December 2022 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.

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 2.1bn, 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 2bn. 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 125m 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 3.42bn, of which USD 3.37bn 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 15m, 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 3bn of bonds by the System in 2008 and sought damages of over USD 800m. In 2016, the court granted the System's request to join the action as a plaintiff. In 2022, a federal district court enjoined the plaintiffs from proceeding with the action on the grounds it impermissibly conflicted with Puerto Rico's approved Plan of Adjustment.

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 125m 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 955m 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 have been granted in all three cases; those decisions are being appealed by the plaintiffs.

Our balance sheet at 31 December 2022 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 141m 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. UBS and the other banks have reached an agreement in principle to resolve those individual matters.

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. In March 2022, the court denied plaintiffs' motion for class certification.

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. In March 2020 the court granted defendants' motion to dismiss the complaint in its entirety. Plaintiffs have appealed the dismissal. In March 2022, the Second Circuit dismissed the appeal because appellants, who had been substituted in to replace the original plaintiffs who had withdrawn, lacked standing to pursue the appeal. 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. In September 2022, the court granted defendants' motion to dismiss the complaint in its entirety, while allowing plaintiffs the opportunity to file an amended complaint. Plaintiffs filed an amended complaint in October 2022, and defendants have moved to dismiss the amended complaint in November 2022.

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. In October 2022, the appeals court affirmed the dismissal on multiple grounds. 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. In August 2022, the court granted UBS's motion for reconsideration and dismissed the case against UBS.

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, 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. Plaintiffs filed a third amended complaint in November 2022 and defendants have moved to dismiss the amended complaint in January 2023.

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, 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 moved to dismiss in November 2021. In March 2022, plaintiffs reached a settlement in principle with the remaining defendants, including UBS. The court granted final approval of the settlement in November 2022.

BBSW – In November 2018, the court dismissed the BBSW lawsuit as to UBS and certain other foreign defendants for lack of personal jurisdiction. Plaintiffs filed an amended complaint in April 2019, which UBS and other defendants moved to dismiss in May 2019. In February 2020, the court 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. In February 2022, plaintiffs reached a settlement in principle with the remaining defendants, including UBS. The court granted final approval of the settlement in November 2022.

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 were granted in March 2021. Plaintiffs filed an amended complaint, which defendants moved to dismiss in June 2021. In March 2022, the court granted defendants' motion to dismiss that complaint. Plaintiffs have appealed the dismissal. 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 172m. 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 2022 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 2022 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.

7. Communications recordkeeping

The SEC and CFTC conducted investigations of UBS and other financial institutions regarding compliance with records preservation requirements relating to business communications sent over unapproved electronic messaging channels. UBS cooperated with the investigations, and, in September 2022, UBS agreed to pay civil monetary penalties of USD 125m to the SEC and USD 75m to the CFTC to resolve these matters.

Note 18 Other liabilities

a) Other financial liabilities measured at amortized cost

USD m	31.12.22	31.12.21
Other accrued expenses	1,564	1,642
Accrued interest expenses	2,008	1,134
Settlement and clearing accounts	1,060	1,282
Lease liabilities	3,211	3,438
Other	2,549	2,269
Total other financial liabilities measured at amortized cost	10,391	9,765

b) Other financial liabilities designated at fair value

USD m	31.12.22	31.12.21
Financial liabilities related to unit-linked investment contracts	13,221	21,466
Securities financing transactions	15,333	6,377
Over-the-counter debt instruments and other	1,684	2,231
Funding from UBS Group AG	1,796	2,340
Total other financial liabilities designated at fair value	32,033	32,414

c) Other non-financial liabilities

USD m	31.12.22	31.12.21
Compensation-related liabilities	4,424	4,795
of which: financial advisor compensation plans	*1,463*	*1,512*
of which: other compensation plans	*2,023*	*2,140*
of which: net defined benefit liability	*449*	*617*
of which: other compensation-related liabilities[1]	*490*	*526*
Current tax liabilities	1,044	1,365
Deferred tax liabilities	233	297
VAT, withholding tax and other tax payables	472	524
Deferred income	233	225
Liabilities of disposal group held for sale[2]		1,298
Other	84	68
Total other non-financial liabilities	6,489	8,572

1 Includes liabilities for payroll taxes and untaken vacation. 2 Refer to Note 29 for more information.

Note 19 Expected credit loss measurement

a) Expected credit losses in the period

Total net credit loss expenses were USD 29m in 2022, reflecting net credit loss expenses of USD 29m related to stage 1 and 2 positions and USD 0m net credit loss expenses related to credit-impaired (stage 3) positions.

Stage 1 and 2 expected credit loss (ECL) expenses of USD 29m include USD 123m expenses related to scenario and parameter updates and USD 13m related to other book quality and size changes, partly offset by USD 77m post-model adjustment (PMA) releases and USD 30m releases related to model changes. Lending to corporate clients not secured by mortgages contributed USD 21m, mainly driven by scenario effects related to the downward revision of GDP and higher interest rate assumptions in the newly introduced *stagflationary geopolitical crisis scenario* (SGC). Lending secured by mortgages contributed USD 16m in expenses, mainly driven by scenario effects related to higher interest rate assumptions, especially from the SGC, and adverse house price assumptions from both applied downside scenarios. This was partly offset by releases from other lending of USD 9m.

› **Refer to Note 19b for more information regarding changes to ECL models, scenarios, scenario weights and the post-model adjustment and to Note 19c for more information regarding the development of ECL allowances and provisions**

Stage 3 net expenses of USD 0m were recognized across a number of defaulted positions, with net expenses of USD 12m in Personal and Corporate Banking and USD 5m in Global Wealth Management, offset by releases of USD 18m in the Investment Bank, including a USD 28m release for a single airline-related counterparty, mainly due to improved cashflow assumptions, and USD 10m net expenses across a number of defaulted positions.

Credit loss expense / (release)

USD m	Global Wealth Management	Personal & Corporate Banking	Asset Management	Investment Bank	Group Functions	Total
For the year ended 31.12.22						
Stages 1 and 2	(5)	27	0	6	1	29
Stage 3	5	12	0	(18)	2	0
Total credit loss expense / (release)	0	39	0	(12)	3	29
For the year ended 31.12.21						
Stages 1 and 2	(28)	(62)	0	(34)	0	(123)
Stage 3	(1)	(24)	1	0	0	(25)
Total credit loss expense / (release)	**(29)**	**(86)**	**1**	**(34)**	**0**	**(148)**
For the year ended 31.12.20						
Stages 1 and 2	48	129	0	88	0	266
Stage 3	40	128	2	217	42	429
Total credit loss expense / (release)	**88**	**257**	**2**	**305**	**42**	**695**

b) Changes to ECL models, scenarios, scenario weights and key inputs

Refer to Note 1a for information about the principles governing expected credit loss (ECL) models, scenarios, scenario weights and key inputs applied.

Governance

Comprehensive cross-functional and cross-divisional governance processes are in place and are used to discuss and approve scenario updates and weights, to assess whether significant increases in credit risk resulted in stage transfers, to review model outputs and to reach conclusions regarding post-model adjustments.

Model changes

During 2022, the model review and enhancement process led to adjustments of the probability of default (PD), loss given default (LGD), and credit conversion factor (CCF) models, resulting in a USD 30m decrease in ECL allowances. This includes a decrease of USD 19m in Global Wealth Management affecting loans to financial advisors and specialized US lending portfolios and an USD 11m decrease in Personal & Corporate Banking related to lending to *large corporate clients* and *financial intermediaries & hedge funds*.

Scenario and key input updates

During 2022, the scenarios and related macroeconomic factors were updated from those applied at the end of 2021 by considering the prevailing economic and political conditions and uncertainty. The review focused on events that significantly changed the economic outlook during the year: the Russia–Ukraine war, with the subsequent effect on energy markets, the inflation outlook and economic growth in Europe, and rising global interest rates due to central banks' adoption of more restrictive monetary policies.

Baseline scenario: the projections of the baseline scenario, which are aligned to the economic and market assumptions used for UBS AG's business planning purposes, are broadly in line with external data, such as that from Bloomberg Consensus, Oxford Economics and the International Monetary Fund World Economic Outlook. The expectation for 2023 is that global growth stalls under the weight of monetary policy tightening, and continued pressure on real purchasing power due to high inflation – further fueled in Europe by the energy crisis and a lack of labor supply – even though unemployment rates are forecast to be higher than in 2022 and an energy crisis in Europe seems likely to be averted. Interest rates are expected to remain high, given the persistence of inflationary trends, leading to a less optimistic outlook for global house prices, which is cushioned in Switzerland by continued strong demand.

Global crisis scenario: The first hypothetical downside scenario, the global crisis scenario, is aligned with the UBS AG's 2022 binding stress scenario and was updated in 2022 to reflect expected risks, resulting in minimal changes. It assumes that, while the global economy has returned to pre-pandemic levels and the immediate risks from COVID-19 have decreased, the associated disruptions and the consequences of the unprecedented monetary and fiscal stimulus measures will remain critical. Concerns regarding the sustainability of public debt, following the marked deterioration of fiscal positions, lead to a loss of confidence and market turbulence, while protectionism results in a decrease in global trade. Governments and central banks have limited scope to support the economies, and interest rate levels remain moderate. As a consequence, China suffers a hard landing which, combined with political, solvency and liquidity concerns, affects emerging markets significantly. A spillover effect leads to a contraction of the Eurozone, Swiss and US economies, as global demand is significantly affected. Given the severity of the macroeconomic impact, unemployment rates rise to historical highs and real estate sectors contract sharply.

Stagflationary geopolitical crisis scenario: The second downside scenario was changed during 2022. In light of the developments caused by Russia's invasion of Ukraine, the *mild global interest rate steepening scenario* was replaced by a *severe global interest rate steepening scenario* in the first quarter of 2022, as the beginning of the Russia–Ukraine war increased fears of higher inflation and a corresponding reaction by monetary authorities. In the second quarter of the year, the progression of the war and the enforcement of sanctions regimes led to a redesign of the scenario. The resulting *severe Russia–Ukraine conflict scenario* has similar dynamics as the severe global interest rate steepening scenario, but addressed specifically the prospect of rising energy costs, especially in Europe, with the consequences of lower growth and higher inflation rates. In the fourth quarter of 2022, UBS developed a new *stagflationary geopolitical crisis scenario* (SGC) and included this new scenario in the ECL calculation for year-end 2022 in lieu of the *severe Russia–Ukraine conflict scenario*. While the SGC scenario addresses similar risks as the *severe Russia–Ukraine conflict scenario*, it also covers additional and broader risks and therefore assumes more severe shocks. Geopolitical tensions cause an escalation of security concerns and undermine globalization. The ensuing economic regionalization leads to a surge in global commodity prices and further disruptions of supply chains and raises the specter of prolonged stagflation. The severe interest rate and adverse house price assumptions in the SGC scenario had a substantive impact on model-based ECL allowances for loans secured by mortgages in Switzerland and the US. These effects were partly offset by PMA releases related to loans secured by mortgages. Refer to the section below on "Scenario weights and post-model adjustments" for more details.

Asset price inflation scenario: The upside scenario is based on positive developments, such as an easing of geopolitical tensions across the globe and a rebound in Chinese economic growth. A combination of lower energy and commodity prices, effective monetary policies and easing supply chain disruptions helps reduce inflation. Improved consumer and business sentiment lead to an economic rebound with central banks able to normalize interest rates; asset prices increase significantly.

Note 19 Expected credit loss measurement (continued)

The table below details the key assumptions for the four scenarios applied as of 31 December 2022.

Scenario weights and post-model adjustments

Due to the less positive outlook compared with the assessment on 31 December 2021, the scenario weights changed during 2022. The upside scenario was allocated a 0% probability, and the previous 5% weight was added to the *baseline scenario*, now set at 60%. Following the introduction of the SGC, which was deemed to have a higher probability of occurring than the *global crisis scenario*, the weights were rebalanced. The SGC has a weight of 25% (compared with 10% for the *mild global interest rate steepening scenario* used as of 31 December 2021) and the weight of the *global crisis scenario* was reduced to 15% (from 30% as of 31 December 2021). The weights are also shown in the table below.

The scenarios and weight allocation were established in line with the general market sentiment that the short-term outlook is subdued and a recession in major markets is a strong probability. The downside risks in relation to inflation and monetary policy, as well as the availability and price of energy, mainly in Europe, are better reflected in our models compared with the uncertain developments caused by COVID-19 in recent years.

However, unquantifiable risks continue to be relevant, as the pandemic has not been overcome and the world may face new disruptions. Furthermore, the geopolitical situation worsened during 2022, and the impact on the world economy from escalations with unforeseeable consequences could be severe. In the near term, this uncertainty relates primarily to the development of the Russia–Ukraine war. Models, which are based on supportable statistical information from past experiences regarding interdependencies of macroeconomic factors and their implications for credit risk portfolios, cannot comprehensively reflect such extraordinary events, such as a pandemic or a fundamental change in the world political order. Rather than creating multiple additional scenarios to attempt gauging these risks and applying model parameters that lack supportable information and cannot be robustly validated, management continued to also apply PMAs.

These PMA took into account that more of the downside risks were modeled in 2022, particularly for lending secured by mortgages. The PMA amounted to USD 131m as of 31 December 2022 (31 December 2021: USD 224m). These remaining PMA for uncertainties on potentially unmodeled risk almost entirely relate to corporate lending portfolios in Personal & Corporate Banking and the Investment Bank.

Economic scenarios and weights applied

	Assigned weights in %	
ECL scenario	31.12.22	31.12.21
Asset price inflation	0.0	5.0
Baseline	60.0	55.0
Mild global interest rate steepening	0.0	10.0
Stagflationary geopolitical crisis	25.0	0.0
Global crisis	15.0	30.0

Scenario assumptions

	One year				Three years cumulative			
31.12.22	Asset price inflation	Baseline	Stagflationary geopolitical crisis	Global crisis	Asset price inflation	Baseline	Stagflationary geopolitical crisis	Global crisis
Real GDP growth (% change)								
United States	4.0	(0.3)	(4.8)	(6.4)	9.1	3.2	(4.4)	(1.8)
Eurozone	3.0	0.6	(5.6)	(8.5)	6.2	2.5	(5.7)	(8.3)
Switzerland	3.0	0.7	(4.8)	(6.7)	6.6	3.5	(4.9)	(3.7)
Consumer price index (% change)								
United States	2.5	2.6	10.0	(0.5)	8.1	6.5	15.8	1.2
Eurozone	2.3	5.0	9.6	(0.7)	7.4	9.6	14.8	(0.7)
Switzerland	2.1	1.6	5.8	(1.8)	6.2	3.9	10.7	(1.6)
Unemployment rate (end-of-period level, %)								
United States	3.0	3.9	9.2	10.0	3.0	5.3	11.8	9.4
Eurozone	6.0	7.0	10.9	11.9	6.0	7.1	12.2	13.0
Switzerland	1.7	2.3	4.3	4.4	1.5	2.6	5.1	4.9
Fixed income: 10-year government bonds (change in yields, basis points)								
USD	25.0	(5.6)	235.0	(326.0)	70.0	(13.2)	205.0	(291.1)
EUR	20.0	47.8	250.0	(270.6)	57.5	44.7	220.0	(246.5)
CHF	25.0	45.7	220.0	(209.7)	62.5	57.0	205.0	(159.6)
Equity indices (% change)								
S&P 500	20.0	7.4	(51.5)	(50.0)	51.7	22.8	(45.6)	(27.9)
EuroStoxx 50	17.0	17.2	(51.6)	(50.0)	42.9	29.2	(47.2)	(39.3)
SPI	14.0	5.6	(51.6)	(46.0)	37.9	19.3	(47.2)	(32.9)
Swiss real estate (% change)								
Single-Family Homes	6.6	1.1	(16.7)	(19.9)	14.0	2.3	(32.9)	(23.9)
Other real estate (% change)								
United States (S&P / Case–Shiller)	7.8	(4.5)	(12.8)	(19.3)	19.1	(0.6)	(35.8)	(32.7)
Eurozone (House Price Index)	7.0	(2.7)	(8.4)	(8.9)	15.4	2.0	(14.7)	(17.5)

Note 19 Expected credit loss measurement (continued)

Scenario assumptions	One year				Three years cumulative			
31.12.21	Asset price inflation	Baseline	Mild global interest rate steepening	Global crisis	Asset price inflation	Baseline	Mild global interest rate steepening	Global crisis
Real GDP growth (% change)								
United States	9.1	4.4	(0.1)	(5.9)	17.8	10.1	1.8	(3.8)
Eurozone	9.4	3.9	(0.1)	(8.7)	17.3	7.5	0.9	(10.3)
Switzerland	5.5	2.4	(0.9)	(6.6)	13.1	5.8	(0.1)	(5.7)
Consumer price index (% change)								
United States	3.1	2.2	5.7	(1.2)	9.5	6.3	13.0	0.4
Eurozone	2.3	1.4	4.2	(1.3)	8.0	4.8	10.4	(1.7)
Switzerland	1.8	0.3	3.5	(1.8)	6.1	1.7	9.0	(1.6)
Unemployment rate (end-of-period level, %)								
United States	3.0	3.9	6.1	10.9	3.0	3.5	7.2	10.8
Eurozone	6.2	7.4	8.7	12.9	6.0	7.2	9.1	15.1
Switzerland	2.3	2.5	3.4	5.2	1.6	2.3	4.2	5.9
Fixed income: 10-year government bonds (change in yields, basis points)								
USD	50.0	16.5	259.2	(50.0)	170.0	41.2	329.2	(15.0)
EUR	40.0	11.1	283.8	(35.0)	140.0	34.9	349.3	(25.0)
CHF	50.0	12.1	245.5	(70.0)	150.0	34.4	307.3	(35.0)
Equity indices (% change)								
S&P 500	12.0	14.1	(27.0)	(50.2)	35.5	24.7	(21.8)	(40.1)
EuroStoxx 50	16.0	12.3	(23.4)	(57.6)	41.6	20.7	(19.9)	(50.4)
SPI	14.0	12.1	(22.9)	(53.6)	37.9	19.1	(19.6)	(44.2)
Swiss real estate (% change)								
Single-Family Homes	5.1	4.4	(4.3)	(17.0)	15.5	7.4	(8.8)	(30.0)
Other real estate (% change)								
United States (S&P / Case–Shiller)	10.0	3.5	(2.3)	(9.5)	21.7	7.1	(8.7)	(26.3)
Eurozone (House Price Index)	8.4	5.1	(4.0)	(5.4)	17.8	9.6	(7.6)	(10.8)

c) Development of ECL allowances and provisions

The ECL allowances and provisions recognized in the period are impacted by a variety of factors, such as:
- the effect of selecting and updating forward-looking scenarios and the respective weights;
- origination of new instruments during the period;
- the effect of passage of time (lower residual lifetime PD and the effect of discount unwind) as the ECL on an instrument for the remaining lifetime decreases (all other factors remaining the same);
- derecognition of instruments in the period;
- change in individual asset quality of instruments;
- movements from a maximum 12-month ECL to the recognition of lifetime ECL (and vice versa) following transfers between stages 1 and 2;
- movements from stages 1 and 2 to stage 3 (credit-impaired status) when default has become certain and PD increases to 100% (or vice versa);
- changes in models or updates to model parameters;
- write-off; and
- foreign exchange translations for assets denominated in foreign currencies.

Note 19 Expected credit loss measurement (continued)

The table below explains the changes in the ECL allowances and provisions for on- and off-balance sheet financial instruments and credit lines in scope of ECL requirements between the beginning and the end of the period due to the factors listed above.

Development of ECL allowances and provisions

USD m	Total	Stage 1	Stage 2	Stage 3
Balance as of 31 December 2021	(1,165)	(282)	(220)	(662)
Net movement from new and derecognized transactions[1]	(7)	(21)	16	(2)
of which: Private clients with mortgages	*(6)*	*(6)*	*0*	*0*
of which: Real estate financing	*(3)*	*(5)*	*2*	*0*
of which: Large corporate clients	*8*	*(1)*	*11*	*(2)*
of which: SME clients	*(1)*	*(1)*	*0*	*0*
of which: Other	*(6)*	*(8)*	*3*	*0*
of which: Financial intermediaries and hedge funds	*0*	*(2)*	*2*	*0*
of which: Loans to financial advisors	*0*	*0*	*0*	*0*
Remeasurements with stage transfers[2]	(65)	20	(39)	(46)
of which: Private clients with mortgages	*(10)*	*3*	*(12)*	*0*
of which: Real estate financing	*7*	*(1)*	*8*	*0*
of which: Large corporate clients	*(33)*	*16*	*(28)*	*(21)*
of which: SME clients	*(23)*	*2*	*(2)*	*(22)*
of which: Other	*(6)*	*1*	*(4)*	*(3)*
of which: Financial intermediaries and hedge funds	*0*	*0*	*0*	*0*
of which: Loans to financial advisors	*1*	*2*	*(1)*	*0*
Remeasurements without stage transfers[3]	13	(8)	(27)	48
of which: Private clients with mortgages	*(12)*	*5*	*(18)*	*1*
of which: Real estate financing	*13*	*3*	*10*	*0*
of which: Large corporate clients	*32*	*(11)*	*2*	*41*
of which: SME clients	*(6)*	*(10)*	*(9)*	*14*
of which: Other	*(15)*	*5*	*(12)*	*(8)*
of which: Sovereigns	*(8)*	*0*	*(8)*	*0*
of which: Loans to financial advisors	*(3)*	*3*	*(1)*	*(6)*
Model changes[4]	30	29	1	0
Movements with profit or loss impact[5]	(29)	20	(49)	0
Movements without profit or loss impact (write-off, FX and other)[6]	104	3	1	99
Balance as of 31 December 2022	(1,091)	(260)	(267)	(564)

1 Represents the increase and decrease in allowances and provisions resulting from financial instruments (including guarantees and facilities) that were newly originated, purchased or renewed and from the final derecognition of loans or facilities on their maturity date or earlier. 2 Represents the remeasurement between 12-month and lifetime ECL due to stage transfers. 3 Represents the change in allowances and provisions related to changes in model inputs or assumptions, including changes in forward-looking macroeconomic conditions, changes in the exposure profile, PD and LGD changes, and unwinding of the time value. 4 Represents the change in the allowances and provisions related to changes in models and methodologies. 5 Includes ECL movements from new and derecognized transactions, remeasurement changes, model and methodology changes. 6 Represents the decrease in allowances and provisions resulting from write-offs of the ECL allowance against the gross carrying amount when all or part of a financial asset is deemed uncollectible or forgiven and movements in foreign exchange rates.

Movements with profit or loss impact: Stages 1 and 2 ECL allowances and provisions increased on a net basis by USD 29m:

- *Net movement from new and derecognized transactions* includes USD 21m stage 1 expenses and USD 16m stage 2 releases: Stage 1 expenses are primarily driven by new loans secured by real estate. The residual effect is spread across lending segments. Stage 2 releases are largely driven by redemption of corporate loans in the Investment Bank.
- *Remeasurements with stage transfers* include USD 20m releases in stage 1 and USD 39m expenses in stage 2. This mainly includes the transfer of a few large corporate lending transactions in the Investment Bank from stage 1 to 2 (i.e., releases in stage 1 and related but generally higher expenses in stage 2), driven by rating downgrades and scenario effects.
- *Remeasurements without stage transfers* include stage 1 expenses of USD 8m and stage 2 expenses of USD 27m. These expenses of USD 35m relate to large and SME corporate lending (USD 28m), substantially due to scenario effects, and to a single sovereign counterparty (USD 8m).
- Model changes: refer to Note 19b for more information.

Movements without profit or loss impact: Stage 3 allowances decreased by USD 99m almost entirely due to write-offs of USD 95m.

Note 19 Expected credit loss measurement (continued)

Development of ECL allowances and provisions

USD m	Total	Stage 1	Stage 2	Stage 3
Balance as of 31 December 2020	(1,468)	(306)	(333)	(829)
Net movement from new and derecognized transactions[1]	(59)	(72)	13	0
of which: Private clients with mortgages	*(7)*	*(10)*	*3*	*0*
of which: Real estate financing	*(7)*	*(11)*	*4*	*0*
of which: Large corporate clients	*(13)*	*(21)*	*7*	*0*
of which: SME clients	*(8)*	*(8)*	*0*	*0*
of which: Other	*(24)*	*(23)*	*(2)*	*0*
of which: Financial intermediaries and hedge funds	*(21)*	*(18)*	*(4)*	*0*
of which: Loans to financial advisors	*0*	*(1)*	*1*	*0*
Remeasurements with stage transfers[2]	(40)	8	0	(49)
of which: Private clients with mortgages	*(9)*	*4*	*(13)*	*0*
of which: Real estate financing	*(3)*	*1*	*(4)*	*0*
of which: Large corporate clients	*2*	*(2)*	*12*	*(8)*
of which: SME clients	*(27)*	*5*	*4*	*(36)*
of which: Other	*(3)*	*0*	*2*	*(4)*
of which: Financial intermediaries and hedge funds	*2*	*(1)*	*3*	*0*
of which: Loans to financial advisors	*0*	*1*	*(1)*	*0*
Remeasurements without stage transfers[3]	203	55	74	74
of which: Private clients with mortgages	*33*	*8*	*26*	*(1)*
of which: Real estate financing	*30*	*13*	*13*	*3*
of which: Large corporate clients	*44*	*5*	*21*	*17*
of which: SME clients	*53*	*(1)*	*1*	*53*
of which: Other	*44*	*29*	*14*	*2*
of which: Financial intermediaries and hedge funds	*27*	*15*	*12*	*0*
of which: Loans to financial advisors	*6*	*8*	*1*	*(3)*
Model changes[4]	45	29	16	0
Movements with profit or loss impact[5]	148	19	104	25
Movements without profit or loss impact (write-off, FX and other)[6]	154	5	9	141
Balance as of 31 December 2021	(1,165)	(282)	(220)	(662)

1 Represents the increase and decrease in allowances and provisions resulting from financial instruments (including guarantees and facilities) that were newly originated, purchased or renewed and from the final derecognition of loans or facilities on their maturity date or earlier. 2 Represents the remeasurement between 12-month and lifetime ECL due to stage transfers. 3 Represents the change in allowances and provisions related to changes in model inputs or assumptions, including changes in forward-looking macroeconomic conditions, changes in the exposure profile, PD and LGD changes, and unwinding of the time value. 4 Represents the change in the allowances and provisions related to changes in models and methodologies. 5 Includes ECL movements from new and derecognized transactions, remeasurement changes, model and methodology changes. 6 Represents the decrease in allowances and provisions resulting from write-offs of the ECL allowance against the gross carrying amount when all or part of a financial asset is deemed uncollectible or forgiven and movements in foreign exchange rates.

As explained in Note 1a, the assessment of a significant increase in credit risk (SICR) considers a number of qualitative and quantitative factors to determine whether a stage transfer between stage 1 and stage 2 is required, although the primary assessment considers changes in PD based on rating analyses and economic outlook. Additionally, UBS AG takes into consideration counterparties that have moved to a credit watch list and those with payments that are at least 30 days past due.

ECL stage 2 ("significant deterioration in credit risk") allowances / provisions as of 31 December 2022 – classification by trigger

USD m	Stage 2	*of which: PD layer*	*of which: watch list*	*of which: ≥30 days past due*
On- and off-balance sheet	(267)	*(196)*	*(21)*	*(50)*
of which: Private clients with mortgages	*(107)*	*(83)*	*0*	*(25)*
of which: Real estate financing	*(23)*	*(18)*	*0*	*(5)*
of which: Large corporate clients	*(65)*	*(51)*	*(13)*	*0*
of which: SME clients	*(37)*	*(22)*	*(7)*	*(7)*
of which: Financial intermediaries and hedge funds	*(17)*	*(17)*	*0*	*0*
of which: Loans to financial advisors	*(2)*	*0*	*0*	*(2)*
of which: Credit cards	*(12)*	*0*	*0*	*(12)*
of which: Other	*(5)*	*(5)*	*0*	*0*

Note 19 Expected credit loss measurement (continued)

d) Maximum exposure to credit risk

The tables below provide UBS AG's maximum exposure to credit risk for financial instruments subject to ECL requirements and the respective collateral and other credit enhancements mitigating credit risk for these classes of financial instruments.

The maximum exposure to credit risk includes the carrying amounts of financial instruments recognized on the balance sheet subject to credit risk and the notional amounts for off-balance sheet arrangements. Where information is available, collateral is presented at fair value. For other collateral, such as real estate, a reasonable alternative value is used. Credit enhancements, such as credit derivative contracts and guarantees, are included at their notional amounts. Both are capped at the maximum exposure to credit risk for which they serve as security. The "Risk management and control" section of this report describes management's view of credit risk and the related exposures, which can differ in certain respects from the requirements of International Financial Reporting Standards (IFRS).

Maximum exposure to credit risk

	31.12.22								
		Collateral[1,2]				Credit enhancements[1]			
USD bn	Maximum exposure to credit risk	Cash collateral received	Collateralized by equity and debt instruments	Secured by real estate	Other collateral[3]	Netting	Credit derivative contracts	Guarantees	Exposure to credit risk after collateral and credit enhancements
Financial assets measured at amortized cost on the balance sheet									
Cash and balances at central banks	169.4								169.4
Loans and advances to banks[4]	14.7		0.0					0.1	14.6
Receivables from securities financing transactions measured at amortized cost	67.8	0.0	64.5		2.4				0.9
Cash collateral receivables on derivative instruments[5,6]	35.0					22.9			12.1
Loans and advances to customers	390.0	36.1	115.9	197.8	19.6			3.0	17.6
Other financial assets measured at amortized cost	53.4	0.1	0.5	0.0	1.3				51.4
Total financial assets measured at amortized cost	730.4	36.2	181.0	197.9	23.4	22.9	0.0	3.0	266.1
Financial assets measured at fair value through other comprehensive income – debt	2.2								2.2
Total maximum exposure to credit risk reflected on the balance sheet within the scope of ECL	732.6	36.2	181.0	197.9	23.4	22.9	0.0	3.0	268.3
Guarantees[7]	22.1	1.2	9.3	0.1	2.0			1.8	7.7
Loan commitments[7]	39.9	0.2	3.1	1.3	6.5		0.1	1.0	27.8
Forward starting transactions, reverse repurchase and securities borrowing agreements	3.8		3.8						0.0
Committed unconditionally revocable credit lines	43.6	0.2	8.2	6.0	6.2			0.5	22.5
Total maximum exposure to credit risk not reflected on the balance sheet within the scope of ECL	109.4	1.6	24.4	7.5	14.7	0.0	0.1	3.3	58.0

	31.12.21								
		Collateral[1,2]				Credit enhancements[1]			
USD bn	Maximum exposure to credit risk	Cash collateral received	Collateralized by equity and debt instruments	Secured by real estate	Other collateral[3]	Netting	Credit derivative contracts	Guarantees	Exposure to credit risk after collateral and credit enhancements
Financial assets measured at amortized cost on the balance sheet									
Cash and balances at central banks	192.8								192.8
Loans and advances to banks[4]	15.4		0.1					0.1	15.1
Receivables from securities financing transactions measured at amortized cost	75.0	0.0	68.0		6.9				0.0
Cash collateral receivables on derivative instruments[5,6]	30.5					18.4			12.1
Loans and advances to customers	398.7	38.2	128.7	191.3	20.2			4.0	16.4
Other financial assets measured at amortized cost	26.2	0.2	0.1	0.0	1.3				24.7
Total financial assets measured at amortized cost	738.6	38.4	196.9	191.3	28.4	18.4	0.0	4.0	261.1
Financial assets measured at fair value through other comprehensive income – debt	8.8								8.8
Total maximum exposure to credit risk reflected on the balance sheet within the scope of ECL	747.5	38.4	196.9	191.3	28.4	18.4	0.0	4.0	270.0
Guarantees[7]	20.9	1.3	6.5	0.2	2.5			2.3	8.1
Loan commitments[7]	39.4	0.5	4.0	2.4	7.3		0.3	1.7	23.1
Forward starting transactions, reverse repurchase and securities borrowing agreements	1.4		1.4						0.0
Committed unconditionally revocable credit lines	42.3	0.3	9.0	6.2	3.9			0.5	22.5
Total maximum exposure to credit risk not reflected on the balance sheet within the scope of ECL	104.1	2.2	20.9	8.7	13.7	0.0	0.3	4.5	53.7

1 Of which: USD 1,372m for 31 December 2022 (31 December 2021: USD 1,443m) relates to total credit-impaired financial assets measured at amortized cost and USD 113m for 31 December 2022 (31 December 2021: USD 130m) to total off-balance sheet financial instruments and credit lines for credit-impaired positions. 2 Collateral arrangements generally incorporate a range of collateral, including cash, equity and debt instruments, real estate and other collateral. UBS AG applies a risk-based approach that generally prioritizes collateral according to its liquidity profile. 3 Includes but is not limited to life insurance contracts, inventory, mortgage loans, gold and other commodities. 4 Loans and advances to banks include amounts held with third-party banks on behalf of clients. The credit risk associated with these balances may be borne by those clients. 5 Included within Cash collateral receivables on derivative instruments are margin balances due from exchanges or clearing houses. Some of these margin balances reflect amounts transferred on behalf of clients who retain the associated credit risk. 6 The amount shown in the "Netting" column represents the netting potential not recognized on the balance sheet. Refer to Note 21 for more information. 7 The amount shown in the "Guarantees" column includes sub-participations.

e) Financial assets subject to credit risk by rating category

The table below shows the credit quality and the maximum exposure to credit risk based on the UBS AG's internal credit rating system and year-end stage classification. Under IFRS 9, the credit risk rating reflects the UBS AG's assessment of the probability of default of individual counterparties, prior to substitutions. The amounts presented are gross of impairment allowances.

› **Refer to the "Risk management and control" section of this report for more details regarding the UBS AG's internal grading system**

Financial assets subject to credit risk by rating category

USD m	31.12.22								
Rating category[1]	0–1	2–3	4–5	6–8	9–13	Credit-impaired (defaulted)	Total gross carrying amount	ECL allowances	Net carrying amount (maximum exposure to credit risk)
Financial assets measured at amortized cost									
Cash and balances at central banks	168,525	877	0	0	56	0	169,457	(12)	169,445
of which: stage 1	*168,525*	*877*	*0*	*0*	*0*	*0*	*169,402*	*0*	*169,402*
of which: stage 2	*0*	*0*	*0*	*0*	*56*	*0*	*56*	*(12)*	*44*
Loans and advances to banks	862	11,150	832	996	837	0	14,676	(6)	14,671
of which: stage 1	*862*	*11,150*	*832*	*996*	*836*	*0*	*14,675*	*(5)*	*14,670*
of which: stage 2	*0*	*0*	*0*	*0*	*1*	*0*	*1*	*(1)*	*1*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Receivables from securities financing transactions measured at amortized cost	27,158	15,860	8,870	15,207	721	0	67,816	(2)	67,814
of which: stage 1	*27,158*	*15,860*	*8,870*	*15,207*	*721*	*0*	*67,816*	*(2)*	*67,814*
Cash collateral receivables on derivative instruments	10,613	12,978	7,138	4,157	147	0	35,034	0	35,033
of which: stage 1	*10,613*	*12,978*	*7,138*	*4,157*	*147*	*0*	*35,034*	*0*	*35,033*
Loans and advances to customers	6,491	216,824	68,444	76,147	20,891	2,012	390,810	(783)	390,027
of which: stage 1	*6,491*	*215,332*	*66,202*	*69,450*	*15,557*	*0*	*373,032*	*(129)*	*372,903*
of which: stage 2	*0*	*1,493*	*2,242*	*6,698*	*5,334*	*0*	*15,767*	*(180)*	*15,587*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*2,012*	*2,012*	*(474)*	*1,538*
Other financial assets measured at amortized cost	29,011	16,649	447	6,708	450	210	53,475	(86)	53,389
of which: stage 1	*29,011*	*16,646*	*427*	*6,426*	*336*	*0*	*52,846*	*(17)*	*52,829*
of which: stage 2	*0*	*2*	*20*	*283*	*114*	*0*	*419*	*(6)*	*413*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*210*	*210*	*(63)*	*147*
Total financial assets measured at amortized cost	242,660	274,337	85,731	103,216	23,102	2,222	731,269	(890)	730,379
On-balance sheet financial instruments									
Financial assets measured at FVOCI – debt instruments	1,307	840	0	92	0	0	2,239	0	2,239
Total on-balance sheet financial instruments	243,966	275,178	85,731	103,308	23,102	2,222	733,508	(890)	732,618

Off-balance sheet positions subject to expected credit loss by rating category

USD m	31.12.22							
Rating category[1]	0–1	2–3	4–5	6–8	9–13	Credit-impaired (defaulted)	Total off-balance sheet exposure (maximum exposure to credit risk)	ECL provisions
Off-balance sheet financial instruments								
Guarantees	7,252	5,961	4,772	3,049	1,025	108	22,167	(48)
of which: stage 1	*7,252*	*5,917*	*3,812*	*2,229*	*596*	*0*	*19,805*	*(13)*
of which: stage 2	*0*	*44*	*960*	*821*	*429*	*0*	*2,254*	*(9)*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*108*	*108*	*(26)*
Irrevocable loan commitments	1,770	14,912	6,986	10,097	6,107	124	39,996	(111)
of which: stage 1	*1,770*	*14,789*	*6,818*	*9,625*	*4,529*	*0*	*37,531*	*(59)*
of which: stage 2	*0*	*123*	*168*	*472*	*1,578*	*0*	*2,341*	*(52)*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*124*	*124*	*0*
Forward starting reverse repurchase and securities borrowing agreements	2,781	2	11	1,007	0	0	3,801	0
Total off-balance sheet financial instruments	11,803	20,874	11,769	14,153	7,132	233	65,964	(159)
Credit lines								
Committed unconditionally revocable credit lines	2,288	16,483	9,247	11,885	3,739	36	43,677	(40)
of which: stage 1	*2,288*	*15,777*	*8,960*	*11,355*	*3,429*	*0*	*41,809*	*(32)*
of which: stage 2	*0*	*705*	*287*	*531*	*310*	*0*	*1,833*	*(8)*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*36*	*36*	*0*
Irrevocable committed prolongation of existing loans	7	1,939	1,489	868	392	2	4,696	(2)
of which: stage 1	*7*	*1,938*	*1,411*	*864*	*380*	*0*	*4,600*	*(2)*
of which: stage 2	*0*	*1*	*78*	*4*	*11*	*0*	*94*	*0*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*2*	*2*	*0*
Total credit lines	2,295	18,421	10,736	12,753	4,131	37	48,373	(42)

1 Refer to the "Internal UBS rating scale and mapping of external ratings" table in the "Risk management and control" section of this report for more information on rating categories.

Note 19 Expected credit loss measurement (continued)

Financial assets subject to credit risk by rating category

USD m	31.12.21								
Rating category[1]	0–1	2–3	4–5	6–8	9–13	Credit-impaired (defaulted)	Total gross carrying amount	ECL allowances	Net carrying amount (maximum exposure to credit risk)
Financial assets measured at amortized cost									
Cash and balances at central banks	**191,015**	**1,802**	**0**	**0**	**0**	**0**	**192,817**	**0**	**192,817**
of which: stage 1	*191,015*	*1,802*	*0*	*0*	*0*	*0*	*192,817*	*0*	*192,817*
Loans and advances to banks	**407**	**12,552**	**1,123**	**795**	**490**	**1**	**15,368**	**(8)**	**15,360**
of which: stage 1	*407*	*12,552*	*1,098*	*795*	*488*	*0*	*15,340*	*(7)*	*15,333*
of which: stage 2	*0*	*0*	*24*	*0*	*2*	*0*	*27*	*(1)*	*26*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*1*	*1*	*0*	*1*
Receivables from securities financing transactions measured at amortized cost	**34,386**	**11,267**	**10,483**	**17,440**	**1,439**	**0**	**75,014**	**(2)**	**75,012**
of which: stage 1	*34,386*	*11,267*	*10,483*	*17,440*	*1,439*	*0*	*75,014*	*(2)*	*75,012*
Cash collateral receivables on derivative instruments	**7,466**	**13,476**	**5,878**	**3,647**	**47**	**0**	**30,514**	**0**	**30,514**
of which: stage 1	*7,466*	*13,476*	*5,878*	*3,647*	*47*	*0*	*30,514*	*0*	*30,514*
Loans and advances to customers	**5,295**	**232,663**	**67,620**	**70,394**	**21,423**	**2,148**	**399,543**	**(850)**	**398,693**
of which: stage 1	*5,295*	*231,583*	*65,083*	*63,298*	*16,362*	*0*	*381,622*	*(126)*	*381,496*
of which: stage 2	*0*	*1,080*	*2,536*	*7,096*	*5,061*	*0*	*15,773*	*(152)*	*15,620*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*2,148*	*2,148*	*(572)*	*1,577*
Other financial assets measured at amortized cost	**12,564**	**6,705**	**321**	**6,097**	**394**	**264**	**26,346**	**(109)**	**26,236**
of which: stage 1	*12,564*	*6,696*	*307*	*5,887*	*317*	*0*	*25,772*	*(27)*	*25,746*
of which: stage 2	*0*	*10*	*13*	*209*	*77*	*0*	*309*	*(7)*	*302*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*264*	*264*	*(76)*	*189*
Total financial assets measured at amortized cost	**251,133**	**278,465**	**85,424**	**98,372**	**23,793**	**2,414**	**739,601**	**(969)**	**738,632**
On-balance sheet financial instruments									
Financial assets measured at FVOCI – debt instruments	**3,996**	**4,771**	**0**	**77**	**0**	**0**	**8,844**	**0**	**8,844**
Total on-balance sheet financial instruments	**255,130**	**283,236**	**85,424**	**98,449**	**23,793**	**2,414**	**748,445**	**(969)**	**747,477**

Off-balance sheet positions subject to expected credit loss by rating category

USD m	31.12.21							
Rating category[1]	0–1	2–3	4–5	6–8	9–13	Credit-impaired (defaulted)	Total off-balance sheet exposure (maximum exposure to credit risk)	ECL provisions
Off-balance sheet financial instruments								
Guarantees	**4,457**	**7,064**	**4,535**	**3,757**	**1,009**	**150**	**20,972**	**(41)**
of which: stage 1	*4,457*	*7,037*	*4,375*	*3,075*	*752*	*0*	*19,695*	*(18)*
of which: stage 2	*0*	*27*	*160*	*682*	*258*	*0*	*1,127*	*(8)*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*150*	*150*	*(15)*
Irrevocable loan commitments	**2,797**	**14,183**	**7,651**	**8,298**	**6,502**	**46**	**39,478**	**(114)**
of which: stage 1	*2,797*	*13,917*	*7,416*	*7,127*	*5,840*	*0*	*37,097*	*(72)*
of which: stage 2	*0*	*266*	*235*	*1,171*	*663*	*0*	*2,335*	*(42)*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*46*	*46*	*0*
Forward starting reverse repurchase and securities borrowing agreements	**0**	**0**	**55**	**1,389**	**0**	**0**	**1,444**	**0**
Total off balance sheet financial instruments	**7,254**	**21,247**	**12,241**	**13,444**	**7,512**	**196**	**61,894**	**(155)**
Credit lines								
Committed unconditionally revocable credit lines	**2,636**	**16,811**	**8,627**	**10,130**	**4,107**	**63**	**42,373**	**(38)**
of which: stage 1	*2,636*	*16,467*	*8,304*	*8,724*	*3,671*	*0*	*39,802*	*(28)*
of which: stage 2	*0*	*344*	*323*	*1,406*	*436*	*0*	*2,508*	*(10)*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*63*	*63*	*0*
Irrevocable committed prolongation of existing loans	**17**	**2,438**	**1,422**	**1,084**	**602**	**48**	**5,611**	**(3)**
of which: stage 1	*17*	*2,438*	*1,422*	*1,082*	*568*	*0*	*5,527*	*(3)*
of which: stage 2	*0*	*0*	*0*	*1*	*34*	*0*	*36*	*0*
of which: stage 3	*0*	*0*	*0*	*0*	*0*	*48*	*48*	*0*
Total credit lines	**2,653**	**19,249**	**10,049**	**11,214**	**4,709**	**111**	**47,984**	**(41)**

1 Refer to the "Internal UBS rating scale and mapping of external ratings" table in the "Risk management and control" section of this report for more information on rating categories.

f) Sensitivity information

As outlined in Note 1a, ECL estimates involve significant uncertainties at the time they are made.

ECL models

The models applied to determine point-in-time PD and LGD rely on market and statistical data, which has been found to correlate well with historically observed defaults in sufficiently homogeneous segments. The risk sensitivities for each of the ECL reporting segments to such factors are summarized in Note 9.

Sustainability and climate risk

Sustainability and climate risk (SCR) may negatively affect clients or portfolios due to direct or indirect transition costs, or exposure to physical risks in locations likely to be impacted by climate change. Such effects could lead to a deterioration in credit worthiness, which in turn would have an impact on ECLs.

While some indicators that are more influenced by climate change (e.g., energy prices) are factored into the current PD models where they have demonstrated statistical relevance, UBS AG currently does not use a specific SCR scenario in addition to the four general economic scenarios applied to derive the weighted-average ECL. The rationale for the approach at this point in time is the significance of model risks and challenges in calibration and probability weight assessment given the paucity of data.

Instead, UBS AG focuses on the process of vetting clients and business transactions and takes individual actions, where transition risk is deemed to be a significant driver of a counterparty's credit worthiness. This review process may lead to a downward revision of the counterparty's credit rating, or the adoption of risk mitigating actions, and hence affect the individual contribution to ECLs.

At the portfolio level, UBS AG has started to use stress loss assumptions to assess the extent to which SCR may affect the quality of the loans extended to small and medium-sized entities and large corporate clients. Initial tests were based on a set of assumptions presented by external parties (such as the Bank of England). Such analysis undertaken during 2022 concluded that the counterparties are not expected to be significantly impacted by physical or transition risks, mainly as there are no material risk concentrations in high-risk sectors. The analysis of the corporate loan book has also shown that any potential significant impacts from transition costs or physical risks would materialize over a time horizon that exceeds in most cases the contractual lifetime of the underlying assets. Based on current information on regulatory developments, this would also apply to the portfolio of private clients' mortgages and real estate financing, given the long lead times for investments in upgrading the housing stock.

As a result of the aforementioned factors, it was assessed that the magnitude of any impact of SCR on the weighted-average ECL would not be material as of 31 December 2022. Therefore, no specific post-model adjustment was made in this regard.

› **Refer to "Sustainability and climate risk" in the "Risk management and control" section of this report**
› **Refer to "Our focus on sustainability and climate" in the "Our strategy, business model and environment" section of this report**
› **Refer to "UBS AG consolidated supplemental disclosures required under SEC regulations" for the maturity profile of UBS core loan book**

Forward-looking scenarios

Depending on the scenario selection and related macroeconomic assumptions for the risk factors, the components of the relevant weighted-average ECL change. This is particularly relevant for interest rates, which can move in both directions under a given growth assumption, e.g., low growth with high interest rates in a stagflation scenario, versus low growth and falling interest rates in a recession. Management generally looks for scenario narratives that reflect the key risk drivers of a given credit portfolio.

As forecasting models are complex, due to the combination of multiple factors, simple what-if analyses involving a change of individual parameters do not necessarily provide realistic information on the exposure of segments to changes in the macroeconomy. Portfolio-specific analyses based on their key risk factors would also not be meaningful, as potential compensatory effects in other segments would be ignored. The table below indicates some sensitivities to ECLs, if a key macroeconomic variable for the forecasting period is amended across all scenarios with all other factors remaining unchanged.

Potential effect on stage 1 and stage 2 positions from changing key parameters as of 31 December 2022

USD m	100% Baseline	100% Stagflationary geopolitical crisis	100% Global crisis	Weighted average
Change in key parameters				
Fixed income: Government bonds (absolute change)				
−0.50%	(3)	(106)	(2)	(14)
+0.50%	4	124	2	17
+1.00%	8	264	10	37
Unemployment rate (absolute change)				
−1.00%	(4)	(138)	(24)	(23)
−0.50%	(2)	(78)	(13)	(12)
+0.50%	3	84	16	15
+1.00%	5	179	32	31
Real GDP growth (relative change)				
−2.00%	7	13	18	11
−1.00%	3	7	9	5
+1.00%	(3)	(7)	(9)	(5)
+2.00%	(5)	(13)	(18)	(10)
House Price Index (relative change)				
−5.00%	15	196	88	56
−2.50%	7	92	40	25
+2.50%	(4)	(83)	(35)	(19)
+5.00%	(7)	(157)	(65)	(36)
Equity (S&P500, EuroStoxx, SMI) (relative change)				
−10.00%	4	7	6	5
−5.00%	2	3	3	2
+5.00%	(2)	(4)	(3)	(2)
+10.00%	(4)	(8)	(7)	(5)

Sensitivities can be more meaningfully assessed in the context of coherent scenarios with consistently developed macroeconomic factors. The table above outlines favorable and unfavorable effects, based on reasonably possible alternative changes to the economic conditions for stage 1 and stage 2 positions. The ECL impact is calculated for material portfolios and disclosed for each scenario.

The forecasting horizon is limited to three years, with a model-based mean reversion of PD and LGD assumed thereafter. Changes to these timelines may have an effect on ECLs: depending on the cycle, a longer or shorter forecasting horizon will lead to different annualized lifetime PD and average LGD estimations. This is currently not deemed to be material for UBS, as a large proportion of loans, including mortgages in Switzerland, have maturities that are within the forecasting horizon.

Scenario weights and stage allocation

Potential effect on stage 1 and stage 2 positions from changing scenario weights or moving to an ECL lifetime calculation as of 31 December 2022

	Actual ECL allowances and provisions, including staging (as per Note 9)	Pro forma ECL allowances and provisions, including staging and assuming application of 100% scenario weighting				Pro forma ECL allowances and provisions, assuming all positions being subject to lifetime ECL
Scenarios	Weighted average	100% Baseline	100% Asset price inflation	100% Stagflationary geopolitical crisis	100% Global crisis	Weighted average
USD m, except where indicated						
Segmentation						
Private clients with mortgages	(136)	(25)	(13)	(523)	(184)	(473)
Real estate financing	(43)	(26)	(22)	(176)	(30)	(126)
Large corporate clients	(136)	(97)	(84)	(199)	(174)	(235)
SME clients	(86)	(67)	(66)	(162)	(97)	(153)
Other segments	(125)	(114)	(111)	(145)	(153)	(281)
Total	**(526)**	**(329)**	**(295)**	**(1,204)**	**(638)**	**(1,267)**

Scenario weights

ECL is sensitive to changing scenario weights, in particular if narratives and parameters are selected that are not close to the baseline scenario, highlighting the non-linearity of credit losses.

As shown in the table above, the ECLs for stage 1 and stage 2 positions would have been USD 329m (31 December 2021: USD 387m) instead of USD 526m (31 December 2021: USD 503m) if ECLs had been determined solely on the *baseline scenario*. The weighted-average ECL therefore amounted to 160% (31 December 2021: 130%) of the baseline value. The effects of weighting each of the four scenarios 100% are shown in the table above.

Stage allocation and SICR

The determination of what constitutes an SICR is based on management judgment, as explained in Note 1a. Changing the SICR trigger will have a direct effect on ECLs, as more or fewer positions would be subject to lifetime ECLs under any scenario.

The relevance of the SICR trigger on overall ECL is demonstrated in the table above with the indication that the ECL allowances and provisions for stage 1 and stage 2 positions would have been USD 1,267m, if all non-impaired positions across the portfolio had been measured for lifetime ECLs irrespective of their actual SICR status. This amount compares with actual stage 1 and 2 allowances and provisions of USD 526m as of 31 December 2022.

Maturity profile

The maturity profile is an important driver in ECLs, in particular for transactions in stage 2. A transfer of a transaction into stage 2 may therefore have a significant effect on ECLs. The current maturity profile of most lending books is relatively short.

Lending to large corporate clients is generally between one and two years, with related loan commitments up to four years. Real estate lending is generally between two and three years in Switzerland, with long dated maturities in the US. Lombard-lending contracts typically have average contractual maturities of 12 months or less, and include callable features.

A significant portion of our lending to SMEs and Real estate financings is documented under multi-purpose credit agreements, which allow for various forms of utilization but are unconditionally cancelable by UBS at any time: a) for drawings under such agreements with a fixed maturity, the respective term is applied for ECL calculations, or a maximum of 12 months in stage 1; b) for unused credit lines and all drawings that have no fixed maturity (e.g., current accounts), UBS generally applies a 12-month maturity from the reporting date, given the credit review policies, which require either continuous monitoring of key indicators and behavioral patterns for smaller positions or an annual formal review for any other limit. The ECLs for these products are sensitive to shortening or extending the maturity assumption.

Note 20 Fair value measurement

a) Valuation principles

All financial and non-financial assets and liabilities measured or disclosed at fair value are categorized into one of three fair value hierarchy levels in accordance with International Financial Reporting Standards (IFRS). The fair value hierarchy is based on the transparency of inputs to the valuation of an asset or liability as of the measurement date. In certain cases, the inputs used to measure fair value may fall within different levels of the fair value hierarchy. For disclosure purposes, the level in the hierarchy within which an instrument is classified in its entirety is based on the lowest level input that is significant to the position's fair value measurement:
- Level 1 – quoted prices (unadjusted) in active markets for identical assets and liabilities;
- Level 2 – valuation techniques for which all significant inputs are, or are based on, observable market data; or
- Level 3 – valuation techniques for which significant inputs are not based on observable market data.

Fair values are determined using quoted prices in active markets for identical assets or liabilities, where available. Where the market for a financial instrument or non-financial asset or liability is not active, fair value is established using a valuation technique, including pricing models. Valuation adjustments may be made to allow for additional factors, including model, liquidity, credit and funding risks, which are not explicitly captured within the valuation technique, but which would nevertheless be considered by market participants when establishing a price. The limitations inherent in a particular valuation technique are considered in the determination of the classification of an asset or liability within the fair value hierarchy. Generally, the unit of account for a financial instrument is the individual instrument, and UBS applies valuation adjustments at an individual instrument level, consistent with that unit of account. However, if certain conditions are met, UBS may estimate the fair value of a portfolio of financial assets and liabilities with substantially similar and offsetting risk exposures on the basis of the net open risks.

› **Refer to Note 20d for more information**

b) Valuation governance

UBS's fair value measurement and model governance framework includes numerous controls and other procedural safeguards that are intended to maximize the quality of fair value measurements reported in the financial statements. New products and valuation techniques must be reviewed and approved by key stakeholders from the risk and finance control functions. Responsibility for the ongoing measurement of financial and non-financial instruments at fair value is with the business divisions.

Note 20 Fair value measurement (continued)

Fair value estimates are validated by the risk and finance control functions, which are independent of the business divisions. Independent price verification is performed by Finance through benchmarking the business divisions' fair value estimates with observable market prices and other independent sources. A governance framework and associated controls are in place in order to monitor the quality of third-party pricing sources where used. For instruments where valuation models are used to determine fair value, independent valuation and model control groups within Finance and Risk Control evaluate UBS's models on a regular basis, including valuation and model input parameters, as well as pricing. As a result of the valuation controls employed, valuation adjustments may be made to the business divisions' estimates of fair value to align with independent market data and the relevant accounting standard.

› **Refer to Note 20d for more information**

c) Fair value hierarchy

The table below provides the fair value hierarchy classification of financial and non-financial assets and liabilities measured at fair value. The narrative that follows describes valuation techniques used in measuring their fair value of different product types (including significant valuation inputs and assumptions used), and the factors considered in determining their classification within the fair value hierarchy.

During 2022, assets and liabilities that were transferred from Level 2 to Level 1, or from Level 1 to Level 2, and were held for the entire reporting period were not material.

Determination of fair values from quoted market prices or valuation techniques[1]

	31.12.22				31.12.21			
USD m	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Financial assets measured at fair value on a recurring basis								
Financial assets at fair value held for trading	96,263	10,284	1,488	108,034	113,722	15,012	2,299	131,033
of which: Equity instruments	*83,095*	*789*	*126*	*84,010*	*97,983*	*1,090*	*149*	*99,222*
of which: Government bills / bonds	*5,496*	*950*	*18*	*6,464*	*7,135*	*1,351*	*10*	*8,496*
of which: Investment fund units	*6,673*	*596*	*61*	*7,330*	*7,843*	*1,364*	*21*	*9,229*
of which: Corporate and municipal bonds	*976*	*6,509*	*541*	*8,026*	*708*	*7,791*	*556*	*9,055*
of which: Loans	*0*	*1,179*	*628*	*1,807*	*0*	*3,099*	*1,443*	*4,542*
of which: Asset-backed securities	*22*	*261*	*114*	*397*	*53*	*317*	*120*	*489*
Derivative financial instruments	769	147,876	1,464	150,109	522	116,482	1,140	118,145
of which: Foreign exchange	*575*	*84,882*	*2*	*85,459*	*255*	*53,046*	*7*	*53,307*
of which: Interest rate	*0*	*39,345*	*460*	*39,805*	*0*	*32,747*	*494*	*33,241*
of which: Equity / index	*1*	*21,542*	*653*	*22,195*	*0*	*27,861*	*384*	*28,245*
of which: Credit	*0*	*719*	*318*	*1,038*	*0*	*1,179*	*236*	*1,414*
of which: Commodities	*0*	*1,334*	*30*	*1,365*	*0*	*1,590*	*16*	*1,606*
Brokerage receivables	0	17,576	0	17,576	0	21,839	0	21,839
Financial assets at fair value not held for trading	26,572	29,110	3,725	59,408	27,278	28,185	4,180	59,642
of which: Financial assets for unit-linked investment contracts	*13,071*	*1*	*0*	*13,072*	*21,110*	*187*	*6*	*21,303*
of which: Corporate and municipal bonds	*35*	*14,101*	*230*	*14,366*	*123*	*13,937*	*306*	*14,366*
of which: Government bills / bonds	*13,103*	*3,638*	*0*	*16,741*	*5,624*	*3,236*	*0*	*8,860*
of which: Loans	*0*	*3,602*	*736*	*4,337*	*0*	*4,982*	*892*	*5,874*
of which: Securities financing transactions	*0*	*7,590*	*114*	*7,704*	*0*	*5,704*	*100*	*5,804*
of which: Auction rate securities	*0*	*0*	*1,326*	*1,326*	*0*	*0*	*1,585*	*1,585*
of which: Investment fund units	*307*	*178*	*190*	*675*	*338*	*137*	*117*	*591*
of which: Equity instruments	*57*	*0*	*792*	*849*	*83*	*2*	*681*	*765*
Financial assets measured at fair value through other comprehensive income on a recurring basis								
Financial assets measured at fair value through other comprehensive income	57	2,182	0	2,239	2,704	6,140	0	8,844
of which: Asset-backed securities[2]	*0*	*0*	*0*	*0*	*0*	*4,849*	*0*	*4,849*
of which: Government bills / bonds[2]	*0*	*26*	*0*	*26*	*2,658*	*27*	*0*	*2,686*
of which: Corporate and municipal bonds	*57*	*2,156*	*0*	*2,213*	*45*	*1,265*	*0*	*1,310*
Non-financial assets measured at fair value on a recurring basis								
Precious metals and other physical commodities	4,471	0	0	4,471	5,258	0	0	5,258
Non-financial assets measured at fair value on a non-recurring basis								
Other non-financial assets[3]	0	0	21	21	0	0	26	26
Total assets measured at fair value	128,132	207,028	6,698	341,858	149,484	187,658	7,645	344,787

Note 20 Fair value measurement (continued)

Determination of fair values from quoted market prices or valuation techniques (continued)[1]

	31.12.22				31.12.21			
USD m	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Financial liabilities measured at fair value on a recurring basis								
Financial liabilities at fair value held for trading	23,578	5,823	114	29,515	25,413	6,170	105	31,688
of which: Equity instruments	*16,521*	*352*	*78*	*16,951*	*18,328*	*513*	*83*	*18,924*
of which: Corporate and municipal bonds	*36*	*4,643*	*27*	*4,707*	*30*	*4,219*	*17*	*4,266*
of which: Government bills / bonds	*5,880*	*706*	*1*	*6,587*	*5,883*	*826*	*0*	*6,709*
of which: Investment fund units	*1,141*	*84*	*3*	*1,229*	*1,172*	*555*	*6*	*1,733*
Derivative financial instruments	640	152,582	1,684	154,906	509	118,558	2,242	121,309
of which: Foreign exchange	*587*	*87,897*	*24*	*88,508*	*258*	*53,800*	*21*	*54,078*
of which: Interest rate	*0*	*37,429*	*116*	*37,545*	*0*	*28,398*	*278*	*28,675*
of which: Equity / index	*0*	*24,963*	*1,184*	*26,148*	*0*	*33,438*	*1,511*	*34,949*
of which: Credit	*0*	*920*	*279*	*1,199*	*0*	*1,412*	*341*	*1,753*
of which: Commodities	*0*	*1,309*	*52*	*1,361*	*0*	*1,503*	*63*	*1,566*
Financial liabilities designated at fair value on a recurring basis								
Brokerage payables designated at fair value	0	45,085	0	45,085	0	44,045	0	44,045
Debt issued designated at fair value	0	62,603	9,240	71,842	0	59,606	11,854	71,460
Other financial liabilities designated at fair value	0	30,055	1,978	32,033	0	29,258	3,156	32,414
of which: Financial liabilities related to unit-linked investment contracts	*0*	*13,221*	*0*	*13,221*	*0*	*21,466*	*0*	*21,466*
of which: Securities financing transactions	*0*	*15,333*	*0*	*15,333*	*0*	*6,375*	*2*	*6,377*
of which: Over-the-counter debt instruments and other	*0*	*993*	*691*	*1,684*	*0*	*1,417*	*814*	*2,231*
Total liabilities measured at fair value	24,219	296,148	13,015	333,382	25,922	257,637	17,357	300,916

1 Bifurcated embedded derivatives are presented on the same balance sheet lines as their host contracts and are not included in this table. The fair value of these derivatives was not material for the periods presented. 2 Effective 1 April 2022, a portfolio of assets previously classified as Financial assets measured at fair value through other comprehensive income was reclassified to Other financial assets measured at amortized cost. Refer to Note 1 for more information. 3 Other non-financial assets primarily consist of properties and other non-current assets held for sale, which are measured at the lower of their net carrying amount or fair value less costs to sell.

Valuation techniques

UBS uses widely recognized valuation techniques for determining the fair value of financial and non-financial instruments that are not actively traded and quoted. The most frequently applied valuation techniques include discounted value of expected cash flows, relative value and option pricing methodologies.

Discounted value of expected cash flows is a valuation technique that measures fair value using estimated expected future cash flows from assets or liabilities and then discounts these cash flows using a discount rate or discount margin that reflects the credit and / or funding spreads required by the market for instruments with similar risk and liquidity profiles to produce a present value. When using such valuation techniques, expected future cash flows are estimated using an observed or implied market price for the future cash flows or by using industry-standard cash flow projection models. The discount factors within the calculation are generated using industry-standard yield curve modeling techniques and models.

Relative value models measure fair value based on the market prices of equivalent or comparable assets or liabilities, making adjustments for differences between the characteristics of the observed instrument and the instrument being valued.

Option pricing models incorporate assumptions regarding the behavior of future price movements of an underlying referenced asset or assets to generate a probability-weighted future expected payoff for the option. The resulting probability-weighted expected payoff is then discounted using discount factors generated from industry-standard yield curve modeling techniques and models. The option pricing model may be implemented using a closed-form analytical formula or other mathematical techniques (e.g., binomial tree or Monte Carlo simulation).

Where available, valuation techniques use market-observable assumptions and inputs. If such data is not available, inputs may be derived by reference to similar assets in active markets, from recent prices for comparable transactions or from other observable market data. In such cases, the inputs selected are based on historical experience and practice for similar or analogous instruments, derivation of input levels based on similar products with observable price levels, and knowledge of current market conditions and valuation approaches.

For more complex instruments, fair values may be estimated using a combination of observed transaction prices, consensus pricing services and relevant quotes. Consideration is given to the nature of the quotes (e.g., indicative or firm) and the relationship of recently evidenced market activity to the prices provided by consensus pricing services. UBS also uses internally developed models, which are typically based on valuation methods and techniques recognized as standard within the industry. Assumptions and inputs used in valuation techniques include benchmark interest rate curves, credit and funding spreads used in estimating discount rates, bond and equity prices, equity index prices, foreign exchange rates, levels of market volatility and correlation. Refer to Note 20e for more information. The discount curves used by UBS incorporate the funding and credit characteristics of the instruments to which they are applied.

Financial instruments excluding derivatives: valuation and classification in the fair value hierarchy

Product	Valuation and classification in the fair value hierarchy	
Government bills and bonds	Valuation	– Generally valued using prices obtained directly from the market. – Instruments not priced directly using active-market data are valued using discounted cash flow valuation techniques that incorporate market data for similar government instruments.
	Fair value hierarchy	– Generally traded in active markets with prices that can be obtained directly from these markets, resulting in classification as Level 1, while the remaining positions are classified as Level 2 and Level 3.
Corporate and municipal bonds	Valuation	– Generally valued using prices obtained directly from the market for the security, or similar securities, adjusted for seniority, maturity and liquidity. – When prices are not available, instruments are valued using discounted cash flow valuation techniques incorporating the credit spread of the issuer or similar issuers. – For convertible bonds without directly comparable prices, issuances may be priced using a convertible bond model.
	Fair value hierarchy	– Generally classified as Level 1 or Level 2, depending on the depth of trading activity behind price sources. – Level 3 instruments have no suitable pricing information available.
Traded loans and loans measured at fair value	Valuation	– Valued directly using market prices that reflect recent transactions or quoted dealer prices, where available. – Where no market price data is available, loans are valued by relative value benchmarking using pricing derived from debt instruments in comparable entities or different products in the same entity, or by using a credit default swap valuation technique, which requires inputs for credit spreads, credit recovery rates and interest rates. Recently originated commercial real estate loans are measured using a securitization approach based on rating agency guidelines.
	Fair value hierarchy	– Instruments with suitably deep and liquid pricing information are classified as Level 2. – Positions requiring the use of valuation techniques, or for which the price sources have insufficient trading depth, are classified as Level 3.
Investment fund units	Valuation	– Predominantly exchange-traded, with readily available quoted prices in liquid markets. – Where market prices are not available, fair value may be measured using net asset values (NAVs).
	Fair value hierarchy	– Listed units are classified as Level 1, provided there is sufficient trading activity to justify active-market classification, while other positions are classified as Level 2. – Positions for which NAVs are not available are classified as Level 3.
Asset-backed securities (ABS)	Valuation	– For liquid securities, the valuation process will use trade and price data, updated for movements in market levels between the time of trading and the time of valuation. Less liquid instruments are measured using discounted expected cash flows incorporating price data for instruments or indices with similar risk profiles.
	Fair value hierarchy	– Residential mortgage-backed securities, commercial mortgage-backed securities and other ABS are generally classified as Level 2. However, if significant inputs are unobservable, or if market or fundamental data is not available, they are classified as Level 3.
Auction rate securities (ARS)	Valuation	– ARS are valued utilizing a discounted cash flow methodology. The model captures interest rate risk emanating from the note coupon, credit risk attributable to the underlying closed-end fund investments, liquidity risk as a function of the level of trading volume in these positions, and extension risk, as ARS are perpetual instruments that require an assumption regarding their maturity or issuer redemption date.
	Fair value hierarchy	– Granular and liquid pricing information is generally not available for ARS. As a result, these securities are classified as Level 3.
Equity instruments	Valuation	– Listed equity instruments are generally valued using prices obtained directly from the market. – Unlisted equity holdings, including private equity positions, are initially marked at their transaction price and are revalued when reliable evidence of price movement becomes available or when the position is deemed to be impaired.
	Fair value hierarchy	– The majority of equity securities are actively traded on public stock exchanges where quoted prices are readily and regularly available, resulting in Level 1 classification. – Equity securities less actively traded will be classified as Level 2 and illiquid positions as Level 3.
Financial assets for unit-linked investment contracts	Valuation	– The majority of assets are listed on exchanges and fair values are determined using quoted prices.
	Fair value hierarchy	– Most assets are classified as Level 1 if actively traded, or Level 2 if trading is not active. – Instruments for which prices are not readily available are classified as Level 3.
Securities financing transactions	Valuation	– These instruments are valued using discounted expected cash flow techniques. The discount rate applied is based on funding curves that are relevant to the collateral eligibility terms.
	Fair value hierarchy	– Collateral funding curves for these instruments are generally observable and, as a result, these positions are classified as Level 2. – Where the collateral terms are non-standard, the funding curve may be considered unobservable and these positions are classified as Level 3.
Brokerage receivables and payables	Valuation	– Fair value is determined based on the value of the underlying balances.
	Fair value hierarchy	– Due to their on-demand nature, these receivables and payables are deemed as Level 2.

Note 20 Fair value measurement (continued)

Product	Valuation and classification in the fair value hierarchy	
Financial liabilities related to unit-linked investment contracts	Valuation	– The fair values of investment contract liabilities are determined by reference to the fair value of the corresponding assets.
	Fair value hierarchy	– The liabilities themselves are not actively traded, but are mainly referenced to instruments that are actively traded and are therefore classified as Level 2.
Precious metals and other physical commodities	Valuation	– Physical assets are valued using the spot rate observed in the relevant market.
	Fair value hierarchy	– Generally traded in active markets with prices that can be obtained directly from these markets, resulting in classification as Level 1.
Debt issued designated at fair value	Valuation	– The risk management and the valuation approaches for these instruments are closely aligned with the equivalent derivatives business and the underlying risk, and the valuation techniques used for this component are the same as the relevant valuation techniques described below.
	Fair value hierarchy	– The observability is closely aligned with the equivalent derivatives business and the underlying risk.

Derivative instruments: valuation and classification in the fair value hierarchy

The curves used for discounting expected cash flows in the valuation of collateralized derivatives reflect the funding terms associated with the relevant collateral arrangement for the instrument being valued. These collateral arrangements differ across counterparties with respect to the eligible currency and interest terms of the collateral. The majority of collateralized derivatives are measured using a discount curve based on funding rates derived from overnight interest in the cheapest eligible currency for the respective counterparty collateral agreement.

Uncollateralized and partially collateralized derivatives are discounted using the alternative reference rate (the ARR) (or equivalent) curve for the currency of the instrument. As described in Note 20d, the fair value of uncollateralized and partially collateralized derivatives is then adjusted by credit valuation adjustments (CVAs), debit valuation adjustments (DVAs) and funding valuation adjustments (FVAs), as applicable, to reflect an estimation of the effect of counterparty credit risk, UBS's own credit risk, and funding costs and benefits.

› **Refer to Note 10 for more information about derivative instruments**

Derivative product	Valuation and classification in the fair value hierarchy	
Interest rate contracts	Valuation	– Interest rate swap contracts are valued by estimating future interest cash flows and discounting those cash flows using a rate that reflects the appropriate funding rate for the position being measured. The yield curves used to estimate future index levels and discount rates are generated using market-standard yield curve models using interest rates associated with current market activity. The key inputs to the models are interest rate swap rates, forward rate agreement rates, short-term interest rate futures prices, basis swap spreads and inflation swap rates. – Interest rate option contracts are valued using various market-standard option models, using inputs that include interest rate yield curves, inflation curves, volatilities and correlations. – When the maturity of an interest rate swap or option contract exceeds the term for which standard market quotes are observable for a significant input parameter, the contracts are valued by extrapolation from the last observable point using standard assumptions or by reference to another observable comparable input parameter to represent a suitable proxy for that portion of the term.
	Fair value hierarchy	– The majority of interest rate swaps are classified as Level 2, as the standard market contracts that form the inputs for yield curve models are generally traded in active and observable markets. – Options are generally treated as Level 2, as the calibration process enables the model output to be validated to active-market levels. Models calibrated in this way are then used to revalue the portfolio of both standard options and more exotic products. – Interest rate swap or option contracts are classified as Level 3 when the terms exceed standard market-observable quotes. – Exotic options for which appropriate volatility or correlation input levels cannot be implied from observable market data are classified as Level 3.
Credit derivative contracts	Valuation	– Credit derivative contracts are valued using industry-standard models based primarily on market credit spreads, upfront pricing points and implied recovery rates. Where a derivative credit spread is not directly available, it may be derived from the price of the reference cash bond. – Asset-backed credit derivatives are valued using a valuation technique similar to that of the underlying security with an adjustment to reflect the funding differences between cash and synthetic form.
	Fair value hierarchy	– Single-entity and portfolio credit derivative contracts are classified as Level 2 when credit spreads and recovery rates are determined from actively traded observable market data. Where the underlying reference name(s) are not actively traded and the correlation cannot be directly mapped to actively traded tranche instruments, these contracts are classified as Level 3. – Asset-backed credit derivatives follow the characteristics of the underlying security and are therefore distributed across Level 2 and Level 3.

Derivative product	Valuation and classification in the fair value hierarchy	
Foreign exchange contracts	Valuation	– Open spot foreign exchange (FX) contracts are valued using the FX spot rate observed in the market. – Forward FX contracts are valued using the FX spot rate adjusted for forward pricing points observed from standard market-based sources. – Over-the-counter (OTC) FX option contracts are valued using market-standard option valuation models. The models used for shorter-dated options (i.e., maturities of five years or less) tend to be different than those used for longer-dated options because the models needed for longer-dated OTC FX contracts require additional consideration of interest rate and FX rate interdependency. – The valuation for multi-dimensional FX options uses a multi-local volatility model, which is calibrated to the observed FX volatilities for all relevant FX pairs.
	Fair value hierarchy	– The markets for FX spot and FX forward pricing points are both actively traded and observable and therefore such FX contracts are generally classified as Level 2. – A significant proportion of OTC FX option contracts are classified as Level 2 as inputs are derived mostly from standard market contracts traded in active and observable markets. – OTC FX option contracts classified as Level 3 include multi-dimensional FX options and long-dated FX exotic option contracts where there is no active market from which to derive volatility or correlation inputs.
Equity / index contracts	Valuation	– Equity forward contracts have a single stock or index underlying and are valued using market-standard models. The key inputs to the models are stock prices, estimated dividend rates and equity funding rates (which are implied from prices of forward contracts observed in the market). Estimated cash flows are then discounted using market-standard discounted cash flow models using a rate that reflects the appropriate funding rate for that portion of the portfolio. When no market data is available for the instrument maturity, they are valued by extrapolation of available data, use of historical dividend data, or use of data for a related equity. – Equity option contracts are valued using market-standard models that estimate the equity forward level as described for equity forward contracts and incorporate inputs for stock volatility and for correlation between stocks within a basket. The probability-weighted expected option payoff generated is then discounted using market-standard discounted cash flow models applying a rate that reflects the appropriate funding rate for that portion of the portfolio. When volatility, forward or correlation inputs are not available, they are valued using extrapolation of available data, historical dividend, correlation or volatility data, or the equivalent data for a related equity.
	Fair value hierarchy	– As inputs are derived mostly from standard market contracts traded in active and observable markets, a significant proportion of equity forward contracts are classified as Level 2. – Equity option positions for which inputs are derived from standard market contracts traded in active and observable markets are also classified as Level 2. Level 3 positions are those for which volatility, forward or correlation inputs are not observable.
Commodity contracts	Valuation	– Commodity forward and swap contracts are measured using market-standard models that use market forward levels on standard instruments. – Commodity option contracts are measured using market-standard option models that estimate the commodity forward level as described for commodity forward and swap contracts, incorporating inputs for the volatility of the underlying index or commodity. For commodity options on baskets of commodities or bespoke commodity indices, the valuation technique also incorporates inputs for the correlation between different commodities or commodity indices.
	Fair value hierarchy	– Individual commodity contracts are typically classified as Level 2, because active forward and volatility market data is available.

d) Valuation adjustments and other items

The output of a valuation technique is always an estimate of a fair value that cannot be measured with complete certainty. As a result, valuations are adjusted where appropriate and when such factors would be considered by market participants in estimating fair value, to reflect close-out costs, credit exposure, model-driven valuation uncertainty, funding costs and benefits, trading restrictions and other factors.

Deferred day-1 profit or loss reserves

For new transactions where the valuation technique used to measure fair value requires significant inputs that are not based on observable market data, the financial instrument is initially recognized at the transaction price. The transaction price may differ from the fair value obtained using a valuation technique, where any such difference is deferred and not initially recognized in the income statement.

Deferred day-1 profit or loss is generally released into *Other net income from financial instruments measured at fair value through profit or loss* when pricing of equivalent products or the underlying parameters becomes observable or when the transaction is closed out.

The table below summarizes the changes in deferred day-1 profit or loss reserves during the respective period.

Deferred day-1 profit or loss reserves

USD m	2022	2021	2020
Reserve balance at the beginning of the year	418	269	146
Profit / (loss) deferred on new transactions	299	459	362
(Profit) / loss recognized in the income statement	(295)	(308)	(238)
Foreign currency translation	0	(2)	0
Reserve balance at the end of the year	422	418	269

Own credit

Own credit risk is reflected in the valuation of UBS's fair value option liabilities where this component is considered relevant for valuation purposes by UBS's counterparties and other market participants.

Changes in the fair value of financial liabilities designated at fair value through profit or loss related to own credit are recognized in *Other comprehensive income* directly within *Retained earnings, with no reclassification to the income statement in future periods.* This presentation does not create or increase an accounting mismatch in the income statement, as UBS does not hedge changes in own credit.

Own credit is estimated using own credit adjustment (OCA) curves, which incorporate observable market data, including market-observed secondary prices for UBS's debt and debt curves of peers. In the table below, the change in unrealized own credit consists of changes in fair value that are attributable to the change in UBS's credit spreads, as well as the effect of changes in fair values attributable to factors other than credit spreads, such as redemptions, effects from time decay and changes in interest and other market rates. Realized own credit is recognized when an instrument with an associated unrealized OCA is repurchased prior to the contractual maturity date. Life-to-date amounts reflect the cumulative unrealized change since initial recognition.

› **Refer to Note 15 for more information about debt issued designated at fair value**

Own credit adjustments on financial liabilities designated at fair value

	Included in Other comprehensive income		
	For the year ended		
USD m	31.12.22	31.12.21	31.12.20
Recognized during the period:			
Realized gain / (loss)	1	(14)	2
Unrealized gain / (loss)	866	60	(295)
Total gain / (loss), before tax	867	46	(293)
USD m	31.12.22	31.12.21	31.12.20
Recognized on the balance sheet as of the end of the period:			
Unrealized life-to-date gain / (loss)	556	(315)	(381)
of which: debt issued designated at fair value	289	(144)	(233)
of which: other financial liabilities designated at fair value	266	(172)	(148)

Credit valuation adjustments

In order to measure the fair value of OTC derivative instruments, including funded derivative instruments that are classified as *Financial assets at fair value not held for trading,* CVAs are needed to reflect the credit risk of the counterparty inherent in these instruments. This amount represents the estimated fair value of protection required to hedge the counterparty credit risk of such instruments. A CVA is determined for each counterparty, considering all exposures with that counterparty, and is dependent on the expected future value of exposures, default probabilities and recovery rates, applicable collateral or netting arrangements, break clauses, funding spreads, and other contractual factors.

Funding valuation adjustments

FVAs reflect the costs and benefits of funding associated with uncollateralized and partially collateralized derivative receivables and payables and are calculated as the valuation effect from moving the discounting of the uncollateralized derivative cash flows from the ARR to OCA using the CVA framework, including the probability of counterparty default. An FVA is also applied to collateralized derivative assets in cases where the collateral cannot be sold or repledged.

Debit valuation adjustments

A DVA is estimated to incorporate own credit in the valuation of derivatives where an FVA is not already recognized. The DVA calculation is effectively consistent with the CVA framework, being determined for each counterparty, considering all exposures with that counterparty and taking into account collateral netting agreements, expected future mark-to-market movements and UBS's credit default spreads.

Other valuation adjustments

Instruments that are measured as part of a portfolio of combined long and short positions are valued at mid-market levels to ensure consistent valuation of the long- and short-component risks. A liquidity valuation adjustment is then made to the overall net long or short exposure to move the fair value to bid or offer as appropriate, reflecting current levels of market liquidity. The bid–offer spreads used in the calculation of this valuation adjustment are obtained from market transactions and other relevant sources and are updated periodically.

Uncertainties associated with the use of model-based valuations are incorporated into the measurement of fair value through the use of model reserves. These reserves reflect the amounts that UBS estimates should be deducted from valuations produced directly by models to incorporate uncertainties in the relevant modeling assumptions, in the model and market inputs used, or in the calibration of the model output to adjust for known model deficiencies. In arriving at these estimates, UBS considers a range of market practices, including how it believes market participants would assess these uncertainties. Model reserves are reassessed periodically in light of data from market transactions, consensus pricing services and other relevant sources.

Balance sheet valuation adjustments on financial instruments

	As of	
USD m	31.12.22	31.12.21
Credit valuation adjustments[1]	(33)	(44)
Funding valuation adjustments	(50)	(49)
Debit valuation adjustments	4	2
Other valuation adjustments	(839)	(913)
of which: liquidity	*(311)*	*(341)*
of which: model uncertainty	*(529)*	*(571)*

1 Amounts do not include reserves against defaulted counterparties.

Other items

In the first half of 2021, UBS AG incurred a loss of USD 861m as a result of closing out a significant portfolio of swaps with a US-based client of its prime brokerage business and the unwinding of related hedges, following the client's default. This loss is presented within *Other net income from financial instruments measured at fair value through profit or loss*.

e) Level 3 instruments: valuation techniques and inputs

The table below presents material Level 3 assets and liabilities, together with the valuation techniques used to measure fair value, the inputs used in a given valuation technique that are considered significant as of 31 December 2022 and unobservable, and a range of values for those unobservable inputs.

The range of values represents the highest- and lowest-level inputs used in the valuation techniques. Therefore, the range does not reflect the level of uncertainty regarding a particular input or an assessment of the reasonableness of UBS's estimates and assumptions, but rather the different underlying characteristics of the relevant assets and liabilities held by UBS. The ranges will therefore vary from period to period and parameter to parameter based on characteristics of the instruments held at each balance sheet date. Furthermore, the ranges of unobservable inputs may differ across other financial institutions, reflecting the diversity of the products in each firm's inventory.

Valuation techniques and inputs used in the fair value measurement of Level 3 assets and liabilities

	Fair value						Range of inputs						
	Assets		Liabilities				31.12.22			31.12.21			
USD bn	31.12.22	31.12.21	31.12.22	31.12.21	Valuation technique(s)	Significant unobservable input(s)[1]	low	high	weighted average[2]	low	high	weighted average[2]	unit[1]
Financial assets and liabilities at fair value held for trading and Financial assets at fair value not held for trading													
Corporate and municipal bonds	0.8	0.9	0.0	0.0	Relative value to market comparable	Bond price equivalent	14	112	85	16	143	98	points
					Discounted expected cash flows	Discount margin	412	412		434	434		basis points
Traded loans, loans measured at fair value, loan commitments and guarantees	1.7	2.8	0.0	0.0	Relative value to market comparable	Loan price equivalent	30	100	97	0	101	99	points
					Discounted expected cash flows	Credit spread	200	200	200	175	800	436	basis points
					Market comparable and securitization model	Credit spread	145	1,350	322	28	1,544	241	basis points
Auction rate securities	1.3	1.6			Discounted expected cash flows	Credit spread	115	196	144	115	197	153	basis points
Investment fund units[3]	0.3	0.1	0.0	0.0	Relative value to market comparable	Net asset value							
Equity instruments[3]	0.9	0.8	0.1	0.1	Relative value to market comparable	Price							
Debt issued designated at fair value[4]			9.2	11.9									
Other financial liabilities designated at fair value			2.0	3.2	Discounted expected cash flows	Funding spread	23	175		24	175		basis points
Derivative financial instruments													
Interest rate	0.5	0.5	0.1	0.3	Option model	Volatility of interest rates	75	143		65	81		basis points
Credit	0.3	0.2	0.3	0.3	Discounted expected cash flows	Credit spreads	9	565		1	583		basis points
						Bond price equivalent	3	277		2	136		points
Equity / index	0.7	0.4	1.2	1.5	Option model	Equity dividend yields	0	20		0	11		%
						Volatility of equity stocks, equity and other indices	4	120		4	98		%
						Equity-to-FX correlation	(29)	84		(29)	76		%
						Equity-to-equity correlation	(25)	100		(25)	100		%

1 The ranges of significant unobservable inputs are represented in points, percentages and basis points. Points are a percentage of par (e.g., 100 points would be 100% of par). 2 Weighted averages are provided for most non-derivative financial instruments and were calculated by weighting inputs based on the fair values of the respective instruments. Weighted averages are not provided for inputs related to Other financial liabilities designated at fair value and Derivative financial instruments, as this would not be meaningful. 3 The range of inputs is not disclosed, as there is a dispersion of values given the diverse nature of the investments. 4 Debt issued designated at fair value primarily consists of UBS structured notes, which include variable maturity notes with various equity and foreign exchange underlying risks, rates-linked and credit-linked notes, all of which have embedded derivative parameters that are considered to be unobservable. The equivalent derivative instrument parameters are presented in the respective derivative financial instruments lines in this table.

Significant unobservable inputs in Level 3 positions

This section discusses the significant unobservable inputs used in the valuation of Level 3 instruments and assesses the potential effect that a change in each unobservable input in isolation may have on a fair value measurement. Relationships between observable and unobservable inputs have not been included in the summary below.

Input	Description
Bond price equivalent	– Where market prices are not available for a bond, fair value is measured by comparison with observable pricing data from similar instruments. Factors considered when selecting comparable instruments include credit quality, maturity and industry of the issuer. Fair value may be measured either by a direct price comparison or by conversion of an instrument price into a yield (either as an outright yield or as a spread to the relevant benchmark rate). – For corporate and municipal bonds, the range represents the range of prices from reference issuances used in determining fair value. Bonds priced at 0 are distressed to the point that no recovery is expected, while prices significantly in excess of 100 or par relate to inflation-linked or structured issuances that pay a coupon in excess of the market benchmark as of the measurement date. – For credit derivatives, the bond price range represents the range of prices used for reference instruments, which are typically converted to an equivalent yield or credit spread as part of the valuation process.
Loan price equivalent	– Where market prices are not available for a traded loan, fair value is measured by comparison with observable pricing data for similar instruments. Factors considered when selecting comparable instruments include industry segment, collateral quality, maturity and issuer-specific covenants. Fair value may be measured either by a direct price comparison or by conversion of an instrument price into a yield. The range represents the range of prices derived from reference issuances of a similar credit quality used to measure fair value for loans classified as Level 3. Loans priced at 0 are distressed to the point that no recovery is expected, while a current price of 100 represents a loan that is expected to be repaid in full.
Credit spread	– Valuation models for many credit derivatives require an input for the credit spread, which is a reflection of the credit quality of the associated referenced underlying. The credit spread of a particular security is quoted in relation to the yield on a benchmark security or reference rate, typically either US Treasury or ARR, and is generally expressed in terms of basis points. An increase / (decrease) in credit spread will increase / (decrease) the value of credit protection offered by credit default swaps and other credit derivative products. The income statement effect from such changes depends on the nature and direction of the positions held. Credit spreads may be negative where the asset is more creditworthy than the benchmark against which the spread is calculated. A wider credit spread represents decreasing creditworthiness. The range represents a diverse set of underlyings, with the lower end of the range representing credits of the highest quality and the upper end of the range representing greater levels of credit risk.
Discount margin	– The discount margin (DM) spread represents the discount rates applied to present value cash flows of an asset to reflect the market return required for uncertainty in the estimated cash flows. DM spreads are a rate or rates applied on top of a floating index (e.g., Secured Overnight Financing Rate (SOFR)) to discount expected cash flows. Generally, a decrease / (increase) in the DM in isolation would result in a higher / (lower) fair value. – The high end of the range relates to securities that are priced low within the market relative to the expected cash flow schedule. This indicates that the market is pricing an increased risk of credit loss into the security that is greater than what is being captured by the expected cash flow generation process. The low ends of the ranges are typical of funding rates on better-quality instruments.
Funding spread	– Structured financing transactions are valued using synthetic funding curves that best represent the assets that are pledged as collateral for the transactions. They are not representative of where UBS can fund itself on an unsecured basis, but provide an estimate of where UBS can source and deploy secured funding with counterparties for a given type of collateral. The funding spreads are expressed in terms of basis points, and if funding spreads widen, this increases the effect of discounting. – A small proportion of structured debt instruments and non-structured fixed-rate bonds within financial liabilities designated at fair value had an exposure to funding spreads that was longer in duration than the actively traded market.
Volatility	– Volatility measures the variability of future prices for a particular instrument and is generally expressed as a percentage, where a higher number reflects a more volatile instrument, for which future price movements are more likely to occur. Volatility is a key input into option models, where it is used to derive a probability-based distribution of future prices for the underlying instrument. The effect of volatility on individual positions within the portfolio is driven primarily by whether the option contract is a long or short position. In most cases, the fair value of an option increases as a result of an increase in volatility and is reduced by a decrease in volatility. Generally, volatility used in the measurement of fair value is derived from active-market option prices (referred to as implied volatility). A key feature of implied volatility is the volatility "smile" or "skew," which represents the effect of pricing options of different option strikes at different implied volatility levels. – Volatilities of low interest rates tend to be much higher than volatilities of high interest rates. In addition, different currencies may have significantly different implied volatilities.

Input	Description
Correlation	– Correlation measures the interrelationship between the movements of two variables. It is expressed as a percentage between –100% and +100%, where +100% represents perfectly correlated variables (meaning a movement of one variable is associated with a movement of the other variable in the same direction) and –100% implies that the variables are inversely correlated (meaning a movement of one variable is associated with a movement of the other variable in the opposite direction). The effect of correlation on the measurement of fair value depends on the specific terms of the instruments being valued, reflecting the range of different payoff features within such instruments. – Equity-to-FX correlation is important for equity options based on a currency other than the currency of the underlying stock. Equity-to-equity correlation is particularly important for complex options that incorporate, in some manner, different equities in the projected payoff.
Equity dividend yields	– The derivation of a forward price for an individual stock or index is important for measuring fair value for forward or swap contracts and for measuring fair value using option pricing models. The relationship between the current stock price and the forward price is based on a combination of expected future dividend levels and payment timings, and, to a lesser extent, the relevant funding rates applicable to the stock in question. Dividend yields are generally expressed as an annualized percentage of the share price, with the lowest limit of 0% representing a stock that is not expected to pay any dividend. The dividend yield and timing represent the most significant parameter in determining fair value for instruments that are sensitive to an equity forward price.

f) Level 3 instruments: sensitivity to changes in unobservable input assumptions

The table below summarizes those financial assets and liabilities classified as Level 3 for which a change in one or more of the unobservable inputs to reflect reasonably possible favorable and unfavorable alternative assumptions would change fair value significantly, and the estimated effect thereof. The table below does not represent the estimated effect of stress scenarios. Interdependencies between Level 1, 2 and 3 parameters have not been incorporated in the table. Furthermore, direct interrelationships between the Level 3 parameters discussed below are not a significant element of the valuation uncertainty.

Sensitivity data is estimated using a number of techniques, including the estimation of price dispersion among different market participants, variation in modeling approaches and reasonably possible changes to assumptions used within the fair value measurement process. The sensitivity ranges are not always symmetrical around the fair values, as the inputs used in valuations are not always precisely in the middle of the favorable and unfavorable range.

Sensitivity data is determined at a product or parameter level and then aggregated assuming no diversification benefit. Diversification would incorporate estimated correlations across different sensitivity results and, as such, would result in an overall sensitivity that would be less than the sum of the individual component sensitivities. However, UBS believes that the diversification benefit is not significant to this analysis.

Sensitivity of fair value measurements to changes in unobservable input assumptions[1]

	31.12.22		31.12.21	
USD m	Favorable changes	Unfavorable changes	Favorable changes	Unfavorable changes
Traded loans, loans measured at fair value, loan commitments and guarantees	19	(12)	19	(13)
Securities financing transactions	33	(37)	41	(53)
Auction rate securities	46[2]	(46)[2]	66	(66)
Asset-backed securities	27	(27)	20	(20)
Equity instruments	183	(161)	173	(146)
Interest rate derivatives, net	18[2]	(12)[2]	29	(19)
Credit derivatives, net	3	(4)	5	(8)
Foreign exchange derivatives, net	10	(5)	19	(11)
Equity / index derivatives, net	361	(330)	368	(335)
Other	39[2]	(62)[2]	50	(73)
Total	738	(696)	790	(744)

1 Sensitivity of issued and over-the-counter debt instruments is reported with the equivalent derivative or securities financing instrument. 2 Includes refinements applied in estimating valuation uncertainty across various parameters.

Note 20 Fair value measurement (continued)

g) Level 3 instruments: movements during the period

The table below presents additional information about material movements in Level 3 assets and liabilities measured at fair value on a recurring basis, excluding any related hedging activity.

Assets and liabilities transferred into or out of Level 3 are presented as if those assets or liabilities had been transferred at the beginning of the year.

Movements of Level 3 instruments

USD bn	Balance at the beginning of the period	Net gains / losses included in compre-hensive income[1]	*of which: related to instruments held at the end of the period*	Purchases	Sales	Issuances	Settlements	Transfers into Level 3	Transfers out of Level 3	Foreign currency translation	Balance at the end of the period
For the twelve months ended 31 December 2022[2]											
Financial assets at fair value held for trading	2.3	(0.3)	*(0.3)*	0.3	(1.8)	0.5	0.0	0.7	(0.3)	(0.0)	1.5
of which: Investment fund units	*0.0*	*(0.0)*	*(0.0)*	*0.0*	*(0.0)*	*0.0*	*0.0*	*0.1*	*(0.0)*	*(0.0)*	*0.1*
of which: Corporate and municipal bonds	*0.6*	*(0.0)*	*(0.0)*	*0.3*	*(0.6)*	*0.0*	*0.0*	*0.4*	*(0.0)*	*(0.0)*	*0.5*
of which: Loans	*1.4*	*(0.1)*	*(0.1)*	*0.0*	*(1.1)*	*0.5*	*0.0*	*0.0*	*(0.2)*	*0.0*	*0.6*
Derivative financial instruments – assets	1.1	0.6	*0.3*	0.0	0.0	0.4	(0.7)	0.1	(0.0)	(0.0)	1.5
of which: Interest rate	*0.5*	*0.3*	*0.3*	*0.0*	*0.0*	*0.0*	*(0.2)*	*0.0*	*(0.1)*	*(0.0)*	*0.5*
of which: Equity / index	*0.4*	*0.2*	*0.1*	*0.0*	*0.0*	*0.4*	*(0.3)*	*0.1*	*(0.0)*	*(0.0)*	*0.7*
of which: Credit	*0.2*	*0.1*	*(0.1)*	*0.0*	*0.0*	*0.0*	*(0.2)*	*0.0*	*0.1*	*0.0*	*0.3*
Financial assets at fair value not held for trading	4.2	0.1	*0.1*	0.7	(1.2)	0.1	(0.0)	0.2	(0.3)	(0.0)	3.7
of which: Loans	*0.9*	*(0.0)*	*(0.0)*	*0.4*	*(0.4)*	*0.1*	*0.0*	*0.1*	*(0.3)*	*(0.0)*	*0.7*
of which: Auction rate securities	*1.6*	*0.1*	*0.0*	*0.0*	*(0.3)*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*1.3*
of which: Equity instruments	*0.7*	*0.0*	*0.0*	*0.1*	*(0.1)*	*0.0*	*0.0*	*0.1*	*0.0*	*(0.0)*	*0.8*
Derivative financial instruments – liabilities	2.2	(0.8)	*(0.4)*	0.0	0.0	1.1	(0.9)	0.3	(0.2)	(0.1)	1.7
of which: Interest rate	*0.3*	*(0.3)*	*(0.0)*	*0.0*	*0.0*	*0.1*	*(0.0)*	*0.0*	*(0.0)*	*(0.0)*	*0.1*
of which: Equity / index	*1.5*	*(0.4)*	*(0.3)*	*0.0*	*0.0*	*0.8*	*(0.7)*	*0.1*	*(0.2)*	*(0.0)*	*1.2*
of which: Credit	*0.3*	*(0.1)*	*(0.0)*	*0.0*	*0.0*	*0.1*	*(0.1)*	*0.1*	*(0.0)*	*(0.0)*	*0.3*
Debt issued designated at fair value	11.9	(1.3)	*(0.9)*	0.0	0.0	4.7	(3.1)	0.7	(3.3)	(0.3)	9.2
Other financial liabilities designated at fair value[3]	3.2	(1.0)	*(1.0)*	0.0	0.0	0.0	(0.1)	0.1	(0.2)	(0.0)	2.0
For the twelve months ended 31 December 2021											
Financial assets at fair value held for trading	2.3	(0.0)	*(0.1)*	0.3	(1.6)	1.2	0.0	0.3	(0.3)	(0.0)	2.3
of which: Investment fund units	*0.0*	*(0.0)*	*(0.0)*	*0.0*	*(0.0)*	*0.0*	*0.0*	*0.0*	*(0.0)*	*(0.0)*	*0.0*
of which: Corporate and municipal bonds	*0.8*	*0.0*	*(0.0)*	*0.2*	*(0.4)*	*0.0*	*0.0*	*0.0*	*(0.1)*	*(0.0)*	*0.6*
of which: Loans	*1.1*	*0.0*	*(0.0)*	*0.0*	*(0.8)*	*1.2*	*0.0*	*0.0*	*(0.2)*	*0.0*	*1.4*
Derivative financial instruments – assets	1.8	(0.2)	*(0.1)*	0.0	0.0	0.5	(0.7)	0.1	(0.3)	(0.0)	1.1
of which: Interest rate	*0.5*	*0.1*	*0.1*	*0.0*	*0.0*	*0.1*	*(0.2)*	*0.0*	*(0.1)*	*(0.0)*	*0.5*
of which: Equity / index	*0.9*	*(0.1)*	*(0.1)*	*0.0*	*0.0*	*0.3*	*(0.4)*	*0.0*	*(0.2)*	*(0.0)*	*0.4*
of which: Credit	*0.3*	*(0.1)*	*(0.1)*	*0.0*	*0.0*	*0.0*	*(0.1)*	*0.0*	*(0.0)*	*0.0*	*0.2*
Financial assets at fair value not held for trading	3.9	0.1	*0.1*	1.0	(0.6)	0.0	0.0	0.1	(0.3)	(0.0)	4.2
of which: Loans	*0.9*	*(0.0)*	*0.0*	*0.6*	*(0.3)*	*0.0*	*0.0*	*0.0*	*(0.3)*	*(0.0)*	*0.9*
of which: Auction rate securities	*1.5*	*0.1*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*1.6*
of which: Equity instruments	*0.5*	*0.1*	*0.1*	*0.1*	*(0.1)*	*0.0*	*0.0*	*0.0*	*(0.0)*	*(0.0)*	*0.7*
Derivative financial instruments – liabilities	3.5	0.2	*(0.0)*	0.0	0.0	0.9	(1.8)	0.0	(0.5)	(0.0)	2.2
of which: Interest rate	*0.5*	*(0.1)*	*(0.1)*	*0.0*	*0.0*	*0.0*	*(0.1)*	*0.0*	*(0.0)*	*(0.0)*	*0.3*
of which: Equity / index	*2.3*	*0.3*	*0.1*	*0.0*	*0.0*	*0.8*	*(1.5)*	*0.0*	*(0.4)*	*(0.0)*	*1.5*
of which: Credit	*0.5*	*(0.1)*	*(0.1)*	*0.0*	*0.0*	*0.0*	*(0.0)*	*0.0*	*(0.1)*	*(0.0)*	*0.3*
Debt issued designated at fair value	9.6	0.7	*0.6*	0.0	0.0	7.1	(4.2)	0.1	(1.2)	(0.2)	11.9
Other financial liabilities designated at fair value	2.1	0.0	*0.0*	0.0	0.0	1.3	(0.2)	0.0	(0.0)	(0.0)	3.2

1 Net gains / losses included in comprehensive income are recognized in Net interest income and Other net income from financial instruments measured at fair value through profit or loss in the Income statement, and also in Gains / (losses) from own credit on financial liabilities designated at fair value, before tax in the Statement of comprehensive income. 2 Total Level 3 assets as of 31 December 2022 were USD 6.7bn (31 December 2021: USD 7.6bn). Total Level 3 liabilities as of 31 December 2022 were USD 13.0bn (31 December 2021: USD 17.4bn). 3 Of the USD 1.0bn in net gains / losses that is included in comprehensive income, USD 0.6bn is recognized in the Income statement and USD 0.4bn is recognized in the Statement of comprehensive income in Gains / (losses) from own credit on financial liabilities designated at fair value, before tax.

h) Maximum exposure to credit risk for financial instruments measured at fair value

The tables below provide UBS AG's maximum exposure to credit risk for financial instruments measured at fair value and the respective collateral and other credit enhancements mitigating credit risk for these classes of financial instruments.

The maximum exposure to credit risk includes the carrying amounts of financial instruments recognized on the balance sheet subject to credit risk and the notional amounts for off-balance sheet arrangements. Where information is available, collateral is presented at fair value. For other collateral, such as real estate, a reasonable alternative value is used. Credit enhancements, such as credit derivative contracts and guarantees, are included at their notional amounts. Both are capped at the maximum exposure to credit risk for which they serve as security. The "Risk management and control" section of this report describes management's view of credit risk and the related exposures, which can differ in certain respects from the requirements of IFRS.

Maximum exposure to credit risk

	31.12.22								
		Collateral				Credit enhancements			
USD bn	Maximum exposure to credit risk	Cash collateral received	Collateralized by equity and debt instruments	Secured by real estate	Other collateral	Netting	Credit derivative contracts	Guarantees	Exposure to credit risk after collateral and credit enhancements
Financial assets measured at fair value on the balance sheet[1]									
Financial assets at fair value held for trading – debt instruments[2,3]	16.7								16.7
Derivative financial instruments[4]	150.1		5.9			133.5			10.7
Brokerage receivables	17.6		17.3						0.3
Financial assets at fair value not held for trading – debt instruments[5]	44.8		11.4						33.4
Total financial assets measured at fair value	229.2	0.0	34.6	0.0	0.0	133.5	0.0	0.0	61.2
Guarantees[6]	0.2							0.2	0.0

	31.12.21								
		Collateral				Credit enhancements			
USD bn	Maximum exposure to credit risk	Cash collateral received	Collateralized by equity and debt instruments	Secured by real estate	Other collateral	Netting	Credit derivative contracts	Guarantees	Exposure to credit risk after collateral and credit enhancements
Financial assets measured at fair value on the balance sheet[1]									
Financial assets at fair value held for trading – debt instruments[2,3]	22.6								22.6
Derivative financial instruments[4]	118.1		4.2			103.2			10.7
Brokerage receivables	21.8	0.0	21.6						0.2
Financial assets at fair value not held for trading – debt instruments[5]	37.0	0.0	11.2						25.7
Total financial assets measured at fair value	**199.5**	**0.0**	**37.1**	**0.0**	**0.0**	**103.2**	**0.0**	**0.0**	**59.2**
Guarantees[6]	0.2				0.0			0.2	0.0

1 The maximum exposure to loss is generally equal to the carrying amount and subject to change over time with market movements. 2 These positions are generally managed under the market risk framework. For the purpose of this disclosure, collateral and credit enhancements were not considered. 3 Does not include investment fund units. 4 The amount shown in the "Netting" column represents the netting potential not recognized on the balance sheet. Refer to Note 21 for more information. 5 Financial assets at fair value not held for trading collateralized by securities consisted of structured loans and reverse repurchase and securities borrowing agreements. 6 The amount shown in the "Guarantees" column largely relates to sub-participations.

i) Financial instruments not measured at fair value

The table below provides the estimated fair values of financial instruments not measured at fair value.

Financial instruments not measured at fair value

	31.12.22						31.12.21					
	Carrying amount	Fair value					Carrying amount	Fair value				
USD bn	Total	Carrying amount approximates fair value[1]	Level 1	Level 2	Level 3	Total	Total	Carrying amount approximates fair value[1]	Level 1	Level 2	Level 3	Total
Assets												
Cash and balances at central banks	169.4	169.4	0.1	0.0	0.0	169.4	192.8	192.7	0.1	0.0	0.0	192.8
Loans and advances to banks	14.7	13.9	0.0	0.7	0.0	14.6	15.4	14.6	0.0	0.7	0.0	15.3
Receivables from securities financing transactions measured at amortized cost	67.8	64.3	0.0	1.8	1.7	67.8	75.0	71.6	0.0	1.3	2.1	75.0
Cash collateral receivables on derivative instruments	35.0	35.0	0.0	0.0	0.0	35.0	30.5	30.5	0.0	0.0	0.0	30.5
Loans and advances to customers	390.0	136.9	0.0	45.9	195.0	377.7	398.7	163.7	0.0	43.8	190.4	397.9
Other financial assets measured at amortized cost[2]	53.4	13.0	10.3	25.1	2.5	51.0	26.2	4.1	9.3	10.7	2.4	26.5
Liabilities												
Amounts due to banks	11.6	8.9	0.0	2.7	0.0	11.6	13.1	9.1	0.0	4.0	0.0	13.1
Payables from securities financing transactions measured at amortized cost	4.2	3.5	0.0	0.7	0.0	4.2	5.5	4.1	0.0	1.5	0.0	5.5
Cash collateral payables on derivative instruments	36.4	36.4	0.0	0.0	0.0	36.4	31.8	31.8	0.0	0.0	0.0	31.8
Customer deposits	527.2	493.0	0.0	33.9	0.0	526.9	544.8	537.6	0.0	7.3	0.0	544.8
Funding from UBS Group AG measured at amortized cost	56.1	2.0	0.0	53.7	0.0	55.7	57.3	2.8	0.0	56.0	0.0	58.8
Debt issued measured at amortized cost	59.5	13.4	0.0	45.5	0.0	58.9	82.4	13.0	0.0	69.8	0.0	82.8
Other financial liabilities measured at amortized cost[3]	7.2	7.2	0.0	0.0	0.0	7.2	6.3	6.3	0.0	0.0	0.0	6.3

1 Includes certain financial instruments where the carrying amount is a reasonable approximation of the fair value due to the instruments' short-term nature (instruments that are receivable or payable on demand, or with a remaining maturity (excluding the effects of callable features) of three months or less). 2 Effective 1 April 2022, a portfolio of assets previously classified as Financial assets measured at fair value through other comprehensive income was reclassified to Other financial assets measured at amortized cost. Refer to Note 1 for information. 3 Excludes lease liabilities.

The fair values included in the table above have been calculated for disclosure purposes only. The valuation techniques and assumptions described below relate only to the fair value of UBS's financial instruments not measured at fair value. Other institutions may use different methods and assumptions for their fair value estimations, and therefore such fair value disclosures cannot necessarily be compared from one financial institution to another. The following principles were applied when determining fair value estimates for financial instruments not measured at fair value:

- For financial instruments with remaining maturities greater than three months, the fair value was determined from quoted market prices, if available.
- Where quoted market prices were not available, the fair values were estimated by discounting contractual cash flows using current market interest rates or appropriate yield curves for instruments with similar credit risk and maturity. These estimates generally include adjustments for counterparty credit risk or UBS's own credit.
- For short-term financial instruments with remaining maturities of three months or less, the carrying amount, which is net of credit loss allowances, is generally considered a reasonable estimate of fair value.

Note 21 Offsetting financial assets and financial liabilities

UBS AG enters into netting agreements with counterparties to manage the credit risks associated primarily with repurchase and reverse repurchase transactions, securities borrowing and lending, over-the-counter derivatives, and exchange-traded derivatives. These netting agreements and similar arrangements generally enable the counterparties to set off liabilities against available assets received in the ordinary course of business and / or in the event that the counterparties to the transaction are unable to fulfill their contractual obligations.

The tables below provide a summary of financial assets and financial liabilities subject to offsetting, enforceable master netting arrangements and similar agreements, as well as financial collateral received or pledged to mitigate credit exposures for these financial instruments.

UBS AG engages in a variety of counterparty credit risk mitigation strategies in addition to netting and collateral arrangements. Therefore, the net amounts presented in the tables below do not purport to represent their actual credit risk exposure.

Financial assets subject to offsetting, enforceable master netting arrangements and similar agreements

	Assets subject to netting arrangements								
	Netting recognized on the balance sheet			Netting potential not recognized on the balance sheet[3]			Assets not subject to netting arrangements[4]	Total assets	
As of 31.12.22, USD bn	Gross assets before netting	Netting with gross liabilities[2]	Net assets recognized on the balance sheet	Financial liabilities	Collateral received	Assets after consideration of netting potential	Assets recognized on the balance sheet	Total assets after consideration of netting potential	Total assets recognized on the balance sheet
Receivables from securities financing transactions measured at amortized cost	60.8	(11.1)	49.6	(3.0)	(46.4)	0.3	18.2	18.5	67.8
Derivative financial instruments	147.4	(2.5)	144.9	(110.9)	(28.5)	5.5	5.2	10.7	150.1
Cash collateral receivables on derivative instruments[1]	33.5	0.0	33.5	(20.9)	(1.9)	10.6	1.5	12.1	35.0
Financial assets at fair value not held for trading	85.6	(76.8)	8.7	(1.5)	(7.3)	0.0	50.7	50.7	59.4
of which: reverse repurchase agreements	*84.4*	*(76.8)*	*7.6*	*(1.5)*	*(6.1)*	*0.0*	*0.1*	*0.1*	*7.7*
Total assets	327.2	(90.4)	236.8	(136.3)	(84.1)	16.4	75.6	92.0	312.4
As of 31.12.21, USD bn									
Receivables from securities financing transactions measured at amortized cost	67.7	(13.8)	53.9	(2.9)	(51.0)	0.0	21.1	21.1	75.0
Derivative financial instruments	116.0	(3.6)	112.4	(88.9)	(18.5)	5.0	5.8	10.7	118.1
Cash collateral receivables on derivative instruments[1]	29.4	0.0	29.4	(15.2)	(3.3)	11.0	1.1	12.1	30.5
Financial assets at fair value not held for trading	93.1	(87.6)	5.5	(1.1)	(4.4)	0.0	54.1	54.1	59.6
of which: reverse repurchase agreements	*93.1*	*(87.6)*	*5.5*	*(1.1)*	*(4.4)*	*0.0*	*0.3*	*0.3*	*5.8*
Total assets	306.2	(105.0)	201.2	(108.1)	(77.2)	15.9	82.1	98.1	283.3

1 The net amount of Cash collateral receivables on derivative instruments recognized on the balance sheet includes certain OTC derivatives that are net settled on a daily basis either legally or in substance under IAS 32 principles and exchange-traded derivatives that are economically settled on a daily basis. 2 The logic of the table results in amounts presented in the "Netting with gross liabilities" column corresponding directly to the amounts presented in the "Netting with gross assets" column in the liabilities table presented below. Netting in this column for reverse repurchase agreements presented within the lines "Receivables from securities financing transactions measured at amortized cost" and "Financial assets at fair value not held for trading" taken together corresponds to the amounts presented for repurchase agreements in the "Payables from securities financing transactions measured at amortized cost" and "Other financial liabilities designated at fair value" lines in the liabilities table presented below. 3 For the purpose of this disclosure, the amounts of financial instruments and cash collateral presented have been capped so as not to exceed the net amount of financial assets presented on the balance sheet; i.e., over-collateralization, where it exists, is not reflected in the table. 4 Includes assets not subject to enforceable netting arrangements and other out-of-scope items.

Note 21 Offsetting financial assets and financial liabilities (continued)

Financial liabilities subject to offsetting, enforceable master netting arrangements and similar agreements

	Liabilities subject to netting arrangements								
	Netting recognized on the balance sheet			Netting potential not recognized on the balance sheet[3]			Liabilities not subject to netting arrangements[4]	Total liabilities	
As of 31.12.22, USD bn	Gross liabilities before netting	Netting with gross assets[2]	Net liabilities recognized on the balance sheet	Financial assets	Collateral pledged	Liabilities after consideration of netting potential	Liabilities recognized on the balance sheet	Total liabilities after consideration of netting potential	Total liabilities recognized on the balance sheet
Payables from securities financing transactions measured at amortized cost	14.1	(11.1)	3.0	(1.3)	(1.8)	0.0	1.2	1.2	4.2
Derivative financial instruments	150.3	(2.5)	147.8	(110.9)	(26.2)	10.7	7.1	17.8	154.9
Cash collateral payables on derivative instruments[1]	34.9	0.0	34.9	(20.0)	(1.9)	13.0	1.6	14.5	36.4
Other financial liabilities designated at fair value	92.5	(76.9)	15.6	(3.2)	(12.4)	0.0	16.4	16.4	32.0
of which: repurchase agreements	*92.1*	*(76.9)*	*15.3*	*(3.2)*	*(12.1)*	*0.0*	*0.1*	*0.1*	*15.3*
Total liabilities	291.7	(90.4)	201.3	(135.3)	(42.3)	23.7	26.3	49.9	227.6
As of 31.12.21, USD bn									
Payables from securities financing transactions measured at amortized cost	16.9	(12.8)	4.1	(1.8)	(2.3)	0.0	1.4	1.4	5.5
Derivative financial instruments	118.4	(3.6)	114.9	(88.9)	(18.1)	7.9	6.4	14.3	121.3
Cash collateral payables on derivative instruments[1]	30.4	0.0	30.4	(13.1)	(3.3)	14.0	1.4	15.4	31.8
Other financial liabilities designated at fair value	94.8	(88.6)	6.2	(2.2)	(3.8)	0.2	26.3	26.5	32.4
of which: repurchase agreements	*94.6*	*(88.6)*	*6.0*	*(2.2)*	*(3.8)*	*0.0*	*0.4*	*0.4*	*6.4*
Total liabilities	**260.6**	**(105.0)**	**155.6**	**(106.0)**	**(27.5)**	**22.1**	**35.5**	**57.6**	**191.1**

1 The net amount of Cash collateral payables on derivative instruments recognized on the balance sheet includes certain OTC derivatives that are net settled on a daily basis either legally or in substance under IAS 32 principles and exchange-traded derivatives that are economically settled on a daily basis. 2 The logic of the table results in amounts presented in the "Netting with gross assets" column corresponding to the amounts presented in the "Netting with gross liabilities" column in the assets table presented above. Netting in this column for repurchase agreements presented within the lines "Payables from securities financing transactions measured at amortized cost" and "Other financial liabilities designated at fair value" taken together corresponds to the amounts presented for reverse repurchase agreements in the "Receivables from securities financing transactions measured at amortized cost" and "Financial assets at fair value not held for trading" lines in the assets table presented above. 3 For the purpose of this disclosure, the amounts of financial instruments and cash collateral presented have been capped so as not to exceed the net amount of financial liabilities presented on the balance sheet; i.e., over-collateralization, where it exists, is not reflected in the table. 4 Includes liabilities not subject to enforceable netting arrangements and other out-of-scope items.

Note 22 Restricted and transferred financial assets

This Note provides information about restricted financial assets (Note 22a), transfers of financial assets (Note 22b and 22c) and financial assets that are received as collateral with the right to resell or repledge these assets (Note 22d).

a) Restricted financial assets

Restricted financial assets consist of assets pledged as collateral against an existing liability or contingent liability and other assets that are otherwise explicitly restricted such that they cannot be used to secure funding.

Financial assets are mainly pledged as collateral in securities lending transactions, in repurchase transactions, against loans from Swiss mortgage institutions and in connection with the issuance of covered bonds. UBS AG generally enters into repurchase and securities lending arrangements under standard market agreements. For securities lending, the cash received as collateral may be more or less than the fair value of the securities loaned, depending on the nature of the transaction. For repurchase agreements, the fair value of the collateral sold under an agreement to repurchase is generally in excess of the cash borrowed. Pledged mortgage loans serve as collateral for existing liabilities against Swiss central mortgage institutions and for existing covered bond issuances of USD 8,962m as of 31 December 2022 (31 December 2021: USD 10,843m).

Other restricted financial assets include assets protected under client asset segregation rules, assets held under unit-linked investment contracts to back related liabilities to the policy holders and assets held in certain jurisdictions to comply with explicit minimum local asset maintenance requirements. The carrying amount of the liabilities associated with these other restricted financial assets is generally equal to the carrying amount of the assets, with the exception of assets held to comply with local asset maintenance requirements, for which the associated liabilities are greater.

Restricted financial assets

USD m	31.12.22		31.12.21	
	Restricted financial assets	*of which: assets pledged as collateral that may be sold or repledged by counterparties*	Restricted financial assets	*of which: assets pledged as collateral that may be sold or repledged by counterparties*
Financial assets pledged as collateral				
Financial assets at fair value held for trading	57,435	*36,742*	63,834	*43,397*
Loans and advances to customers[1]	15,195		18,160	
Financial assets at fair value not held for trading	1,509	*1,220*	961	*961*
Debt securities classified as Other financial assets measured at amortized cost	3,432	*2,685*	2,234	*1,870*
Total financial assets pledged as collateral	77,571		85,188	
Other restricted financial assets				
Loans and advances to banks	3,689		3,408	
Financial assets at fair value held for trading	162		392	
Cash collateral receivables on derivative instruments	5,155		4,747	
Loans and advances to customers	1,127		1,237	
Financial assets at fair value not held for trading	14,090		22,328	
Financial assets measured at fair value through other comprehensive income	1,842		894	
Other	859		97	
Total other restricted financial assets	26,924		33,104	
Total financial assets pledged and other restricted financial assets[2]	104,495		118,292	

1 Mainly related to mortgage loans that serve as collateral for existing liabilities toward Swiss central mortgage institutions and for existing covered bond issuances. Of these pledged mortgage loans, approximately USD 3.1bn as of 31 December 2022 (31 December 2021: approximately USD 2.7bn) could be withdrawn or used for future liabilities or covered bond issuances without breaching existing collateral requirements.
2 Does not include assets placed with central banks related to undrawn credit lines and for payment, clearing and settlement purposes (31 December 2022: USD 5.9bn; 31 December 2021: USD 4.4bn).

Note 22 Restricted and transferred financial assets (continued)

In addition to restrictions on financial assets, UBS AG and its subsidiaries are, in certain cases, subject to regulatory requirements that affect the transfer of dividends and capital within UBS AG, as well as intercompany lending. Supervisory authorities also may require entities to measure capital and leverage ratios on a stressed basis, such as the Federal Reserve Board's Comprehensive Capital Analysis and Review (CCAR) process, which may limit the relevant subsidiaries' ability to make distributions of capital based on the results of those tests.

Supervisory authorities generally have discretion to impose higher requirements or to otherwise limit the activities of subsidiaries.

Non-regulated subsidiaries are generally not subject to such requirements and transfer restrictions. However, restrictions can also be the result of different legal, regulatory, contractual, entity- or country-specific arrangements and / or requirements.

› **Refer to the "Financial and regulatory key figures for our significant regulated subsidiaries and sub-groups" section of this report for financial information about significant regulated subsidiaries of UBS AG**

b) Transferred financial assets that are not derecognized in their entirety

The table below presents information for financial assets that have been transferred but are subject to continued recognition in full, as well as recognized liabilities associated with those transferred assets.

Transferred financial assets subject to continued recognition in full

USD m	31.12.22		31.12.21	
	Carrying amount of transferred assets	Carrying amount of associated liabilities recognized on balance sheet	Carrying amount of transferred assets	Carrying amount of associated liabilities recognized on balance sheet
Financial assets at fair value held for trading that may be sold or repledged by counterparties	36,742	16,470	43,397	17,687
relating to securities lending and repurchase agreements in exchange for cash received	*16,756*	*16,470*	*17,970*	*17,687*
relating to securities lending agreements in exchange for securities received	*18,908*		*24,146*	
relating to other financial asset transfers	*1,078*		*1,281*	
Financial assets at fair value not held for trading that may be sold or repledged by counterparties	1,220	1,050	961	898
Debt securities classified as Other financial assets measured at amortized cost that may be sold or repledged by counterparties	2,685	2,302	1,870	1,725
Total financial assets transferred	**40,647**	**19,822**	**46,227**	**20,311**

Transactions in which financial assets are transferred, but continue to be recognized in their entirety on UBS AG's balance sheet include securities lending and repurchase agreements, as well as other financial asset transfers. Repurchase and securities lending arrangements are, for the most part, conducted under standard market agreements and are undertaken with counterparties subject to UBS AG's normal credit risk control processes.

› **Refer to Note 1a item 2e for more information about repurchase and securities lending agreements**

As of 31 December 2022, approximately 45% of the transferred financial assets were assets held for trading transferred in exchange for cash, in which case the associated recognized liability represents the amount to be repaid to counterparties. For securities lending and repurchase agreements, a haircut of between 0% and 15% is generally applied to the transferred assets, which results in associated liabilities having a carrying amount below the carrying amount of the transferred assets. The counterparties to the associated liabilities presented in the table above have full recourse to UBS AG.

In securities lending arrangements entered into in exchange for the receipt of other securities as collateral, neither the securities received nor the obligation to return them are recognized on UBS AG's balance sheet, as the risks and rewards of ownership are not transferred to UBS AG. In cases where such financial assets received are subsequently sold or repledged in another transaction, this is not considered to be a transfer of financial assets.

Other financial asset transfers primarily include securities transferred to collateralize derivative transactions, for which the carrying amount of associated liabilities is not provided in the table above, because those replacement values are managed on a portfolio basis across counterparties and product types, and therefore there is no direct relationship between the specific collateral pledged and the associated liability.

Transferred financial assets that are not subject to derecognition in full but remain on the balance sheet to the extent of UBS AG's continuing involvement were not material as of 31 December 2022 and as of 31 December 2021.

Note 22 Restricted and transferred financial assets (continued)

c) Transferred financial assets that are derecognized in their entirety with continuing involvement

Continuing involvement in a transferred and fully derecognized financial asset may result from contractual provisions in the particular transfer agreement or from a separate agreement, with the counterparty or a third party, entered into in connection with the transfer.

The fair value and carrying amount of UBS AG's continuing involvement from transferred positions as of 31 December 2022 and 31 December 2021 was not material. Life-to-date losses reported in prior periods primarily relate to legacy positions in securitization vehicles that have been fully marked down, with no remaining exposure to loss.

d) Off-balance sheet assets received

The table below presents assets received from third parties that can be sold or repledged and that are not recognized on the balance sheet, but that are held as collateral, including amounts that have been sold or repledged.

Off-balance sheet assets received

USD m	31.12.22	31.12.21
Fair value of assets received that can be sold or repledged	434,023	497,828
received as collateral under reverse repurchase, securities borrowing and lending arrangements, derivative and other transactions [1]	*418,847*	*483,426*
received in unsecured borrowings	*15,175*	*14,402*
Thereof sold or repledged [2]	331,805	367,440
in connection with financing activities	*288,752*	*319,176*
to satisfy commitments under short sale transactions	*29,515*	*31,688*
in connection with derivative and other transactions [1]	*13,538*	*16,575*

1 Includes securities received as initial margin from its clients that UBS AG is required to remit to central counterparties, brokers and deposit banks through its exchange-traded derivative clearing and execution services. 2 Does not include off-balance sheet securities (31 December 2022: USD 9.9bn; 31 December 2021: USD 12.7bn) placed with central banks related to undrawn credit lines and for payment, clearing and settlement purposes for which there are no associated liabilities or contingent liabilities.

Note 23 Maturity analysis of assets and liabilities

a) Maturity analysis of carrying amounts of assets and liabilities

The table below provides an analysis of carrying amounts of balance sheet assets and liabilities, as well as off-balance sheet exposures by residual contractual maturity as of the reporting date. The residual contractual maturity of assets includes the effect of callable features. The residual contractual maturity of liabilities and off-balance sheet exposures is based on the earliest date on which a third party could require UBS AG to pay.

Derivative financial instruments and financial assets and liabilities at fair value held for trading are presented in the *Due within 1 month* column; however, the respective contractual maturities may extend over significantly longer periods.

Assets held to hedge unit-linked investment contracts (presented within *Financial assets at fair value not held for trading*) are presented in the *Due within 1 month* column, consistent with the maturity assigned to the related amounts due under unit-linked investment contracts (presented within *Other financial liabilities designated at fair value*).

Other financial assets and liabilities with no contractual maturity, such as equity securities, are presented in the *Perpetual / Not applicable* column. Undated or perpetual instruments are classified based on the contractual notice period that the counterparty of the instrument is entitled to give. Where there is no contractual notice period, undated or perpetual contracts are presented in the *Perpetual / Not applicable* column.

Non-financial assets and liabilities with no contractual maturity are generally included in the *Perpetual / Not applicable* column.

Loan commitments are classified based on the earliest date they can be drawn down.

Note 23 Maturity analysis of assets and liabilities (continued)

	31.12.22							
USD bn	Due within 1 month	Due between 1 and 3 months	Due between 3 and 12 months	Due between 1 and 2 years	Due between 2 and 5 years	Due over 5 years	Perpetual / Not applicable	Total
Assets								
Total financial assets measured at amortized cost[1]	425.2	28.7	34.5	78.8	70.5	92.8		730.4
Loans and advances to customers	*141.9*	*16.3*	*28.3*	*74.9*	*55.6*	*73.0*		*390.0*
Total financial assets measured at fair value through profit or loss	300.4	10.0	7.8	3.6	9.9	2.0	1.5	335.1
Financial assets at fair value not held for trading	*24.6*	*10.0*	*7.8*	*3.6*	*9.9*	*2.0*	*1.5*	*59.4*
Financial assets measured at fair value through other comprehensive income[1]	0.3	0.9	0.9	0.1	0.0	0.0		2.2
Total non-financial assets	7.1		0.2		2.0	0.4	28.0	37.7
Total assets	732.9	39.5	43.4	82.4	82.4	95.1	29.6	1,105.4
Liabilities								
Total financial liabilities measured at amortized cost	524.3	40.2	49.6	20.7	35.2	23.5	11.8	705.4
Customer deposits	*464.5*	*28.5*	*23.8*	*7.7*	*2.3*	*0.3*		*527.2*
Funding from UBS Group AG	*2.0*			*4.8*	*21.2*	*16.3*	*11.8*	*56.1*
Debt issued measured at amortized cost	*4.6*	*8.8*	*23.3*	*7.2*	*10.0*	*5.7*		*59.5*
of which: non-subordinated fixed rate debt	*3.1*	*4.0*	*13.2*	*2.8*	*7.8*	*5.7*		*36.6*
of which: non-subordinated floating rate debt	*1.5*	*4.8*	*10.1*	*1.9*	*1.6*			*19.9*
of which: subordinated fixed-rate debt				*2.4*	*0.5*			*3.0*
Total financial liabilities measured at fair value through profit or loss[2]	265.9	13.8	16.3	19.6	7.3	10.5		333.4
Debt issued designated at fair value	*9.3*	*12.3*	*15.9*	*19.3*	*6.9*	*8.2*		*71.8*
of which: non-subordinated fixed rate debt	*0.5*	*2.3*	*5.6*	*3.6*	*2.0*	*1.6*		*15.6*
of which: non-subordinated floating rate debt	*8.8*	*10.0*	*10.3*	*15.7*	*4.9*	*6.6*		*56.2*
Total non-financial liabilities	6.7	2.6					0.5	9.7
Total liabilities	796.9	56.5	65.9	40.4	42.5	34.0	12.3	1,048.5
Guarantees, loan commitments and forward starting transactions[3]								
Loan commitments	39.3	0.3	0.4	0.0				40.0
Guarantees	22.4							22.4
Forward starting transactions, reverse repurchase and securities borrowing agreements	3.8							3.8
Total	65.4	0.3	0.4	0.0				66.2

	31.12.21							
USD bn	Due within 1 month	Due between 1 and 3 months	Due between 3 and 12 months	Due between 1 and 2 years	Due between 2 and 5 years	Due over 5 years	Perpetual / Not applicable	Total
Assets								
Total financial assets measured at amortized cost	454.3	45.6	43.2	53.7	64.2	77.6		738.6
Loans and advances to customers	*157.8*	*28.5*	*37.3*	*49.7*	*55.1*	*70.3*		*398.7*
Total financial assets measured at fair value through profit or loss	300.7	5.8	8.1	5.2	7.1	2.5	1.4	330.7
Financial assets at fair value not held for trading	*29.7*	*5.8*	*8.1*	*5.2*	*7.1*	*2.5*	*1.4*	*59.6*
Financial assets measured at fair value through other comprehensive income	0.1	0.4	0.7	0.1	0.4	7.1		8.8
Total non-financial assets	7.3	0.5	0.1	0.2	1.4	0.3	28.2	38.0
Total assets	**762.3**	**52.3**	**52.1**	**59.3**	**73.2**	**87.5**	**29.5**	**1,116.1**
Liabilities								
Total financial liabilities measured at amortized cost	583.3	21.5	48.4	17.3	36.0	24.7	13.7	744.8
Customer deposits	*531.0*	*6.5*	*3.2*	*1.9*	*1.8*	*0.3*		*544.8*
Funding from UBS Group AG	*0.0*	*2.8*	*1.4*	*6.3*	*17.0*	*16.1*	*13.7*	*57.3*
Debt issued measured at amortized cost	*3.7*	*9.3*	*38.4*	*8.7*	*15.5*	*6.9*		*82.4*
of which: non-subordinated fixed rate debt	*3.7*	*8.4*	*27.4*	*6.6*	*9.0*	*6.9*		*62.0*
of which: non-subordinated floating rate debt	*0.0*	*0.8*	*9.0*	*2.1*	*3.3*			*15.2*
of which: subordinated fixed-rate debt			*2.0*		*3.1*			*5.2*
Total financial liabilities measured at fair value through profit or loss[2]	238.1	12.0	14.7	18.8	5.6	11.8		300.9
Debt issued designated at fair value	*12.5*	*11.6*	*14.1*	*18.6*	*5.4*	*9.2*		*71.5*
of which: non-subordinated fixed rate debt	*0.8*	*1.2*	*2.9*	*1.2*	*1.3*	*2.4*		*9.8*
of which: non-subordinated floating rate debt	*11.7*	*10.3*	*11.2*	*17.4*	*4.2*	*6.8*		*61.6*
Total non-financial liabilities	8.7	2.6					0.7	12.0
Total liabilities	**830.0**	**36.0**	**63.0**	**36.2**	**41.6**	**36.5**	**14.4**	**1,057.7**
Guarantees, loan commitments and forward starting transactions[3]								
Loan commitments	38.3	0.5	0.7	0.0				39.5
Guarantees	21.2							21.2
Forward starting transactions, reverse repurchase and securities borrowing agreements	1.4							1.4
Total	**60.9**	**0.5**	**0.7**	**0.0**				**62.1**

1 Effective 1 April 2022, a portfolio of assets previously classified as Financial assets measured at fair value through other comprehensive income was reclassified to Other financial assets measured at amortized cost. Refer to Note 1b for more information. 2 As of 31 December 2022 and 31 December 2021, the contractual redemption amount at maturity of debt issued designated at fair value through profit or loss and other financial liabilities measured at fair value through profit or loss was not materially different from the carrying amount. 3 The notional amounts associated with derivative loan commitments, as well as forward starting repurchase and reverse repurchase agreements, measured at fair value through profit or loss are presented together with notional amounts related to derivative instruments and have been excluded from the table above. Refer to Note 10 for more information.

Note 23 Maturity analysis of assets and liabilities (continued)

b) Maturity analysis of financial liabilities on an undiscounted basis

The table below provides an analysis of financial liabilities on an undiscounted basis, including all cash flows relating to principal and future interest payments. The residual contractual maturities for non-derivative and non-trading financial liabilities are based on the earliest date on which UBS could be contractually required to pay. Derivative positions and trading liabilities, predominantly made up of short sale transactions, are presented in the *Due within 1 month* column, as this provides a conservative reflection of the nature of these trading activities. The residual contractual maturities may extend over significantly longer periods.

	31.12.22							
USD bn	Due within 1 month	Due between 1 and 3 months	Due between 3 and 12 months	Due between 1 and 2 years	Due between 2 and 5 years	Due over 5 years	Perpetual / Not applicable	Total
Financial liabilities recognized on balance sheet[1]								
Amounts due to banks	6.3	2.6	1.9	0.3	0.6	0.0		11.7
Payables from securities financing transactions	3.3	0.3	0.4	0.3		0.0		4.4
Cash collateral payables on derivative instruments	36.4							36.4
Customer deposits	464.6	28.8	24.5	8.2	2.6	0.3		529.0
Funding from UBS Group AG[2]	2.2	0.6	1.2	6.8	27.6	21.2	12.7	72.3
Debt issued measured at amortized cost	4.6	8.9	23.7	7.8	10.8	6.9		62.8
Other financial liabilities measured at amortized cost	5.6	0.1	0.4	0.5	1.2	1.3		9.2
of which: lease liabilities	*0.1*	*0.1*	*0.4*	*0.5*	*1.2*	*1.3*		*3.7*
Total financial liabilities measured at amortized cost[3, 5]	523.1	41.2	52.2	24.0	42.8	29.8	12.7	725.8
Financial liabilities at fair value held for trading[3, 4]	29.5							29.5
Derivative financial instruments[3, 5]	154.9							154.9
Brokerage payables designated at fair value	45.1							45.1
Debt issued designated at fair value[6]	9.4	12.4	16.0	19.7	7.1	12.3		76.8
Other financial liabilities designated at fair value	27.1	1.4	0.4	0.4	0.5	5.0		34.8
Total financial liabilities measured at fair value through profit or loss	**266.0**	**13.8**	**16.4**	**20.0**	**7.5**	**17.3**		**341.1**
Total	789.2	55.0	68.6	44.0	50.3	47.1	12.7	1,066.9
Guarantees, commitments and forward starting transactions								
Loan commitments[7]	39.3	0.3	0.4	0.0				40.0
Guarantees	22.4							22.4
Forward starting transactions, reverse repurchase and securities borrowing agreements[7]	3.8							3.8
Total	65.4	0.3	0.4	0.0				66.2

	31.12.21							
USD bn	Due within 1 month	Due between 1 and 3 months	Due between 3 and 12 months	Due between 1 and 2 years	Due between 2 and 5 years	Due over 5 years	Perpetual / Not applicable	Total
Financial liabilities recognized on balance sheet[1]								
Amounts due to banks	6.7	2.4	3.5	0.0	0.5			13.1
Payables from securities financing transactions	3.8	0.3	1.6	0.0				5.7
Cash collateral payables on derivative instruments	31.8							31.8
Customer deposits	531.0	6.6	3.3	2.0	1.9	0.4		545.1
Funding from UBS Group AG[2]	0.2	3.3	2.3	7.8	21.1	16.9	13.7	65.3
Debt issued measured at amortized cost	3.8	9.4	38.8	9.0	16.1	7.6		84.7
Other financial liabilities measured at amortized cost	5.3	0.1	0.4	0.6	1.2	1.5		9.1
of which: lease liabilities	*0.1*	*0.1*	*0.4*	*0.6*	*1.2*	*1.5*		*3.9*
Total financial liabilities measured at amortized cost	582.6	22.1	49.9	19.4	40.8	26.4	13.7	754.8
Financial liabilities at fair value held for trading[3,4]	31.7							31.7
Derivative financial instruments[3,5]	121.3							121.3
Brokerage payables designated at fair value	44.0							44.0
Debt issued designated at fair value[6]	13.8	11.5	13.5	18.8	5.6	12.5		75.9
Other financial liabilities designated at fair value	28.1	0.4	0.5	0.2	0.2	7.1		36.5
Total financial liabilities measured at fair value through profit or loss	239.0	11.9	14.0	19.0	5.8	19.6		309.4
Total	**821.6**	**34.0**	**63.9**	**38.4**	**46.6**	**45.9**	**13.7**	**1,064.2**
Guarantees, commitments and forward starting transactions								
Loan commitments[7]	38.3	0.5	0.7	0.0				39.5
Guarantees	21.2							21.2
Forward starting transactions, reverse repurchase and securities borrowing agreements[7]	1.4							1.4
Total	**60.9**	**0.5**	**0.7**	**0.0**				**62.1**

1 Except for financial liabilities at fair value held for trading and derivative financial instruments (see footnote 3), the amounts presented generally represent undiscounted cash flows of future interest and principal payments. 2 The time-bucket Perpetual / Not applicable includes perpetual loss-absorbing additional tier 1 capital instruments. 3 Carrying amount is fair value. Management believes that this best represents the cash flows that would have to be paid if these positions had to be settled or closed out. 4 Contractual maturities of financial liabilities at fair value held for trading are: USD 27.8bn due within 1 month (31 December 2021: USD 30.8bn), USD 1.7bn due between 1 month and 1 year (31 December 2021: USD 0.9bn) and USD 0bn due between 1 and 5 years (31 December 2021: USD 0bn). 5 Includes USD 46m (31 December 2021: USD 34m) related to fair values of derivative loan commitments and forward starting reverse repurchase agreements classified as derivatives, presented within "Due within 1 month." The full contractual committed amount of USD 34.4bn (31 December 2021: USD 36.0bn) is presented in Note 10 under notional amounts. 6 Future interest payments on variable-rate liabilities are determined by reference to the applicable interest rate prevailing as of the reporting date. Future principal payments that are variable are determined by reference to the conditions existing at the relevant reporting date. 7 Excludes derivative loan commitments and forward starting reverse repurchase agreements measured at fair value (see footnote 5).

Note 24 Interest rate benchmark reform

Background

A market-wide reform of major interest rate benchmarks is being undertaken globally. The publication of London Interbank Offered Rates (LIBORs) ceased immediately after 31 December 2021 for all non-US dollar LIBORs, as well as for one-week and two-month USD LIBOR. Publication of the remaining USD LIBOR tenors will cease immediately after 30 June 2023.

In December 2022, the FCA consulted on the continued publication of one-, three- and six-month USD LIBOR under a synthetic format until the end of September 2024 to ensure an orderly winding down of remaining contracts that are not governed by US law. In addition, in December 2022, the US Federal Reserve Board adopted the final rules that implement the Adjustable Interest Rate (LIBOR) Act, which is substantially based on, and supersedes, the New York State LIBOR legislation. The Adjustable Interest Rate (LIBOR) Act provides a legislative solution for USD LIBOR legacy products governed by any US state law should such products fail to transition prior to the USD LIBOR cessation date of 30 June 2023.

A framework has been established within UBS AG to address the transition of contracts that do not contain adequate fallback provisions and to cease entering into new LIBOR contracts, with the exception of specific circumstances that are allowed by regulatory provisions for USD LIBOR.

Governance over the transition to alternative benchmark rates

Throughout the transition process UBS AG has been maintaining a global cross-divisional, cross-functional governance structure and change program to address the scale and complexity of the transition. This global program is sponsored by the Group CFO and led by senior representatives from the business divisions and UBS AG's control and support functions. The program includes governance and execution structures within each business division, together with cross-divisional teams from each control and support function. During 2022, progress was overseen centrally via a monthly Group LIBOR Transition Forum with an increased US regional focus.

Risks

A core part of UBS AG's change program is the identification, management and monitoring of the risks associated with IBOR reform and transition. These risks include, but are not limited to, the following:

– economic risks to UBS AG and its clients, through the repricing of existing contracts, reduced transparency and / or liquidity of pricing information, market uncertainty or disruption;
– accounting risks, where the transition affects the accounting treatment, including hedge accounting and consequential income statement volatility;
– valuation risks arising from the variation between benchmarks that will cease and ARRs, affecting the risk profile of financial instruments;
– operational risks arising from changes to UBS AG's front-to-back processes and systems to accommodate the transition (e.g., data sourcing and processing and bulk migration of contracts); and
– legal and conduct risks relating to UBS AG's engagement with clients and market counterparties around new benchmark products and amendments required for existing contracts referencing benchmarks that will cease.

Overall, the effort required to transition is affected by multiple factors, including whether negotiations need to take place with multiple stakeholders (as is the case for syndicated loans or certain listed securities), market readiness and a client's technical readiness to handle ARR market conventions. UBS AG remains confident that it has the transparency, oversight and operational preparedness to progress with the IBOR transition consistent with market timelines, given the significant progress made as of 31 December 2022. UBS AG did not have and does not expect changes to its risk management approach and strategy as a result of interest rate benchmark reform.

Transition progress

UBS AG's significant non-derivative exposures subject to IBOR reform primarily related to brokerage receivable and payable balances, corporate and private loans, and mortgages, linked to CHF and USD LIBORs. During 2020, UBS AG transitioned most of its CHF LIBOR-linked deposits to the Swiss Average Overnight Rate (SARON). In that same year, UBS AG launched SARON-based mortgages and corporate loans based on all major ARRs in the Swiss market, as well as Secure Overnight Financing Rate (SOFR)-based mortgages in the US market.

Throughout 2021, UBS AG transitioned substantially all of its private and corporate loans linked to non-USD IBORs, with the remaining CHF LIBOR-linked contracts transitioning on their first roll date in 2022. In addition, as of 31 December 2021 UBS AG had completed the transition of IBOR-linked non-derivative financial assets and liabilities related to brokerage accounts, except for balances originated in the US, which transitioned to SOFR in January 2022.

Note 24 Interest rate benchmark reform (continued)

In 2022, UBS AG focused its efforts on the transition of USD LIBOR and the remaining non-USD LIBOR contracts, by leveraging industry solutions (e.g., the use of fallback provisions), through third-party actions (those by clearing houses, agents, etc.) and bi-lateral contract negotiations. As of 31 December 2022, the transition of non-USD IBORs is substantially complete.

In addition, in 2022, substantially all US securities-based lending has been transitioned to SOFR and UBS AG continues to make good progress on the transition of the remaining USD LIBOR non-derivative assets and liabilities, with the US mortgage portfolio of USD 9bn (31 December 2021: USD 11bn) the largest remaining exposure left to transition.

In August 2022, to facilitate the transition of derivatives linked to the USD LIBOR Swap Rate, UBS AG adhered to the June 2022 Benchmark Module of the ISDA 2021 Fallbacks Protocol on the USD LIBOR Swap Rate. UBS AG will begin gradually transitioning USD LIBOR derivatives not transacted with clearing houses or exchanges from the first quarter of 2023. The transition of USD LIBOR-cleared derivatives is planned to commence in the second quarter of 2023.

As of 31 December 2022, UBS AG had approximately USD 3bn equivalent of yen- and US dollar-denominated funding from UBS Group AG that, per current contractual terms, if not called on their respective call dates, would reset based directly on JPY LIBOR and USD LIBOR. In addition, certain US dollar-denominated contracts providing funding from UBS Group AG reference rates indirectly derived from IBORs, if they are not called on their respective call dates. These contracts have robust IBOR fallback language and the confirmation of interest rate calculation mechanics will be communicated as market standards formalize and in advance of any rate resets. These debt instruments have not been included in the table below, given their current fixed-rate coupon.

Financial instruments yet to transition to alternative benchmarks

The amounts included in the table below relate to financial instrument contracts across UBS AG's business divisions where UBS AG has material exposures subject to IBOR reform that have not yet transitioned to ARRs, and that:
- contractually reference an interest rate benchmark that will transition to an alternative benchmark; and
- have a contractual maturity date (including open-ended contracts) after the agreed cessation dates.

Contracts where penalty terms reference IBORs, or where exposure to an IBOR is not the primary purpose of the contract, have not been included, as these contracts do not have a material impact on the transition process.

In line with information provided to management and external parties monitoring UBS AG's transition progress, the table below includes the following financial metrics for instruments external to UBS AG that are subject to interest rate benchmark reform:
- gross carrying value / exposure for non-derivative financial instruments; and
- total trade count for derivative financial instruments.

The exposures included in the table below reflect the maximum IBOR exposure, without regard for early termination rights, with the actual exposure being dependent upon client preferences and investment decisions.

As of 31 December 2022, UBS AG had made significant progress in transitioning LIBOR exposures to ARRs. The remaining USD LIBOR-linked exposures included in the table below primarily relate to derivatives and US mortgages, with the transition planned to be completed by 30 June 2023.

		LIBOR benchmark rates					
		31.12.22[1]	31.12.21				
	Measure	USD	USD	CHF	GBP	EUR[2]	JPY
Carrying value of non-derivative financial instruments							
Total non-derivative financial assets	USD m	14,269[3]	65,234[3]	21,616[4]	45[5]	1	0
Total non-derivative financial liabilities	USD m	1,138[5]	1,985[5]	27[5]	3[5]	5[6]	0
Trade count of derivative financial instruments							
Total derivative financial instruments	Trade count	32,006[7]	40,500[7,8]	829[9]	183[9]	3,744[9]	184[9]
Off-balance sheet exposures							
Total irrevocable loan commitments	USD m	4,606[10]	11,863[11]	0	0	0	0

1 As of 31 December 2022, non-USD balances and trade counts are minimal. 2 Relates primarily to EUR LIBOR positions. 3 Includes USD 1bn (31 December 2021: USD 1bn) of loans related to revolving multi-currency credit lines, where IBOR transition efforts are complete, except for USD LIBOR. Balances as of 31 December 2021 also include USD 37bn USD LIBOR securities-based lending and USD 5bn brokerage accounts, which for the most part transitioned to SOFR in January 2022. The remaining balances as of 31 December 2022 and 31 December 2021 primarily relate to US mortgages and corporate lending. 4 Relates primarily to CHF LIBOR mortgages, which have automatically transitioned to SARON on their first roll date in 2022. 5 Relates to floating-rate notes that per their contractual terms can reset to rates linked to LIBOR, with transition dependent upon the actions of respective issuers. 6 Relates to contracts that transitioned in January 2022. 7 Includes approximately 2,000 (31 December 2021: 1,000) contracts having a contractual maturity after 30 June 2023, with the last USD LIBOR fixing occurring before 30 June 2023. No further contractual fixing is required for these contracts. 8 Includes approximately 5,000 cross-currency derivatives, of which approximately 500 have both a non-USD LIBOR leg and a USD LIBOR leg, where the non-USD leg transitioned in January 2022 before the next fixing date. The remainder represents cross-currency swaps with an ARR leg and a USD IBOR leg. 9 Includes predominantly bilateral derivatives, which transitioned in January 2022, and an insignificant amount of cleared derivatives, where the respective clearing houses' organized transition happened in January 2022. 10 Includes approximately USD 3bn of loan commitments that can be drawn in different currencies, however only USD LIBOR transition efforts remain open, with completion scheduled for 2023. 11 Includes loan commitments that can be drawn in different currencies at the client's discretion, of which approximately USD 3bn have only USD LIBOR exposure remaining and approximately USD 2bn retain a non-USD LIBOR interest rate, with transition dependent upon the actions of other parties. The remainder represents loan commitments that can be drawn in US dollars only and will transition on or before 30 June 2023.

Derivatives designated in hedge accounting relationships

UBS AG applies hedge accounting to interest rate risk and foreign exchange risk, including structural foreign exchange risk related to net investments in foreign operations.

› **Refer to "Market risk" in the "Risk management and control" section of this report for more information about how risks arise and how they are managed by UBS AG**

Hedging instruments and hedged risk

Interest rate swaps are designated in fair value hedges or cash flow hedges of interest rate risk arising solely from changes in benchmark interest rates. Fair value changes arising from such risk are usually the largest component of the overall change in the fair value of the hedged position in transaction currency.

Cross-currency swaps are designated as fair value hedges of foreign exchange risk. Foreign exchange forwards and foreign exchange swaps are mainly designated as hedges of structural foreign exchange risk related to net investments in foreign operations. In both cases the hedged risk arises solely from changes in the spot foreign exchange rate.

The notional of the designated hedging instruments matches the notional of the hedged items, except when the interest rate swaps are re-designated in cash flow hedges, in which case the hedge ratio designated is determined based on the swap sensitivity.

Hedged items and hedge designation

Fair value hedges of interest rate risk related to debt instruments and loan assets

Fair value hedges of interest rate risk related to debt instruments and loan assets involve swapping fixed cash flows associated with the debt issued, funding from UBS Group AG, debt securities held and long-term fixed-rate mortgage loans in Swiss francs to floating cash flows by entering into interest rate swaps that either receive fixed and pay floating cash flows or that pay fixed and receive floating cash flows.

Designations have been made in US dollars, euro, Swiss francs, Australian dollars, yen, pounds sterling and Singapore dollars. For new hedging instruments and hedged risk designations entered into starting from 2021 in these currencies (with the exception of euro), the benchmark rate was the relevant alternative reference rate (ARR). Following the interbank offered rate (IBOR) transition for swaps with LCH (formerly the London Clearing House) in December 2021, the benchmark hedge rate for Swiss franc, yen and pound sterling designations was changed from an IBOR rate to the relevant ARR with the hedge relationship continuing in accordance with *Interest Rate Benchmark Reform – Phase 2 (Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16)*.

Cash flow hedges of forecast transactions

UBS AG hedges forecast cash flows on non-trading financial assets and liabilities that bear interest at variable rates or are expected to be refinanced or reinvested in the future, due to movements in future market rates. The amounts and timing of future cash flows, representing both principal and interest flows, are projected on the basis of contractual terms and other relevant factors, including estimates of prepayments and defaults. The aggregate principal balances and interest cash flows across all portfolios over time form the basis for identifying the non-trading interest rate risk of UBS AG, which is hedged with interest rate swaps, the maximum maturity of which is 15 years. Cash flow forecasts and risk exposures are monitored and adjusted on an ongoing basis, and consequently additional hedging instruments are traded and designated, or are terminated resulting in a hedge discontinuance. Hedge designations have been made in the following currencies: US dollars, euro, Swiss francs, pounds sterling and Hong Kong dollars. The cash flow hedges in Swiss francs, pounds sterling and certain cash flow hedges in US dollars were discontinued and replaced with new ARR designations in December 2021. In addition, the transition of floating rate hedged items in USD to ARR rates in January 2022 resulted in the update of the hedged risk to ARR in the affected hedge relationships without discontinuation of hedge accounting in accordance with *Interest Rate Benchmark Reform – Phase 2 (Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16)*.

Fair value hedges of foreign exchange risk related to issued debt instruments

Debt instruments denominated in currencies other than the US dollar are designated in fair value hedges of spot foreign exchange risk, in addition to and separate from the fair value hedges of interest rate risk. Cross-currency swaps economically convert debt denominated in currencies other than the US dollar to US dollars.

Hedges of net investments in foreign operations

UBS AG applies hedge accounting for certain net investments in foreign operations, which include subsidiaries, branches and associates. Upon maturity of hedging instruments, typically two months, the hedge relationship is terminated and new designations are made to reflect any changes in the net investments in foreign operations.

Note 25 Hedge accounting (continued)

Economic relationship between hedged item and hedging instrument

The economic relationship between the hedged item and the hedging instrument is determined based on a qualitative analysis of their critical terms. In cases where hedge designation takes place after origination of the hedging instrument, a quantitative analysis of the possible behavior of the hedging derivative and the hedged item during their respective terms is also performed.

Sources of hedge ineffectiveness

In hedges of interest rate risk, hedge ineffectiveness can arise from mismatches of critical terms and / or the use of different curves to discount the hedged item and instrument, or from entering into a hedge relationship after the trade date of the hedging derivative.

In hedges of foreign exchange risk related to debt issued, hedge ineffectiveness can arise due to the discounting of the hedging instruments and undesignated risk components and lack of such discounting and risk components in the hedged items.

In hedges of net investments in foreign operations, ineffectiveness is unlikely unless the hedged net assets fall below the designated hedged amount. The exceptions are hedges where the hedging currency is not the same as the currency of the foreign operation, where the currency basis may cause ineffectiveness.

Hedge ineffectiveness from financial instruments measured at fair value through profit or loss is recognized in *Other net income.*

Derivatives not designated in hedge accounting relationships

Non-hedge accounted derivatives are mandatorily held for trading with all fair value movements taken to *Other net income from financial instruments measured at fair value through profit or loss*, even when held as an economic hedge or to facilitate client clearing. The one exception relates to forward points on certain short- and long-duration foreign exchange contracts acting as economic hedges, which are reported in *Net interest income.*

All hedges: designated hedging instruments and hedge ineffectiveness

	As of or for the year ended					
	31.12.22					
		Carrying amount				
USD m	Notional amount	Derivative financial assets	Derivative financial liabilities	Changes in fair value of hedging instruments[1]	Changes in fair value of hedged items[1]	Hedge ineffectiveness recognized in the income statement
Interest rate risk						
Fair value hedges	92,415	0	0	(5,195)	5,169	(27)
Cash flow hedges	75,304	2	5	(5,813)	5,760	(53)
Foreign exchange risk						
Fair value hedges[2]	20,566	845	3	(1,088)	1,105	18
Hedges of net investments in foreign operations	13,844	7	528	318	(319)	(1)

	As of or for the year ended					
	31.12.21					
		Carrying amount				
USD m	Notional amount	Derivative financial assets	Derivative financial liabilities	Changes in fair value of hedging instruments[1]	Changes in fair value of hedged items[1]	Hedge ineffectiveness recognized in the income statement
Interest rate risk						
Fair value hedges	89,525	0	7	(1,604)	1,602	(2)
Cash flow hedges	79,573	12	1	(1,185)	990	(196)
Foreign exchange risk						
Fair value hedges[2]	27,875	87	261	(2,139)	2,181	42
Hedges of net investments in foreign operations	13,761	23	103	492	(491)	0

1 Amounts used as the basis for recognizing hedge ineffectiveness for the period. 2 The foreign currency basis spread of cross-currency swaps designated as hedging derivatives is excluded from the hedge accounting designation and accounted for as a cost of hedging with amounts deferred in Other comprehensive income within Equity.

Note 25 Hedge accounting (continued)

Fair value hedges: designated hedged items

USD m	31.12.22		31.12.21	
	Interest rate risk	FX risk	Interest rate risk	FX risk
Debt issued measured at amortized cost				
Carrying amount of designated debt issued	11,279	5,737	21,653	11,392
of which: accumulated amount of fair value hedge adjustment	*(1,002)*		*261*	
Funding from UBS Group AG				
Carrying amount of designated debt instruments	57,250	14,828	53,047	16,483
of which: accumulated amount of fair value hedge adjustment	*(5,055)*		*218*	
Other financial assets measured at amortized cost – debt securities				
Carrying amount of designated debt securities	4,577		2,677	
of which: accumulated amount of fair value hedge adjustment	*(180)*		*(7)*	
Loans and advances to customers				
Carrying amount of designated loans	14,270		13,835	
of which: accumulated amount of fair value hedge adjustment	*(1,249)*		*(109)*	
of which: accumulated amount of fair value hedge adjustment subject to amortization attributable to the portion of the portfolio that ceased to be part of hedge accounting	*(51)*		*3*	

Fair value hedges: profile of the timing of the nominal amount of the hedging instrument

	31.12.22					
USD bn	Due within 1 month	Due between 1 and 3 months	Due between 3 and 12 months	Due between 1 and 5 years	Due after 5 years	Total
Interest rate swaps	0	4	10	53	26	92
Cross-currency swaps	0	1	2	12	5	21

	31.12.21					
USD bn	Due within 1 month	Due between 1 and 3 months	Due between 3 and 12 months	Due between 1 and 5 years	Due after 5 years	Total
Interest rate swaps	0	8	10	49	22	90
Cross-currency swaps	1	1	6	13	6	28

Cash flow hedge reserve on a pre-tax basis

USD m	31.12.22	31.12.21
Amounts related to hedge relationships for which hedge accounting continues to be applied	(4,692)	26
Amounts related to hedge relationships for which hedge accounting is no longer applied	(540)	743
Total other comprehensive income recognized directly in equity related to cash flow hedges, on a pre-tax basis	(5,232)	769

Foreign currency translation reserve on a pre-tax basis

USD m	31.12.22	31.12.21
Amounts related to hedge relationships for which hedge accounting continues to be applied	250	(61)
Amounts related to hedge relationships for which hedge accounting is no longer applied	266	262
Total other comprehensive income recognized directly in equity related to hedging instruments designated as net investment hedges, on a pre-tax basis	515	201

Interest rate benchmark reform

UBS AG continues to apply the relief provided by *Interest Rate Benchmark Reform (amendments to IFRS 9, IAS 39 and IFRS 7)*, published by the IASB in September 2019, mainly to its hedges in USD. The cessation date for USD LIBOR is 30 June 2023.

The following table provides details on the notional amount and carrying amount of the hedging instruments in the hedge relationships where the designated risk is LIBOR and maturing after the cessation date of the applicable interest rate benchmarks.

Hedges of net investments in foreign operations are not affected by the amendments.

› **Refer to Note 1a item 2j for more information about the relief provided by the amendments to IFRS 9 and IFRS 7 related to interest rate benchmark reform**
› **Refer to Note 24 for more information about the transition progress**
› **Refer to earlier parts of this Note for the information about the transition progress of fair value and cash flow hedges**

Note 25 Hedge accounting (continued)

Hedging instruments referencing LIBOR

	31.12.22			31.12.21		
		Carrying amount			Carrying amount	
USD m	Notional amount	Derivative financial assets	Derivative financial liabilities	Notional amount	Derivative financial assets	Derivative financial liabilities
Interest rate risk						
Fair value hedges	20,383	0	0	23,367	0	0
Cash flow hedges	2,179	0	0	10,803	0	0

Note 26 Post-employment benefit plans

a) Defined benefit plans

UBS AG has established defined benefit plans for its employees in various jurisdictions in accordance with local regulations and practices. The major plans are located in Switzerland, the UK, the US and Germany. The level of benefits depends on the specific plan rules.

Swiss pension plan

The Swiss pension plan covers employees of UBS Group AG in Switzerland and employees of companies in Switzerland having close economic or financial ties with UBS Group AG, and exceeds the minimum benefit requirements under Swiss pension law. In 2017, a significant number of employees were transferred from UBS AG to UBS Business Solutions AG, which is a directly held subsidiary of UBS Group AG. There continues to be one pooled pension plan in Switzerland covering the employees of UBS AG and those transferred to UBS Business Solutions AG. UBS AG and UBS Business Solutions AG both are legal sponsors of UBS's Swiss pension plan. Since the date of the employee transfer, UBS AG and UBS Business Solutions AG apply proportionate defined benefit accounting, i.e., the net pension cost and the net pension asset / liability of the Swiss pension plan are allocated proportionally between UBS AG and UBS Business Solutions AG based on the aggregated net pension cost and defined benefit obligations related to their employees. The Swiss plan offers retirement, disability and survivor benefits and is governed by a Pension Foundation Board. The responsibilities of this board are defined by Swiss pension law and the plan rules.

Savings contributions to the Swiss plan are paid by both employer and employee. Depending on the age of the employee, UBS AG pays a savings contribution that ranges between 6.5% and 27.5% of contributory base salary and between 2.8% and 9% of contributory variable compensation. UBS AG also pays risk contributions that are used to fund disability and survivor benefits. Employees can choose the level of savings contributions paid by them, which vary between 2.5% and 13.5% of contributory base salary and between 0% and 9% of contributory variable compensation, depending on age and choice of savings contribution category.

The plan offers to members at the normal retirement age of 65 a choice between a lifetime pension and a partial or full lump sum payment. Participants can choose to draw early retirement benefits starting from the age of 58, but can also continue employment and remain active members of the plan until the age of 70. Employees have the opportunity to make additional purchases of benefits to fund early retirement benefits.

The pension amount payable to a participant is calculated by applying a conversion rate to the accumulated balance of the participant's retirement savings account at the retirement date. The balance is based on credited vested benefits transferred from previous employers, purchases of benefits, and the employee and employer contributions that have been made to the participant's retirement savings account, as well as the interest accrued. The annual interest rate credited to participants is determined by the Pension Foundation Board at the end of each year.

Although the Swiss plan is based on a defined contribution promise under Swiss pension law, it is accounted for as a defined benefit plan under International Financial Reporting Standards (IFRS), primarily because of the obligation to accrue interest on the participants' retirement savings accounts and the payment of lifetime pension benefits.

An actuarial valuation in accordance with Swiss pension law is performed regularly. Should an underfunded situation on this basis occur, the Pension Foundation Board is required to take the necessary measures to ensure that full funding can be expected to be restored within a maximum period of 10 years. If a Swiss plan were to become significantly underfunded on a Swiss pension law basis, additional employer and employee contributions could be required. In this situation, the risk is shared between employer and employees, and the employer is not legally obliged to cover more than 50% of the additional contributions required. As of 31 December 2022, the Swiss plan had a technical funding ratio in accordance with Swiss pension law of 119.0% (31 December 2021: 134.8%).

The investment strategy of the Swiss plan complies with Swiss pension law, including the rules and regulations relating to diversification of plan assets, and is derived from the risk budget defined by the Pension Foundation Board on the basis of regularly performed asset and liability management analyses. The Pension Foundation Board strives for a medium- and long-term balance between assets and liabilities.

As of 31 December 2022, the Swiss plan was in a surplus situation on an IFRS measurement basis, as the fair value of the plan's assets exceeded the defined benefit obligation (DBO) by USD 4,418m (31 December 2021: USD 3,716m). However, a surplus is only recognized on the balance sheet to the extent that it does not exceed the estimated future economic benefit, which equals the difference between the present value of the estimated future net service cost and the present value of the estimated future employer contributions. As of both 31 December 2022 and 31 December 2021, the estimated future economic benefit was zero and hence no net defined benefit asset was recognized on the balance sheet.

Changes to the Swiss pension plan in 2019

The Pension Foundation Board and UBS AG agreed to implement measures that took effect from the start of 2019 to support the long-term financial stability of the Swiss pension fund. The measures, among other things, lowered the conversion rate and increased the normal retirement age from 64 to 65. Pensions already in payment on 1 January 2019 were not affected.

To mitigate the effects for active participants, UBS AG committed to pay an extraordinary contribution and contributed CHF 390m (USD 421m) in three installments in 2020, 2021 and 2022. The installments of USD 143m, USD 152m and USD 126m paid in 2020, 2021 and 2022 reduced other comprehensive income with no effect on the income statement.

The regular employer contributions to be made to the Swiss plan in 2023 are estimated at USD 275m.

UK pension plan

The UK plan is a career-average revalued earnings scheme, and benefits increase automatically based on UK price inflation, subject to defined caps. The normal retirement age for participants in the UK plan is 60. The plan provides guaranteed lifetime pension benefits to participants upon retirement. The UK plan has been closed to new entrants for more than 20 years and, since 2013, participants are no longer accruing benefits for current or future service. Instead, employees participate in the UK defined contribution plan.

The governance responsibility for the UK plan lies jointly with the Pension Trustee Board and UBS AG. The employer contributions to the pension fund reflect agreed-upon deficit funding contributions, which are determined on the basis of the most recent actuarial valuation using assumptions agreed by the Pension Trustee Board and UBS AG. In the event of underfunding, UBS AG and the Pension Trustee Board must agree on a deficit recovery plan within statutory deadlines. In 2022, UBS AG made deficit funding contributions of USD 5m to the UK plan. In 2021, UBS AG made no deficit funding contributions.

The plan assets are invested in a diversified portfolio of financial assets, which include longevity swaps with an external insurance company. These swaps enable the UK pension plan to hedge the risk between expected and actual longevity, which should mitigate volatility in the net defined benefit asset / liability. As of 31 December 2022, the longevity swaps had a negative value of USD 1m (31 December 2021: negative USD 3m).

In 2019, UBS AG and the Pension Trustee Board entered into an arrangement whereby a collateral pool was established to provide security for the pension fund. The value of the collateral pool as of 31 December 2022 was USD 292m (31 December 2021: USD 337m) and includes corporate bonds, government-related debt instruments and other financial assets. The arrangement provides the Pension Trustee Board dedicated access to a pool of assets in the event of UBS AG's insolvency or not paying a required deficit funding contribution.

The employer contributions to be made to the UK defined benefit plan in 2023 are estimated at USD 18m, subject to regular funding reviews during the year.

US pension plans

There are two distinct major defined benefit plans in the US, with a normal retirement age of 65. Both plans were closed to new entrants more than 20 years ago. Since they closed, new employees have participated in a defined contribution plan.

One of the defined benefit plans is a contribution-based plan in which each participant accrues a percentage of salary in a retirement savings account. The retirement savings account is credited annually with interest based on a rate that is linked to the average yield on one-year US government bonds. For the other defined benefit plan, retirement benefits accrue based on the career-average earnings of each individual plan participant. Former employees with vested benefits have the option of taking a lump sum payment or a lifetime annuity.

As required under applicable pension laws, both plans have fiduciaries who, together with UBS AG, are responsible for the governance of the plans.

The plan assets of both plans are invested in diversified portfolios of financial assets. Each plan's fiduciaries are responsible for the investment decisions with respect to the plan assets.

The employer contributions to be made to the US defined benefit plans in 2023 are estimated at USD 11m.

German pension plans

There are two unfunded defined benefit plans in Germany. The normal retirement age is 65 and benefits are paid directly by UBS AG. In the larger of the two plans each participant accrues a percentage of salary in a retirement savings account. The accumulated account balance of the participant is credited on an annual basis with guaranteed interest at a rate of 5%. The plan has been closed to new entrants, and all participants younger than the age of 55 as of June 2021 no longer accrue benefits. In the other plan, amounts are accrued annually based on employee elections related to variable compensation. For this plan, the accumulated account balance is credited on an annual basis with a guaranteed interest rate of 6% for amounts accrued before 2010, of 4% for amounts accrued from 2010 to 2017 and of 0.9% for amounts accrued after 2017. Both plans are subject to German pension law, whereby the responsibility to pay pension benefits when they are due resides entirely with UBS AG. A portion of the pension payments is directly increased in line with price inflation.

In June 2021, UBS AG implemented a new funded pension plan with interest credited to participants equal to actual investment returns with a guaranteed minimum of 0%. The plan was implemented retrospectively for new hires since June 2018 and for all eligible active participants younger than 55 from July 2021. Each participant accrues a percentage of salary in a retirement savings account.

The employer contributions to be made to the German defined benefit plans in 2023 are estimated at USD 12m.

Financial information by plan

The tables below provide an analysis of the movement in the net asset / liability recognized on the balance sheet for defined benefit plans, as well as an analysis of amounts recognized in net profit and in *Other comprehensive income*.

Note 26 Post-employment benefit plans (continued)

Defined benefit plans

USD m	Swiss pension plan		UK pension plan		US and German pension plans		Total	
	2022	2021	2022	2021	2022	2021	2022	2021
Defined benefit obligation at the beginning of the year	15,480	15,619	4,105	4,162	1,740	1,905	21,324	21,686
Current service cost	240	285	0	0	5	6	244	291
Interest expense	195	33	67	58	35	30	297	122
Plan participant contributions	154	161	0	0	0	0	154	161
Remeasurements	(2,424)	490	(1,474)	71	(267)	(62)	(4,165)	498
of which: actuarial (gains) / losses due to changes in demographic assumptions	*2*	*26*	*(6)*	*14*	*1*	*4*	*(3)*	*45*
of which: actuarial (gains) / losses due to changes in financial assumptions	*(2,653)*	*(385)*	*(1,575)*	*(3)*	*(279)*	*(78)*	*(4,506)*	*(466)*
of which: experience (gains) / losses [1]	*226*	*848*	*107*	*59*	*11*	*12*	*344*	*919*
Past service cost related to plan amendments	0	0	0	0	0	4	0	4
Curtailments	(13)	(49)	0	0	0	0	(13)	(49)
Benefit payments	(796)	(602)	(123)	(148)	(111)	(112)	(1,030)	(862)
Other movements	(5)	0	0	0	0	1	(5)	1
Foreign currency translation	(291)	(456)	(408)	(38)	(28)	(33)	(727)	(527)
Defined benefit obligation at the end of the year	12,539	15,480	2,166	4,105	1,375	1,740	16,080	21,324
of which: amounts owed to active members	*7,103*	*8,604*	*65*	*150*	*169*	*222*	*7,336*	*8,976*
of which: amounts owed to deferred members	*0*	*0*	*656*	*1,593*	*528*	*669*	*1,184*	*2,262*
of which: amounts owed to retirees	*5,436*	*6,876*	*1,445*	*2,362*	*678*	*849*	*7,560*	*10,086*
of which: funded plans	*12,539*	*15,480*	*2,166*	*4,105*	*1,011*	*1,222*	*15,717*	*20,806*
of which: unfunded plans	*0*	*0*	*0*	*0*	*363*	*518*	*363*	*518*
Fair value of plan assets at the beginning of the year	19,196	18,358	4,297	4,149	1,329	1,360	24,821	23,867
Return on plan assets excluding interest income	(1,942)	1,319	(1,312)	277	(223)	40	(3,476)	1,637
Interest income	274	42	70	58	31	26	376	127
Employer contributions	401	450	5	0	16	16	422	466
Plan participant contributions	154	161	0	0	0	0	154	161
Benefit payments	(796)	(602)	(123)	(148)	(111)	(112)	(1,030)	(862)
Administration expenses, taxes and premiums paid	(7)	(8)	0	0	(3)	(4)	(11)	(11)
Other movements	(1)	0	0	0	0	1	(1)	1
Foreign currency translation	(322)	(524)	(450)	(39)	0	0	(772)	(563)
Fair value of plan assets at the end of the year	16,957	19,196	2,488	4,297	1,039	1,329	20,484	24,821
Surplus / (deficit)	4,418	3,716	321	192	(335)	(411)	4,404	3,497
Asset ceiling effect at the beginning of the year	3,716	2,739	0	0	0	0	3,716	2,739
Interest expense on asset ceiling effect	77	8	0	0	0	0	77	8
Asset ceiling effect excluding interest expense and foreign currency translation on asset ceiling effect	656	1,037	0	0	0	0	656	1,037
Foreign currency translation	(31)	(68)	0	0	0	0	(31)	(68)
Asset ceiling effect at the end of the year	4,418	3,716	0	0	0	0	4,418	3,716
Net defined benefit asset / (liability) of major plans	0	0	321	192	(335)	(411)	(14)	(219)
Net defined benefit asset / (liability) of remaining plans							(80)	(96)
Total net defined benefit asset / (liability)							(94)	(315)
of which: Net defined benefit asset							*355*	*302*
of which: Net defined benefit liability [2]							*(449)*	*(617)*

1 Experience (gains) / losses are a component of actuarial remeasurements of the defined benefit obligation and reflect the effects of differences between the previous actuarial assumptions and what has actually occurred. 2 Refer to Note 18c.

Note 26 Post-employment benefit plans (continued)

Income statement – expenses related to defined benefit plans[1]

USD m	Swiss pension plan		UK pension plan		US and German pension plans		Total	
For the year ended	31.12.22	31.12.21	31.12.22	31.12.21	31.12.22	31.12.21	31.12.22	31.12.21
Current service cost	240	285	0	0	5	6	244	291
Interest expense related to defined benefit obligation	195	33	67	58	35	30	297	122
Interest income related to plan assets	(274)	(42)	(70)	(58)	(31)	(26)	(376)	(127)
Interest expense on asset ceiling effect	77	8	0	0	0	0	77	8
Administration expenses, taxes and premiums paid	7	8	0	0	3	4	11	11
Past service cost related to plan amendments	0	0	0	0	0	4	0	4
Curtailments	(13)	(49)	0	0	0	0	(13)	(49)
Net periodic expenses recognized in net profit for major plans	230	243	(3)	0	12	18	239	261
Net periodic expenses recognized in net profit for remaining plans[2]							17	19
Total net periodic expenses recognized in net profit							256	280

1 Refer to Note 6. 2 Includes differences between actual and estimated performance award accruals.

Other comprehensive income – gains / (losses) on defined benefit plans

USD m	Swiss pension plan		UK pension plan		US and German pension plans		Total	
For the year ended	31.12.22	31.12.21	31.12.22	31.12.21	31.12.22	31.12.21	31.12.22	31.12.21
Remeasurement of defined benefit obligation	2,424	(490)	1,474	(71)	267	62	4,165	(498)
of which: change in discount rate assumption	*3,078*	*494*	*1,451*	*319*	*317*	*77*	*4,846*	*890*
of which: change in rate of pension increase assumption	*0*	*0*	*123*	*(316)*	*(5)*	*(1)*	*118*	*(318)*
of which: change in rate of interest credit on retirement savings assumption	*(408)*	*(110)*	*0*	*0*	*(82)*	*(1)*	*(490)*	*(110)*
of which: change in life expectancy	*0*	*0*	*5*	*9*	*(1)*	*(3)*	*4*	*5*
of which: change in other actuarial assumptions	*(19)*	*(26)*	*1*	*(23)*	*48*	*2*	*30*	*(47)*
of which: experience gains / (losses)[1]	*(226)*	*(848)*	*(107)*	*(59)*	*(11)*	*(12)*	*(344)*	*(919)*
Return on plan assets excluding interest income	(1,942)	1,319	(1,312)	277	(223)	40	(3,476)	1,637
Asset ceiling effect excluding interest expense and foreign currency translation	(656)	(1,037)	0	0	0	0	(656)	(1,037)
Total gains / (losses) recognized in other comprehensive income for major plans	(173)	(207)	162	207	43	102	32	102
Total gains / (losses) recognized in other comprehensive income for remaining plans							8	31
Total gains / (losses) recognized in other comprehensive income[2]							40	133

1 Experience (gains) / losses are a component of actuarial remeasurements of the defined benefit obligation and reflect the effects of differences between the previous actuarial assumptions and what has actually occurred. 2 Refer to the "Statement of comprehensive income."

The table below provides information about the duration of the DBO and the timing for expected benefit payments.

	Swiss pension plan		UK pension plan		US and German pension plans[1]	
	31.12.22	31.12.21	31.12.22	31.12.21	31.12.22	31.12.21
Duration of the defined benefit obligation (in years)	13.4	15.5	13.7	18.8	7.9	9.5
Maturity analysis of benefits expected to be paid						
USD m						
Benefits expected to be paid within 12 months	702	719	107	110	123	123
Benefits expected to be paid between 1 and 3 years	1,445	1,440	234	248	232	237
Benefits expected to be paid between 3 and 6 years	2,183	2,097	384	418	335	338
Benefits expected to be paid between 6 and 11 years	3,751	3,467	667	743	502	495
Benefits expected to be paid between 11 and 16 years	3,519	3,156	667	751	388	392
Benefits expected to be paid in more than 16 years	13,243	10,733	2,570	3,028	516	519

1 The duration of the defined benefit obligation represents a weighted average across US and German plans.

Actuarial assumptions

The actuarial assumptions used for the defined benefit plans are based on the economic conditions prevailing in the jurisdiction in which they are offered. Changes in the defined benefit obligation are most sensitive to changes in the discount rate. The discount rate is based on the yield of high-quality corporate bonds quoted in an active market in the currency of the respective plan. A decrease in the discount curve increases the DBO. UBS AG regularly reviews the actuarial assumptions used in calculating the DBO to determine their continuing relevance.

› **Refer to Note 1a item 5 for a description of the accounting policy for defined benefit plans**

The tables below show the significant actuarial assumptions used in calculating the DBO at the end of the year.

Significant actuarial assumptions

	Swiss pension plan		UK pension plan		US pension plans		German pension plans	
In %	31.12.22	31.12.21	31.12.22	31.12.21	31.12.22	31.12.21	31.12.22	31.12.21
Discount rate	2.34	0.34	5.02	1.82	4.92[1]	2.47[1]	3.81	0.99
Rate of pension increase	0.00	0.00	3.08	3.32	0.00	0.00	2.20	1.80
Rate of interest credit on retirement savings	3.39	1.04	0.00	0.00	5.73[2]	1.18[2]	0.00	0.00

1 Represents weighted average across US pension plans. 2 Only applicable to one of the US pension plans

Mortality tables and life expectancies for major plans

		Life expectancy at age 65 for a male member currently			
		aged 65		aged 45	
Country	Mortality table	31.12.22	31.12.21	31.12.22	31.12.21
Switzerland	BVG 2020 G with CMI 2021 projections[1]	21.7	21.7	23.4	23.3
UK	S3PA with CMI 2021 projections[2]	23.5	23.4	24.6	24.5
USA	Pri-2012 with MP-2021 projection scale	22.0	21.9	23.3	23.3
Germany	Dr. K. Heubeck 2018 G	20.6	20.5	23.4	23.2

		Life expectancy at age 65 for a female member currently			
		aged 65		aged 45	
Country	Mortality table	31.12.22	31.12.21	31.12.22	31.12.21
Switzerland	BVG 2020 G with CMI 2021 projections[1]	23.5	23.4	25.1	25.0
UK	S3PA with CMI 2021 projections[2]	25.0	24.9	26.4	26.3
USA	Pri-2012 with MP-2021 projection scale	23.4	23.3	24.8	24.7
Germany	Dr. K. Heubeck 2018 G	24.0	23.9	26.3	26.1

1 In 2021, BVG 2020 G with CMI 2019 projections was used. 2 In 2021, S3PA with CMI 2020 projections was used.

Sensitivity analysis of significant actuarial assumptions

The table below presents a sensitivity analysis for each significant actuarial assumption, showing how the DBO would have been affected by changes in the relevant actuarial assumption that were reasonably possible at the balance sheet date. Unforeseen circumstances may arise, which could result in variations that are outside the range of alternatives deemed reasonably possible. Caution should be used in extrapolating the sensitivities below on the DBO, as the sensitivities may not be linear.

Sensitivity analysis of significant actuarial assumptions[1]

Increase / (decrease) in defined benefit obligation	Swiss pension plan		UK pension plan		US and German pension plans	
USD m	31.12.22	31.12.21	31.12.22	31.12.21	31.12.22	31.12.21
Discount rate						
Increase by 50 basis points	(641)	(975)	(141)	(361)	(51)	(78)
Decrease by 50 basis points	723	1,116	157	411	55	84
Rate of pension increase						
Increase by 50 basis points	487	749	127	334	4	6
Decrease by 50 basis points	–[2]	–[2]	(118)	(306)	(3)	(6)
Rate of interest credit on retirement savings						
Increase by 50 basis points	106	134	–[3]	–[3]	9	8
Decrease by 50 basis points	(106)	(134)	–[3]	–[3]	(8)	(7)
Life expectancy						
Increase in longevity by one additional year	304	475	65	184	39	56

1 The sensitivity analyses are based on a change in one assumption while holding all other assumptions constant, so that interdependencies between the assumptions are excluded. 2 As the assumed rate of pension increase was 0% as of 31 December 2022 and as of 31 December 2021, a downward change in assumption is not applicable. 3 As the UK plan does not provide interest credits on retirement savings, a change in assumption is not applicable.

Fair value of plan assets

The tables below provide information about the composition and fair value of plan assets of the major pension plans.

Composition and fair value of plan assets

Swiss pension plan

	31.12.22				31.12.21			
	Fair value			Plan asset allocation %	Fair value			Plan asset allocation %
USD m	Quoted in an active market	Other	Total		Quoted in an active market	Other	Total	
Cash and cash equivalents	183	0	183	1	106	0	106	1
Real estate / property								
Domestic	0	2,130	2,130	13	0	1,994	1,994	10
Foreign	0	517	517	3	0	328	328	2
Investment funds								
Equity								
Domestic	418	0	418	2	476	0	476	2
Foreign	2,794	1,222	4,017	24	3,510	1,498	5,009	26
Bonds[1]								
Domestic, AAA to BBB–	2,117	0	2,117	12	2,512	0	2,512	13
Foreign, AAA to BBB–	3,395	0	3,395	20	2,877	0	2,877	15
Foreign, below BBB–	598	0	598	4	742	0	742	4
Other	867	1,997	2,864	17	2,379	2,010	4,389	23
Other investments	351	367	718	4	377	385	762	4
Total fair value of plan assets	10,724	6,233	16,957	100	12,980	6,216	19,196	100

	31.12.22	31.12.21
Total fair value of plan assets	16,957	19,196
of which:[2]		
Bank accounts at UBS AG	*189*	*109*
UBS AG debt instruments	*28*	*16*
UBS Group AG shares	*15*	*14*
Securities lent to UBS AG[3]	*489*	*608*
Property occupied by UBS	*51*	*52*
Derivative financial instruments, counterparty UBS AG[3]	*43*	*72*

1 The bond credit ratings are primarily based on S&P's credit ratings. Ratings AAA to BBB– and below BBB– represent investment grade and non-investment grade ratings, respectively. In cases where credit ratings from other rating agencies were used, these were converted to the equivalent rating in S&P's rating classification. 2 Bank accounts at UBS AG encompass accounts in the name of the Swiss pension fund. The other positions disclosed in the table encompass both direct investments in UBS AG instruments and UBS Group AG shares and indirect investments, i.e., those made through funds that the pension fund invests in. 3 Securities lent to UBS AG and derivative financial instruments are presented gross of any collateral. Securities lent to UBS AG were fully covered by collateral as of 31 December 2022 and 31 December 2021. Net of collateral, derivative financial instruments amounted to negative USD 5m as of 31 December 2022 (31 December 2021: positive USD 24m).

Composition and fair value of plan assets (continued)

UK pension plan

	31.12.22				31.12.21			
	Fair value			Plan asset allocation %	Fair value			Plan asset allocation %
USD m	Quoted in an active market	Other	Total		Quoted in an active market	Other	Total	
Cash and cash equivalents	104	0	104	4	147	0	147	3
Bonds[1]								
Domestic, AAA to BBB–	1,729	0	1,729	69	2,605	0	2,605	61
Foreign, AAA to BBB–	297	0	297	12	372	0	372	9
Foreign, below BBB–	7	0	7	0	4	0	4	0
Investment funds								
Equity								
Domestic	19	3	22	1	44	4	47	1
Foreign	366	0	366	15	921	0	921	21
Bonds[1]								
Domestic, AAA to BBB–	367	90	457	18	532	147	679	16
Domestic, below BBB–	1	0	1	0	12	0	12	0
Foreign, AAA to BBB–	90	0	90	4	179	0	179	4
Foreign, below BBB–	114	0	114	5	115	0	115	3
Real estate								
Domestic	64	0	64	3	110	12	122	3
Foreign	6	31	36	1	6	34	40	1
Other	(280)	0	(280)	(11)	(313)	0	(313)	(7)
Repurchase agreements	(612)	0	(612)	(25)	(725)	0	(725)	(17)
Other investments	66	27	94	4	65	26	91	2
Total fair value of plan assets	2,336	151	2,488	100	4,074	223	4,297	100

1 The bond credit ratings are primarily based on S&P's credit ratings. Ratings AAA to BBB– and below BBB– represent investment grade and non-investment grade ratings, respectively. In cases where credit ratings from other rating agencies were used, these were converted to the equivalent rating in S&P's rating classification.

US and German pension plans

	31.12.22				31.12.21			
	Fair value			Plan asset allocation %	Fair value			Plan asset allocation %
USD m	Quoted in an active market	Other	Total		Quoted in an active market	Other	Total	
Cash and cash equivalents	7	0	7	1	11	0	11	1
Equity								
Domestic	55	0	55	5	79	0	79	6
Foreign	24	0	24	2	31	0	31	2
Bonds[1]								
Domestic, AAA to BBB–	359	0	359	35	486	0	486	37
Domestic, below BBB–	4	0	4	0	17	0	17	1
Foreign, AAA to BBB–	74	0	74	7	97	0	97	7
Foreign, below BBB–	3	0	3	0	6	0	6	0
Investment funds								
Equity								
Domestic	27	0	27	3	3	0	3	0
Foreign	33	0	33	3	56	0	56	4
Bonds[1]								
Domestic, AAA to BBB–	266	0	266	26	269	0	269	20
Domestic, below BBB–	109	0	109	10	147	0	147	11
Foreign, AAA to BBB–	2	0	2	0	11	0	11	1
Foreign, below BBB–	5	0	5	0	2	0	2	0
Real estate								
Domestic	0	11	11	1	0	9	9	1
Other	54	0	54	5	99	0	99	7
Other investments	5	1	6	1	5	1	6	0
Total fair value of plan assets	1,027	12	1,039	100	1,319	10	1,329	100

1 The bond credit ratings are primarily based on S&P's credit ratings. Ratings AAA to BBB– and below BBB– represent investment grade and non-investment grade ratings, respectively. In cases where credit ratings from other rating agencies were used, these were converted to the equivalent rating in S&P's rating classification.

b) Defined contribution plans

UBS AG sponsors a number of defined contribution plans, with the most significant plans in the US and the UK. UBS AG's obligation is limited to its contributions made in accordance with each plan, which may include direct contributions and matching contributions. Employer contributions to defined contribution plans are recognized as an expense and were USD 299m in 2022, USD 303m in 2021 and USD 291m in 2020.

› **Refer to Note 6 for more information**

c) Related-party disclosure

UBS AG is the principal provider of banking services for the pension fund of UBS AG in Switzerland. In this capacity, UBS AG is engaged to execute most of the pension fund's banking activities. These activities can include, but are not limited to, trading, securities lending and borrowing and derivative transactions. The non-Swiss UBS AG pension funds do not have a similar banking relationship with UBS AG. During 2022, UBS AG received USD 20m in fees for banking services from the major post-employment benefit plans (2021: USD 22m). As of 31 December 2022, the major post-employment benefit plans held USD 253m in UBS Group AG shares (31 December 2021: USD 241m).

› **Refer to the "Composition and fair value of plan assets" table in Note 26a for more information about fair value of investments in UBS AG and UBS Group AG instruments held by the Swiss pension fund**

Note 27 Employee benefits: variable compensation

a) Plans offered

UBS has several share-based and other deferred compensation plans that align the interests of Group Executive Board (GEB) members and other employees with the interests of investors.

Share-based awards are granted in the form of notional shares and, where permitted, carry a dividend equivalent that may be paid in notional shares or cash. Awards are settled by delivering UBS shares at vesting, except in jurisdictions where this is not permitted for legal or tax reasons.

Deferred compensation awards are generally forfeitable upon, among other circumstances, voluntary termination of employment with UBS. These compensation plans are also designed to meet regulatory requirements and include special provisions for regulated employees. For the majority of variable compensation awards granted under such plans to employees of UBS AG, the grantor entity is UBS Group AG. Expenses associated with these awards are charged by UBS Group AG to UBS AG. For the purpose of this Note, references to shares refer to UBS Group AG shares.

The most significant deferred compensation plans are described below.

› **Refer to Note 1a item 4 for a description of the accounting policy related to share-based and other deferred compensation plans**

Mandatory deferred compensation plans

Long-Term Incentive Plan

The Long-Term Incentive Plan (LTIP) is a mandatory deferred share-based compensation plan for GEB members for the performance year 2022. For prior performance years, LTIP was granted to senior leaders of the Group (i.e., GEB members and selected senior management).

The number of notional shares delivered at vesting depends on two equally weighted performance metrics over a three-year performance period: return on common equity tier 1 (CET1) capital and relative total shareholder return, which compares the total shareholder return (TSR) of UBS with the TSR of an index consisting of listed Global Systemically Important Banks as determined by the Financial Stability Board (excluding UBS). The final number of shares vest over three years following the performance period for GEB members, and cliff-vest in the year following the performance period for selected senior management.

Equity Ownership Plan / Fund Ownership Plan

The Equity Ownership Plan (EOP) is the deferred share-based compensation plan for employees outside of the GEB that are subject to deferral requirements. EOP awards generally vest over three years.

Certain Asset Management employees receive some or all of their EOP in the form of notional funds (Fund Ownership Plan or FOP, previously named AM EOP). This plan is generally delivered in cash and vests over three years. The amount delivered depends on the value of the underlying investment funds at the time of vesting.

Deferred Contingent Capital Plan

The Deferred Contingent Capital Plan (DCCP) is a deferred compensation plan for all employees who are subject to deferral requirements. Such employees are awarded notional additional tier 1 (AT1) capital instruments, which, at the discretion of UBS, can be settled in cash or a perpetual, marketable AT1 capital instrument. DCCP awards generally bear notional interest paid annually (except for certain regulated employees) and vest in full after five years. Awards are forfeited if a viability event occurs (i.e., if FINMA notifies the firm that the DCCP awards must be written down to mitigate the risk of insolvency, bankruptcy or failure of UBS) or if the firm receives a commitment of extraordinary support from the public sector that is necessary to prevent such an event. DCCP awards are also written down if the Group's CET1 capital ratio falls below a defined threshold. In addition, GEB members forfeit 20% of DCCP awards for each loss-making year during the vesting period.

Financial advisor variable compensation

In line with market practice for US wealth management businesses, the compensation for US financial advisors in Global Wealth Management consists of cash compensation and deferred compensation awards, determined using a formulaic approach based on production.

Cash compensation reflects a percentage of the compensable production that each financial advisor generates. Compensable production is generally based on transaction revenue and investment advisory fees and may reflect further adjustments. The percentage rate generally varies based on the level of the production and firm tenure.

Financial advisors may also be granted annual deferred compensation. These amounts generally vest over a six-year period. The annual deferred compensation amount reflects the overall percentage rate and production.

Cash compensation and deferred compensation awards may be reduced for, among other things, errors, negligence or carelessness, or failure to comply with the firm's rules, standards, practices and / or policies, and / or applicable laws and regulations.

Financial advisors may also participate in additional programs to support promoting and developing their business or supporting the transition of client relationships where appropriate. Financial advisor compensation also includes expenses related to compensation commitments with financial advisors entered into at the time of recruitment that are subject to vesting requirements.

b) Effect on the income statement

Effect on the income statement for the financial year and future periods

The table below provides information about compensation expenses related to total variable compensation that were recognized in the financial year ended 31 December 2022, as well as expenses that were deferred and will be recognized in the income statement for 2023 and later. The majority of expenses deferred to 2023 and later that are related to the 2022 performance year pertain to awards granted in February 2023. The total unamortized compensation expense for unvested share-based awards granted up to 31 December 2022 will be recognized in future periods over a weighted average period of 2.5 years.

Variable compensation

	Expenses recognized in 2022			Expenses deferred to 2023 and later[1]		
USD m	Related to the 2022 performance year	Related to prior performance years	Total	Related to the 2022 performance year	Related to prior performance years	Total
Non-deferred cash	2,012	(9)	2,003	0	0	0
Deferred compensation awards	346	561	907	582	730	1,312
of which: Equity Ownership Plan	*191*	*225*	*416*	*294*	*240*	*534*
of which: Deferred Contingent Capital Plan	*123*	*211*	*334*	*238*	*395*	*634*
of which: Long-Term Incentive Plan	*11*	*30*	*41*	*30*	*40*	*70*
of which: Fund Ownership Plan	*21*	*95*	*116*	*20*	*54*	*74*
Variable compensation – performance awards	**2,358**	**552**	**2,910**	**582**	**730**	**1,312**
Variable compensation – financial advisors[2]	**3,799**	**709**	**4,508**	**1,290**	**2,652**	**3,942**
of which: non-deferred cash	*3,481*	*0*	*3,481*	*0*	*0*	*0*
of which: deferred share-based awards	*104*	*62*	*166*	*122*	*180*	*302*
of which: deferred cash-based awards	*185*	*215*	*400*	*588*	*636*	*1,224*
of which: compensation commitments with recruited financial advisors	*29*	*432*	*461*	*580*	*1,836*	*2,416*
Variable compensation – other[3]	**146**	**72**	**217**	**230**	**189**	**419**
Total variable compensation	**6,304**	**1,332**	**7,636[4]**	**2,101**	**3,571**	**5,672**

1 Estimate as of 31 December 2022. Actual amounts to be expensed in future periods may vary; e.g., due to forfeiture of awards. 2 Financial advisor compensation consists of cash and deferred compensation awards and is based on compensable revenues and firm tenure using a formulaic approach. It also includes expenses related to compensation commitments with financial advisors entered into at the time of recruitment that are subject to vesting requirements. 3 Consists of replacement payments, forfeiture credits, severance payments, retention plan payments and interest expense related to the Deferred Contingent Capital Plan. 4 Includes USD 680m in expenses related to share-based compensation (performance awards: USD 457m; other variable compensation: USD 56m; financial advisor compensation: USD 166m). A further USD 80m in expenses related to share-based compensation was recognized within other expense categories included in Note 6 (salaries: USD 4m, related to role-based allowances; social security: USD 57m; other personnel expenses: USD 19m related to the Equity Plus Plan).

Note 27 Employee benefits: variable compensation (continued)

Variable compensation (continued)

	Expenses recognized in 2021			Expenses deferred to 2022 and later[1]		
USD m	Related to the 2021 performance year	Related to prior performance years	Total	Related to the 2021 performance year	Related to prior performance years	Total
Non-deferred cash	2,136	(8)	2,128	0	0	0
Deferred compensation awards	389	399	788	767	606	1,373
of which: Equity Ownership Plan	*175*	*174*	*350*	*374*	*180*	*553*
of which: Deferred Contingent Capital Plan	*134*	*151*	*285*	*290*	*318*	*608*
of which: Long-Term Incentive Plan	*51*	*17*	*69*	*48*	*32*	*79*
of which: Fund Ownership Plan	*29*	*55*	*84*	*56*	*77*	*133*
Variable compensation – performance awards	**2,525**	**391**	**2,916**	**767**	**606**	**1,373**
Variable compensation – financial advisors[2]	**4,175**	**685**	**4,860**	**1,097**	**2,323**	**3,419**
of which: non-deferred cash	*3,858*	*(6)*	*3,853*	*0*	*0*	*0*
of which: deferred share-based awards	*106*	*51*	*157*	*123*	*146*	*269*
of which: deferred cash-based awards	*170*	*202*	*372*	*311*	*495*	*806*
of which: compensation commitments with recruited financial advisors	*41*	*438*	*479*	*662*	*1,682*	*2,344*
Variable compensation – other[3]	**163**	**33**	**196**	**210**	**178**	**388**
Total variable compensation	**6,863**	**1,109**	**7,973[4]**	**2,074**	**3,107**	**5,181**

1 Estimate as of 31 December 2021. Actual amounts expensed may vary; e.g., due to forfeiture of awards. 2 Financial advisor compensation consists of cash and deferred compensation awards and is based on compensable revenues and firm tenure using a formulaic approach. It also includes expenses related to compensation commitments with financial advisors entered into at the time of recruitment that are subject to vesting requirements. 3 Consists of replacement payments, forfeiture credits, severance payments, retention plan payments and interest expense related to the Deferred Contingent Capital Plan. 4 Includes USD 631m in expenses related to share-based compensation (performance awards: USD 419m; other variable compensation: USD 56m; financial advisor compensation: USD 157m). A further USD 77m in expenses related to share-based compensation was recognized within other expense categories included in Note 6 (salaries: USD 5m related to role-based allowances; social security: USD 59m; other personnel expenses: USD 13m related to the Equity Plus Plan).

Variable compensation (continued)

	Expenses recognized in 2020			Expenses deferred to 2021 and later[1]		
USD m	Related to the 2020 performance year	Related to prior performance years	Total	Related to the 2020 performance year	Related to prior performance years	Total
Non-deferred cash	1,948	(29)	1,920	0	0	0
Deferred compensation awards	329	704	1,034	734	277	1,011
of which: Equity Ownership Plan	*131*	*315*	*446*	*298*	*67*	*365*
of which: Deferred Contingent Capital Plan	*108*	*339*	*448*	*271*	*189*	*459*
of which: Long-Term Incentive Plan	*41*	*11*	*52*	*46*	*9*	*55*
of which: Fund Ownership Plan	*49*	*39*	*88*	*120*	*12*	*132*
Variable compensation – performance awards	**2,278**	**675**	**2,953**	**734**	**277**	**1,011**
Variable compensation – financial advisors[2]	**3,378**	**713**	**4,091**	**822**	**2,284**	**3,106**
of which: non-deferred cash	*3,154*	*0*	*3,154*	*0*	*0*	*0*
of which: deferred share-based awards	*69*	*50*	*119*	*79*	*135*	*214*
of which: deferred cash-based awards	*133*	*183*	*316*	*271*	*467*	*738*
of which: compensation commitments with recruited financial advisors	22	480	502	473	1,682	2,155
Variable compensation – other[3]	**109**	**92**	**201**	**176**	**189**	**364**
Total variable compensation	**5,765**	**1,481**	**7,246[4]**	**1,732**	**2,749**	**4,481**

1 Estimate as of 31 December 2020. Actual amounts expensed may vary; e.g., due to forfeiture of awards. 2 Financial advisor compensation consists of cash and deferred compensation awards and is based on compensable revenues and firm tenure using a formulaic approach. It also includes expenses related to compensation commitments with financial advisors entered into at the time of recruitment that are subject to vesting requirements. 3 Consists of replacement payments, forfeiture credits, severance payments, retention plan payments and interest expense related to the Deferred Contingent Capital Plan. 4 Includes USD 666m in expenses related to share-based compensation (performance awards: USD 498m; other variable compensation: USD 49m; financial advisor compensation: USD 119m). A further USD 88m in expenses related to share-based compensation was recognized within other expense categories included in Note 6 (salaries: USD 4m related to role-based allowances; social security: USD 51m; other personnel expenses: USD 34m related to the Equity Plus Plan).

c) Outstanding share-based compensation awards

Share and performance share awards

Movements in outstanding share-based awards granted by UBS AG and its subsidiaries to employees during 2022 and 2021 are provided in the table below.

Movements in outstanding share-based compensation awards

	Number of shares 2022	Weighted average grant date fair value (USD)	Number of shares 2021	Weighted average grant date fair value (USD)
Outstanding, at the beginning of the year	295,921	15	54,557	13
Awarded during the year	358,424	19	278,756	15
Distributed during the year	(37,994)	14	(24,176)	13
Forfeited during the year	(1,923)	15	(13,215)	15
Outstanding, at the end of the year	614,428	17	295,921	15
of which: shares vested for accounting purposes	*174,329*		*116,775*	

The total carrying amount of the liability related to cash-settled share-based awards as of 31 December 2022 and 31 December 2021 was USD 7m and USD 3m, respectively.

d) Valuation

UBS share awards

UBS measures compensation expense based on the average market price of UBS shares on the grant date as quoted on the SIX Swiss Exchange, taking into consideration post-vesting sale and hedge restrictions, non-vesting conditions and market conditions, where applicable. The fair value of the share awards subject to post-vesting sale and hedge restrictions is discounted on the basis of the duration of the post-vesting restriction and is referenced to the cost of purchasing an at-the-money European put option for the term of the transfer restriction. The grant date fair value of notional shares without dividend entitlements also includes a deduction for the present value of future expected dividends to be paid between the grant date and distribution.

Note 28 Interests in subsidiaries and other entities

a) Interests in subsidiaries

UBS AG defines its significant subsidiaries as those entities that, either individually or in aggregate, contribute significantly to UBS AG's financial position or results of operations, based on a number of criteria, including the subsidiaries' equity and contribution to UBS AG's total assets and profit or loss before tax, in accordance with the requirements set by IFRS 12, Swiss regulations and the rules of the US Securities and Exchange Commission (the SEC).

Individually significant subsidiaries

The table below lists UBS AG's individually significant subsidiaries as of 31 December 2022. Unless otherwise stated, the subsidiaries listed below have share capital consisting solely of ordinary shares held entirely by UBS AG and the proportion of ownership interest held is equal to the voting rights held by UBS AG.

The country where the respective registered office is located is also the principal place of business. UBS AG operates through a global branch network and a significant proportion of its business activity is conducted outside Switzerland, including in the UK, the US, Singapore, the Hong Kong SAR and other countries. UBS Europe SE has branches and offices in a number of EU Member States, including Germany, Italy, Luxembourg and Spain. Share capital is provided in the currency of the legally registered office.

Note 28 Interests in subsidiaries and other entities (continued)

Individually significant subsidiaries of UBS AG as of 31 December 2022[1]

Company	Registered office	Primary business	Share capital in million		Equity interest accumulated in %
UBS Americas Holding LLC	Wilmington, Delaware, USA	Group Functions	USD	5,150.0[2]	100.0
UBS Americas Inc.	Wilmington, Delaware, USA	Group Functions	USD	0.0	100.0
UBS Asset Management AG	Zurich, Switzerland	Asset Management	CHF	43.2	100.0
UBS Bank USA	Salt Lake City, Utah, USA	Global Wealth Management	USD	0.0	100.0
UBS Europe SE	Frankfurt, Germany	Global Wealth Management	EUR	446.0	100.0
UBS Financial Services Inc.	Wilmington, Delaware, USA	Global Wealth Management	USD	0.0	100.0
UBS Securities LLC	Wilmington, Delaware, USA	Investment Bank	USD	1,283.1[3]	100.0
UBS Switzerland AG	Zurich, Switzerland	Personal & Corporate Banking	CHF	10.0	100.0

1 Includes direct and indirect subsidiaries of UBS AG. 2 Consists of common share capital of USD 1,000 and non-voting preferred share capital of USD 5,150,000,000. 3 Consists of common share capital of USD 100,000 and non-voting preferred share capital of USD 1,283,000,000.

Other subsidiaries

The table below lists other direct and indirect subsidiaries of UBS AG that are not individually significant but contribute to UBS AG's total assets and aggregated profit before tax thresholds and are thus disclosed in accordance with requirements set by the SEC.

Other subsidiaries of UBS AG as of 31 December 2022

Company	Registered office	Primary business	Share capital in million		Equity interest accumulated in %
UBS Asset Management (Americas) Inc.	Wilmington, Delaware, USA	Asset Management	USD	0.0	100.0
UBS Asset Management (Hong Kong) Limited	Hong Kong SAR, China	Asset Management	HKD	153.8	100.0
UBS Asset Management Life Ltd	London, United Kingdom	Asset Management	GBP	15.0	100.0
UBS Asset Management Switzerland AG	Zurich, Switzerland	Asset Management	CHF	0.5	100.0
UBS Business Solutions US LLC	Wilmington, Delaware, USA	Group Functions	USD	0.0	100.0
UBS Credit Corp.	Wilmington, Delaware, USA	Global Wealth Management	USD	0.0	100.0
UBS (France) S.A.	Paris, France	Global Wealth Management	EUR	197.0	100.0
UBS Fund Management (Luxembourg) S.A.	Luxembourg, Luxembourg	Asset Management	EUR	13.0	100.0
UBS Fund Management (Switzerland) AG	Basel, Switzerland	Asset Management	CHF	1.0	100.0
UBS (Monaco) S.A.	Monte Carlo, Monaco	Global Wealth Management	EUR	49.2	100.0
UBS O'Connor LLC	Wilmington, Delaware, USA	Asset Management	USD	1.0	100.0
UBS Realty Investors LLC	Boston, Massachusetts, USA	Asset Management	USD	9.0	100.0
UBS Securities Australia Ltd	Sydney, Australia	Investment Bank	AUD	0.3[1]	100.0
UBS Securities Hong Kong Limited	Hong Kong SAR, China	Investment Bank	HKD	3,354.2	100.0
UBS Securities Japan Co., Ltd.	Tokyo, Japan	Investment Bank	JPY	34,708.7	100.0
UBS SuMi TRUST Wealth Management Co., Ltd.	Tokyo, Japan	Global Wealth Management	JPY	5,165.0	51.0

1 Includes a nominal amount relating to redeemable preference shares.

Consolidated structured entities

Consolidated structured entities (SEs) include certain investment funds, securitization vehicles and client investment vehicles. UBS AG has no individually significant subsidiaries that are SEs.

In 2022 and 2021, UBS AG did not enter into any contractual obligation that could require UBS AG to provide financial support to consolidated SEs. In addition, UBS AG did not provide support, financial or otherwise, to a consolidated SE when UBS AG was not contractually obligated to do so, nor does UBS AG have any intention to do so in the future. Furthermore, UBS AG did not provide support, financial or otherwise, to a previously unconsolidated SE that resulted in UBS AG controlling the SE during the reporting period.

b) Interests in associates and joint ventures

As of 31 December 2022 and 2021, no associate or joint venture was individually material to UBS AG. Also, there were no significant restrictions on the ability of associates or joint ventures to transfer funds to UBS AG or its subsidiaries as cash dividends or to repay loans or advances made. There were no quoted market prices for any associates or joint ventures of UBS AG.

In 2022, UBS AG reclassified its minority investment (49%) in its Japanese real estate joint venture, Mitsubishi Corp.-UBS Realty Inc., of USD 44m to *Properties and other non-current assets held for sale* and sold the shareholding. The sale resulted in a pre-tax gain of USD 848m in 2022, which was recognized in *Other income*. UBS AG's asset management, wealth management and investment banking businesses operating in Japan were not affected by the sale.

Investments in associates and joint ventures

USD m	2022	2021
Carrying amount at the beginning of the year	1,243	1,557
Additions	3	1
Reclassifications[1]	(44)	(386)
Share of comprehensive income	(41)	150
of which: share of net profit[2]	*32*	*105*
of which: share of other comprehensive income[3]	*(73)*	*45*
Share of changes in retained earnings	0	1
Dividends received	(31)	(39)
Foreign currency translation	(30)	(39)
Carrying amount at the end of the year	1,101	1,243
of which: associates	*1,098*	*1,200*
of which: SIX Group AG, Zurich[4]	*954*	*1,043*
of which: other associates	*144*	*157*
of which: joint ventures	*3*	*43*
of which: Mitsubishi Corp.-UBS Realty Inc., Tokyo[1]		*40*
of which: other joint ventures	*3*	*3*

1 In 2022, UBS AG reclassified its minority investment (49%) in Mitsubishi Corp.-UBS Realty Inc. of USD 44m to Properties and other non-current assets held for sale and sold the investment in the same year. In 2021, UBS AG reclassified its minority investment (48.8%) in Clearstream Fund Centre AG of USD 386m to Properties and other non-current assets held for sale and sold the investment in the same year. 2 For 2022, consists of USD 27m from associates and USD 5m from joint ventures (for 2021, consists of USD 79m from associates and USD 26m from joint ventures). 3 For 2022, consists of negative USD 73m from associates (for 2021, consists of USD 44m from associates and USD 1m from joint ventures). 4 In 2022, UBS AG's equity interest amounted to 17.31%. UBS AG is represented on the Board of Directors.

c) Unconsolidated structured entities

UBS AG is considered to sponsor another entity if, in addition to ongoing involvement with that entity, it had a key role in establishing that entity or in bringing together relevant counterparties for a transaction facilitated by that entity. During 2022, UBS AG sponsored the creation of various SEs and interacted with a number of non-sponsored SEs, including securitization vehicles, client vehicles and certain investment funds, that UBS AG did not consolidate as of 31 December 2022 because it did not control them.

Interests in unconsolidated structured entities

The table below presents UBS AG's interests in and maximum exposure to loss from unconsolidated SEs, as well as the total assets held by the SEs in which UBS had an interest as of year-end, except for investment funds sponsored by third parties, for which the carrying amount of UBS's interest as of year-end has been disclosed.

Sponsored unconsolidated structured entities in which UBS did not have an interest at year-end

During 2022 and 2021, UBS AG did not earn material income from sponsored unconsolidated SEs in which UBS did not have an interest at year-end.

During 2022 and 2021, UBS AG and third parties did not transfer any assets into sponsored securitization vehicles created in the year. UBS AG and third parties transferred assets, alongside deposits and debt issuances (which are assets from the perspective of the vehicle), of USD 1bn and USD 3bn, respectively, into sponsored client vehicles created in 2022 (2021: USD 1bn and USD 2bn, respectively). For sponsored investment funds, transfers arose during the period as investors invested and redeemed positions, thereby changing the overall size of the funds, which, when combined with market movements, resulted in a total closing net asset value of USD 38bn (31 December 2021: USD 46bn).

Note 28 Interests in subsidiaries and other entities (continued)

Interests in unconsolidated structured entities

	31.12.22				
USD m, except where indicated	Securitization vehicles	Client vehicles	Investment funds	Total	Maximum exposure to loss[1]
Financial assets at fair value held for trading	278	81	5,884	6,243	6,243
Derivative financial instruments	3	160	115	278	278
Loans and advances to customers			119	119	119
Financial assets at fair value not held for trading			108	108	108
Financial assets measured at fair value through other comprehensive income[2]					
Other financial assets measured at amortized cost[2]	837	4,977[3]	2	5,817	6,066
Total assets	1,118[4]	5,219	6,228	12,565	
Derivative financial instruments	1	35	763	798	2
Total liabilities	1	35	763	798	
Assets held by the unconsolidated structured entities in which UBS AG had an interest (USD bn)	50[5]	107[6]	95[7]		

	31.12.21				
USD m, except where indicated	Securitization vehicles	Client vehicles	Investment funds	Total	Maximum exposure to loss[1]
Financial assets at fair value held for trading	246	162	6,743	7,151	7,151
Derivative financial instruments	5	45	155	205	205
Loans and advances to customers			125	125	125
Financial assets at fair value not held for trading	35		100	135	135
Financial assets measured at fair value through other comprehensive income	324	4,525		4,849	4,849
Other financial assets measured at amortized cost		0[3]	0	1	250
Total assets	610[4]	4,732	7,124	12,466	
Derivative financial instruments	2	11	281	294	
Total liabilities	2	11	281	294	
Assets held by the unconsolidated structured entities in which UBS AG had an interest (USD bn)	30[5]	81[6]	103[7]		

1 For the purpose of this disclosure, maximum exposure to loss amounts do not consider the risk-reducing effects of collateral or other credit enhancements. 2 Effective 1 April 2022, a portfolio of assets previously classified as Financial assets measured at fair value through other comprehensive income was reclassified to Other financial assets measured at amortized cost. Refer to Note 1b for more information. 3 Includes the carrying amount of loan commitments. The maximum exposure to loss for these instruments is equal to the notional amount. 4 As of 31 December 2022, USD 0.1bn of the USD 1.1bn (31 December 2021: USD 0.1bn of the USD 0.6bn) was held in Group Functions – Non-core and Legacy Portfolio. 5 Represents the principal amount outstanding. 6 Represents the market value of total assets. 7 Represents the net asset value of the investment funds sponsored by UBS AG and the carrying amount of UBS AG's interests in the investment funds not sponsored by UBS AG.

UBS AG retains or purchases interests in unconsolidated SEs in the form of direct investments, financing, guarantees, letters of credit and derivatives, as well as through management contracts. UBS AG's maximum exposure to loss is generally equal to the carrying amount of UBS AG's interest in the given SE, with this subject to change over time with market movements. Guarantees, letters of credit and credit derivatives are an exception, with the given contract's notional amount, adjusted for losses already incurred, representing the maximum loss that UBS AG is exposed to.

The maximum exposure to loss disclosed in the table above does not reflect UBS AG's risk management activities, including effects from financial instruments that may be used to economically hedge risks inherent in the given unconsolidated SE or risk-reducing effects of collateral or other credit enhancements.

In 2022 and 2021, UBS AG did not provide support, financial or otherwise, to any unconsolidated SE when not contractually obligated to do so, nor does UBS AG have any intention to do so in the future.

In 2022 and 2021, income and expenses from interests in unconsolidated SEs primarily resulted from mark-to-market movements recognized in *Other net income from financial instruments measured at fair value through profit or loss*, which were generally hedged with other financial instruments, as well as fee and commission income received from UBS-sponsored funds.

Interests in securitization vehicles

As of 31 December 2022 and 31 December 2021, UBS AG held interests, both retained and acquired, in various securitization vehicles that relate to financing, underwriting, secondary market and derivative trading activities.

The numbers outlined in the table above may differ from the securitization positions presented in the 31 December 2022 Pillar 3 Report, available under "Pillar 3 disclosures" at *ubs.com/investors,* for the following reasons: (i) exclusion of synthetic securitizations transacted with entities that are not SEs and transactions in which UBS AG did not have an interest because it did not absorb any risk; (ii) a different measurement basis in certain cases (e.g., IFRS carrying amount within the previous table compared with net exposure amount at default for Pillar 3 disclosures); and (iii) different classification of vehicles viewed as sponsored by UBS AG versus sponsored by third parties.

› **Refer to the 31 December 2022 Pillar 3 Report, available under "Pillar 3 disclosures" at *ubs.com/investors,* for more information**

Interests in client vehicles
Client vehicles are established predominantly for clients to gain exposure to specific assets or risk exposures. Such vehicles may enter into derivative agreements, with UBS or a third party, to align the cash flows of the entity with the investor's intended investment objective, or to introduce other desired risk exposures.

As of 31 December 2022 and 31 December 2021, UBS AG retained interests in client vehicles sponsored by UBS and third parties that relate to financing, secondary market and derivative trading activities, and to hedge structured product offerings.

Interests in investment funds
Investment funds have a collective investment objective, and are either passively managed, so that any decision-making does not have a substantive effect on variability, or are actively managed and investors or their governing bodies do not have substantive voting or similar rights.

UBS AG holds interests in a number of investment funds, primarily resulting from seed investments or in order to hedge structured product offerings. In addition to the interests disclosed in the table above, UBS AG manages the assets of various pooled investment funds and receives fees based, in whole or in part, on the net asset value of the fund and / or the performance of the fund. The specific fee structure is determined based on various market factors and considers the fund's nature and the jurisdiction of incorporation, as well as fee schedules negotiated with clients. These fee contracts represent an interest in the fund, as they align UBS AG's exposure with investors, providing a variable return based on the performance of the entity. Depending on the structure of the fund, these fees may be collected directly from the fund's assets and / or from the investors. Any amounts due are collected on a regular basis and are generally backed by the fund's assets. Therefore, interest in such funds is not represented by the on-balance sheet fee receivable but rather by the future exposure to variable fees. The total assets of such funds were USD 336bn and USD 425bn as of 31 December 2022 and 31 December 2021, respectively, and have been excluded from the table above. UBS AG did not have any material exposure to loss from these interests as of 31 December 2022 or as of 31 December 2021.

Note 29 Changes in organization and acquisitions and disposals of subsidiaries and businesses

Disposals of subsidiaries and businesses

Sale of UBS Swiss Financial Advisers AG
In the third quarter of 2022, UBS AG completed the sale of its wholly owned subsidiary UBS Swiss Financial Advisers AG (SFA) to Vontobel. UBS AG continues to refer US clients that want to have discretionary portfolio management or investment advisory services booked in Switzerland to Vontobel SFA. Upon completion of the sale, UBS AG recorded a pre-tax gain of USD 86m in 2022, which was recognized in *Other income*.

Prior to completion of the sale, the assets and liabilities that were subject to the transaction were presented as a disposal group held for sale within *Other non-financial assets* and *Other non-financial liabilities* (31 December 2021: USD 446m and USD 475m, respectively).

Sale of wealth management business in Spain
UBS AG completed the sale of its domestic wealth management business in Spain to Singular Bank in the third quarter of 2022. The sale included the transition of employees, client relationships, products and services of the wealth management business of UBS AG in Spain and resulted in a pre-tax gain of USD 133m in 2022, which was recognized in *Other income*.

Prior to completion of the sale, the assets and liabilities that were subject to the transaction were presented as a disposal group held for sale within *Other non-financial assets* and *Other non-financial liabilities* (31 December 2021: USD 647m and USD 823m, respectively).

Sale of US alternative investments administration business
In the fourth quarter of 2022, UBS AG sold its US alternative investments administration business and recorded a pre-tax gain of USD 41m gain in *Other income*.

Sale of investments in associates and joint ventures
UBS AG sold its minority investment (49%) in its Japanese real estate joint venture, Mitsubishi Corp.-UBS Realty Inc., in 2022.

› **Refer to Note 28b for more information**

Acquisitions of subsidiaries and businesses

Wealthfront
In August 2022, UBS AG and Wealthfront mutually agreed to terminate their merger agreement, under which Wealthfront was to be acquired by UBS Americas Inc. In the third quarter of 2022, UBS AG purchased a USD 69.7m note convertible into Wealthfront shares.

Note 30 Related parties

UBS AG defines related parties as associates (entities that are significantly influenced by UBS), joint ventures (entities in which UBS shares control with another party), post-employment benefit plans for UBS AG employees, key management personnel, close family members of key management personnel and entities that are, directly or indirectly, controlled or jointly controlled by key management personnel or their close family members. Key management personnel is defined as members of the Board of Directors (the BoD) and Executive Board (the EB).

a) Remuneration of key management personnel

The Vice Chairman of the BoD has a specific management employment contract and receives pension benefits upon retirement. Total remuneration of the Chairman and the Vice Chairman of the BoD and all EB members is included in the table below.

Remuneration of key management personnel

USD m, except where indicated	31.12.22	31.12.21	31.12.20
Base salaries and other cash payments[1]	26	30	31
Incentive awards – cash[2]	16	17	17
Annual incentive award under DCCP	23	26	26
Employer's contributions to retirement benefit plans	2	2	2
Benefits in kind, fringe benefits (at market value)	1	1	1
Share-based compensation[3]	42	45	45
Total	110	122	122
Total (CHF m)[4]	106	112	115

1 May include role-based allowances in line with market practice and regulatory requirements. 2 The cash portion may also include blocked shares in line with regulatory requirements. 3 Compensation expense is based on the share price on grant date taking into account performance conditions. Refer to Note 27 for more information. For EB members, share-based compensation for 2022, 2021 and 2020 was entirely composed of LTIP awards. For the Chairman of the BoD, the share-based compensation for 2022, 2021 and 2020 was entirely composed of UBS shares. 4 Swiss franc amounts disclosed represent the respective US dollar amounts translated at the applicable performance award currency exchange rates (2022: USD / CHF 0.96; 2021: USD / CHF 0.92; 2020: USD / CHF 0.94).

The independent members of the BoD, including the Chairman, do not have employment or service contracts with UBS AG, and thus are not entitled to benefits upon termination of their service on the BoD. Payments to these individuals for their services as independent members of the BoD amounted to USD 11.1m (CHF 10.7m) in 2022, USD 7.5m (CHF 6.9m) in 2021 and USD 7.0m (CHF 6.6m) in 2020.

b) Equity holdings of key management personnel

Equity holdings of key management personnel[1]

	31.12.22	31.12.21
Number of UBS Group AG shares held by members of the BoD, EB and parties closely linked to them[2]	2,443,580	4,175,515

1 No options were held in 2022 and 2021 by non-independent members of the BoD and any EB member or any of its related parties. 2 Excludes shares granted under variable compensation plans with forfeiture provisions.

Of the share totals above, no shares were held by close family members of key management personnel on 31 December 2022 and 31 December 2021. No shares were held by entities that are directly or indirectly controlled or jointly controlled by key management personnel or their close family members on 31 December 2022 and 31 December 2021. As of 31 December 2022, no member of the BoD or EB was the beneficial owner of more than 1% of the shares in UBS Group AG.

c) Loans, advances and mortgages to key management personnel

The non-independent members of the BoD and EB members are granted loans, fixed advances and mortgages in the ordinary course of business on substantially the same terms and conditions that are available to other employees, including interest rates and collateral, and neither involve more than the normal risk of collectability nor contain any other unfavorable features for the firm. Independent BoD members are granted loans and mortgages in the ordinary course of business at general market conditions.

Movements in the loan, advances and mortgage balances are as follows.

Loans, advances and mortgages to key management personnel[1]

USD m, except where indicated	2022	2021
Balance at the beginning of the year	28	31
Additions	8	11
Reductions	(7)	(15)
Balance at the end of the year[2]	28	28
Balance at the end of the year (CHF m)[2, 3]	26	25

1 All loans are secured loans. 2 There were no unused uncommitted credit facilities as of 31 December 2022 and 31 December 2021. 3 Swiss franc amounts disclosed represent the respective US dollar amounts translated at the relevant year-end closing exchange rate.

d) Other related-party transactions with entities controlled by key management personnel

In 2022 and 2021, UBS AG did not enter into transactions with entities that are directly or indirectly controlled or jointly controlled by UBS AG's key management personnel or their close family members and as of 31 December 2022, 31 December 2021 and 31 December 2020, there were no outstanding balances related to such transactions. Furthermore, in 2022 and 2021, entities controlled by key management personnel did not sell any goods or provide any services to UBS AG, and therefore did not receive any fees from UBS AG. UBS AG also did not provide services to such entities in 2022 and 2021, and therefore also received no fees.

e) Transactions with associates and joint ventures

Loans to and outstanding receivables from associates and joint ventures

USD m	2022	2021
Carrying amount at the beginning of the year	251	630
Additions	402	133
Reductions	(438)	(497)
Foreign currency translation	1	(14)
Carrying amount at the end of the year	217	251
of which: unsecured loans and receivables	*209*	*243*

Other transactions with associates and joint ventures

	As of or for the year ended	
USD m	31.12.22	31.12.21
Payments to associates and joint ventures for goods and services received	138	157
Fees received for services provided to associates and joint ventures	4	104
Liabilities to associates and joint ventures	90	127
Commitments and contingent liabilities to associates and joint ventures	7	7

› **Refer to Note 28 for an overview of investments in associates and joint ventures**

f) Receivables and payables from / to UBS Group AG and other subsidiaries of UBS Group AG

USD m	31.12.22	31.12.21
Receivables		
Loans and advances to customers	2,807	1,049
Financial assets at fair value held for trading	146	187
Other financial assets measured at amortized cost	147	45
Payables		
Customer deposits	2,119	2,828
Funding from UBS Group AG	56,147	57,295
Other financial liabilities measured at amortized cost	1,985	1,887
Other financial liabilities designated at fair value[1]	1,796	2,340

1 Represents funding recognized from UBS Group AG that is designated at fair value. Refer to Note 18b for more information.

Note 31 Invested assets and net new money

The following disclosures provide a breakdown of UBS AG's invested assets and a presentation of their development, including net new money, as required by the Swiss Financial Market Supervisory Authority (FINMA).

Invested assets

Invested assets consist of all client assets managed by or deposited with UBS AG for investment purposes. Invested assets include 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. All assets held for purely transactional purposes and custody-only assets, including corporate client assets held for cash management and transactional purposes, are excluded from invested assets, as UBS AG only administers the assets and does not offer advice on how they should be invested. Also excluded are non-bankable assets (e.g., art collections) and deposits from third-party banks for funding or trading purposes.

Discretionary assets are defined as client assets that UBS AG decides how to invest. Other invested assets are those where the client ultimately decides how the assets are invested. When a single product is created in one business division and sold in another, it is counted in both the business division managing the investment and the one distributing it. This results in double counting within UBS AG's total invested assets and net new money, as both business divisions are independently providing a service to their respective clients, and both add value and generate revenue.

Net new money

Net new money in a reporting period is the amount of invested assets entrusted to UBS AG by new and existing clients, less those withdrawn by existing clients and clients who terminated relationships with UBS AG.

Net new money is calculated using the direct method, under which inflows and outflows to / from invested assets are determined at the client level, based on transactions. Interest and dividend income from invested assets are not counted as net new money inflows. Market and currency movements, as well as fees, commissions and interest on loans charged, are excluded from net new money, as are effects resulting from any acquisition or divestment of a UBS subsidiary or business. Reclassifications between invested assets and custody-only assets as a result of a change in service level delivered are generally treated as net new money flows. However, where the change in service level directly results from an externally imposed regulation or a strategic decision by UBS AG to exit a market or specific service offering, the one-time net effect is reported as *Other effects*.

The Investment Bank does not track invested assets and net new money. However, when a client is transferred from the Investment Bank to another business division, this may produce net new money even though the client's assets were already with UBS AG.

Invested assets and net new money

	As of or for the year ended	
USD bn	31.12.22	31.12.21
Fund assets managed by UBS	390	419
Discretionary assets	1,440	1,705
Other invested assets	2,127	2,472
Total invested assets[1]	3,957	4,596
of which: double counts	*340*	*356*
Net new money[1]	68	159

1 Includes double counts.

Development of invested assets

USD bn	2022	2021
Total invested assets at the beginning of the year[1]	4,596	4,187
Net new money	68	159
Market movements[2]	(595)	339
Foreign currency translation	(72)	(65)
Other effects	(40)	(24)
of which: acquisitions / (divestments)	*(19)*	*(5)*
Total invested assets at the end of the year[1]	3,957	4,596

1 Includes double counts. 2 Includes interest and dividend income.

Note 32 Currency translation rates

The following table shows the rates of the main currencies used to translate the financial information of UBS AG's operations with a functional currency other than the US dollar into US dollars.

	Closing exchange rate		Average rate[1]		
	As of		For the year ended		
	31.12.22	31.12.21	31.12.22	31.12.21	31.12.20
1 CHF	1.08	1.10	1.05	1.09	1.07
1 EUR	1.07	1.14	1.05	1.18	1.15
1 GBP	1.21	1.35	1.23	1.37	1.29
100 JPY	0.76	0.87	0.76	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 year represent an average of twelve month-end rates, weighted according to the income and expense volumes of all operations of UBS AG with the same functional currency for each month. Weighted average rates for individual business divisions may deviate from the weighted average rates for UBS AG.

Note 33 Main differences between IFRS and Swiss GAAP

The consolidated financial statements of UBS AG are prepared in accordance with International Financial Reporting Standards (IFRS). The Swiss Financial Market Supervisory Authority (FINMA) requires financial groups presenting financial statements under IFRS to provide a narrative explanation of the main differences between IFRS and Swiss generally accepted accounting principles (GAAP) (the FINMA Accounting Ordinance, FINMA Circular 2020/1 "Accounting – banks" and the Banking Ordinance (the BO)). Included in this Note are the significant differences in the recognition and measurement between IFRS and the provisions of the BO and the guidelines of FINMA governing true and fair view financial statement reporting pursuant to Art. 25 to Art. 42 of the BO.

1. Consolidation

Under IFRS, all entities that are controlled by the holding entity are consolidated. Under Swiss GAAP controlled entities deemed immaterial to a group or those held only temporarily are exempt from consolidation, but instead are recorded as participations accounted for under the equity method of accounting or as financial investments measured at the lower of cost or market value.

2. Classification and measurement of financial assets

Under IFRS, debt instruments are measured at amortized cost, fair value through other comprehensive income (FVOCI) or fair value through profit or loss (FVTPL), depending on the nature of the business model within which the particular asset is held and the characteristics of the contractual cash flows of the asset. Equity instruments are accounted for at FVTPL by UBS. Under Swiss GAAP, trading assets and derivatives are measured at FVTPL, in line with IFRS. However, non-trading debt instruments are generally measured at amortized cost, even when the assets are managed on a fair value basis. In addition, the measurement of financial assets in the form of securities depends on the nature of the asset: debt instruments not held to maturity, i.e., instruments available for sale, and equity instruments with no permanent holding intent, are classified as *Financial investments* and measured at the lower of (amortized) cost or market value. Market value adjustments up to the original cost amount and realized gains or losses upon disposal of the investment are recorded in the income statement as *Other income from ordinary activities.* Equity instruments with a permanent holding intent are classified as participations in *Non-consolidated investments in subsidiaries and other participations* and are measured at cost less impairment. Impairment losses are recorded in the income statement as *Impairment of investments in non-consolidated subsidiaries and other participations.* Reversals of impairments up to the original cost amount and realized gains or losses upon disposal of the investment are recorded as *Extraordinary income / Extraordinary expenses*.

3. Fair value option applied to financial liabilities

Under IFRS, UBS applies the fair value option to certain financial liabilities not held for trading. Instruments for which the fair value option is applied are accounted for at FVTPL. The amount of change in the fair value attributable to changes in UBS's own credit is presented in *Other comprehensive income* directly within *Retained earnings*. The fair value option is applied primarily to issued structured debt instruments, certain non-structured debt instruments, certain payables under repurchase agreements and cash collateral on securities lending agreements, amounts due under unit-linked investment contracts, and brokerage payables.

Under Swiss GAAP, the fair value option can only be applied to structured debt instruments consisting of a debt host contract and one or more embedded derivatives that do not relate to own equity. Furthermore, unrealized changes in fair value attributable to changes in UBS's own credit are not recognized, whereas realized own credit is recognized in *Net trading income*.

4. Allowances and provisions for credit losses

Swiss GAAP permit use of IFRS for accounting for allowances and provisions for credit losses based on an expected credit loss (ECL) model. UBS has chosen to apply the IFRS 9 ECL approach to those exposures that are in the ECL scope of both frameworks, IFRS and Swiss GAAP.

For the small residual exposures within the scope of Swiss GAAP ECL requirements, which are not subject to ECL under IFRS due to classification differences, UBS applies alternative approaches.

- For exposures for which Pillar 1 internal ratings-based models are applied to measure credit risk, ECL is determined by the regulatory expected loss (EL), with an add-on for scaling up to the residual maturity of exposures maturing beyond the next 12 months, as appropriate. For detailed information on regulatory EL, refer to the "Risk management and control" section of this report.
- For exposures for which the Pillar 1 standardized approach is used to measure credit risk, ECL is determined using a portfolio approach that derives a conservative probability of default (PD) and a conservative loss given default (LGD) for the entire portfolio.

5. Hedge accounting

Under IFRS, when cash flow hedge accounting is applied, the fair value gain or loss on the effective portion of a derivative designated as a cash flow hedge is recognized initially in equity and reclassified to the income statement when certain conditions are met. When fair value hedge accounting is applied, the fair value change of the hedged item attributable to the hedged risk is reflected in the measurement of the hedged item and is recognized in the income statement along with the change in the fair value of the hedging derivative. Under Swiss GAAP, the effective portion of the fair value change of a derivative instrument designated as a cash flow or as a fair value hedge is deferred on the balance sheet as *Other assets* or *Other liabilities*. The carrying amount of the hedged item designated in fair value hedges is not adjusted for fair value changes attributable to the hedged risk.

6. Goodwill and intangible assets

Under IFRS, goodwill acquired in a business combination is not amortized but tested annually for impairment. Intangible assets with an indefinite useful life are also not amortized but tested annually for impairment. Under Swiss GAAP, goodwill and intangible assets with indefinite useful lives are amortized over a period not exceeding five years, unless a longer useful life, which may not exceed 10 years, can be justified. In addition, these assets are tested annually for impairment.

7. Post-employment benefit plans

Swiss GAAP permit the use of IFRS or Swiss accounting standards for post-employment benefit plans, with the election made on a plan-by-plan basis.

UBS has elected to apply IFRS (IAS 19) for the non-Swiss defined benefit plans in the UBS AG standalone financial statements and Swiss GAAP (FER 16) for the Swiss pension plan in the UBS AG and the UBS Switzerland AG standalone financial statements. The requirements of Swiss GAAP are better aligned with the specific nature of Swiss pension plans, which are hybrid in that they combine elements of defined contribution and defined benefit plans, but are treated as defined benefit plans under IFRS. Key differences between Swiss GAAP and IFRS include the treatment of dynamic elements, such as future salary increases and future interest credits on retirement savings, which are not considered under the static method used in accordance with Swiss GAAP. Also, the discount rate used to determine the defined benefit obligation in accordance with IFRS is based on the yield of high-quality corporate bonds of the market in the respective pension plan country. The discount rate used in accordance with Swiss GAAP (i.e., the technical interest rate) is determined by the Pension Foundation Board based on the expected returns of the Board's investment strategy.

For defined benefit plans, IFRS require the full defined benefit obligation net of the plan assets to be recorded on the balance sheet subject to the asset ceiling rules, with changes resulting from remeasurements recognized directly in equity. However, for non-Swiss defined benefit plans for which IFRS accounting is elected, changes due to remeasurements are recognized in the income statement of UBS AG standalone under Swiss GAAP.

Swiss GAAP require employer contributions to the pension fund to be recognized as personnel expenses in the income statement. Swiss GAAP also require an assessment of whether, based on the pension fund's financial statements prepared in accordance with Swiss accounting standards (FER 26), an economic benefit to, or obligation of, the employer arises from the pension fund that is recognized in the balance sheet when conditions are met. Conditions for recording a pension asset or liability would be met if, for example, an employer contribution reserve is available or the employer is required to contribute to the reduction of a pension deficit (on an FER 26 basis).

8. Leasing

Under IFRS, a single lease accounting model applies that requires UBS to record a right-of-use (RoU) asset and a corresponding lease liability on the balance sheet when UBS is a lessee in a lease arrangement. The RoU asset and the lease liability are recognized when UBS acquires control of the physical use of the asset. The lease liability is measured based on the present value of the lease payments over the lease term, discounted using UBS's unsecured borrowing rate. The RoU asset is recorded at an amount equal to the lease liability but is adjusted for rent prepayments, initial direct costs, any costs to refurbish the leased asset and / or lease incentives received. The RoU asset is depreciated over the shorter of the lease term or the useful life of the underlying asset.

Under Swiss GAAP, leases that transfer substantially all the risks and rewards, but not necessarily legal title in the underlying assets, are classified as finance leases. All other leases are classified as operating leases. Whereas finance leases are recognized on the balance sheet and measured in line with IFRS, operating leases are not recognized on the balance sheet, with payments recognized as *General and administrative expenses* on a straight-line basis over the lease term, which commences with control of the physical use of the asset. Lease incentives are treated as a reduction of rental expense and recognized on a consistent basis over the lease term.

9. Netting of derivative assets and liabilities

Under IFRS, derivative assets, derivative liabilities and related cash collateral not settled to market are reported on a gross basis unless the restrictive IFRS netting requirements are met: (i) existence of master netting agreements and related collateral arrangements that are unconditional and legally enforceable, in both the normal course of business and the event of default, bankruptcy or insolvency of UBS and its counterparties; and (ii) UBS's intention to either settle on a net basis or to realize the asset and settle the liability simultaneously. Under Swiss GAAP, derivative assets, derivative liabilities and related cash collateral not settled to market are generally reported on a net basis, provided the master netting and the related collateral agreements are legally enforceable in the event of default, bankruptcy or insolvency of UBS's counterparties.

10. Negative interest

Under IFRS, negative interest income arising on a financial asset does not meet the definition of interest income and, therefore, negative interest on financial assets and negative interest on financial liabilities are presented within interest expense and interest income, respectively. Under Swiss GAAP, negative interest on financial assets is presented within interest income and negative interest on financial liabilities is presented within interest expense.

11. Extraordinary income and expense

Certain non-recurring and non-operating income and expense items, such as realized gains or losses from the disposal of participations, fixed and intangible assets, and reversals of impairments of participations and fixed assets, are classified as extraordinary items under Swiss GAAP. This distinction is not available under IFRS. ▲

Joint liability of UBS Switzerland AG

In 2015, the Personal & Corporate Banking and Wealth Management businesses booked in Switzerland were transferred from UBS AG to UBS Switzerland AG through an asset transfer in accordance with the Swiss Merger Act. Under the terms of the asset transfer agreement, UBS Switzerland AG assumed joint liability for contractual obligations of UBS AG existing on the asset transfer date, including the full and unconditional guarantee of certain registered debt securities issued by UBS AG. To reflect this joint liability, UBS Switzerland AG is presented in a separate column as a subsidiary co-guarantor.

The joint liability of UBS Switzerland AG for contractual obligations of UBS AG decreased in 2022 by USD 1.4bn to USD 4.3bn as of 31 December 2022. The decrease substantially relates to a combination of contractual maturities, early extinguishments, fair value movements and foreign currency effects.

Supplemental guarantor consolidated income statement

USD m For the year ended 31 December 2022	UBS AG (standalone)[1]	UBS Switzerland AG (standalone)[1]	Other subsidiaries[2]	Elimination entries	UBS AG (consolidated)
Interest income from financial instruments measured at amortized cost and fair value through other comprehensive income	4,824	3,894	4,661	(1,575)	11,803
Interest expense from financial instruments measured at amortized cost	(5,449)	(736)	(2,604)	2,093	(6,696)
Net interest income from financial instruments measured at fair value through profit or loss and other	881	546	431	(449)	1,410
Net interest income	257	3,704	2,488	68	6,517
Other net income from financial instruments measured at fair value through profit or loss	5,541	900	940	112	7,493
Fee and commission income	2,875	4,865	13,766	(660)	20,846
Fee and commission expense	(684)	(464)	(1,327)	652	(1,823)
Net fee and commission income	2,191	4,401	12,439	(8)	19,023
Other income	6,732	203	3,329	(8,382)	1,882
Total revenues	14,721	9,208	19,197	(8,210)	34,915
Credit loss expense / (release)	(17)	50	(3)	(1)	29
Personnel expenses	3,251	1,995	9,835	0	15,080
General and administrative expenses	3,374	3,258	5,029	(2,660)	9,001
Depreciation, amortization and impairment of non-financial assets	871	340	744	(109)	1,845
Operating expenses	7,496	5,592	15,607	(2,769)	25,927
Operating profit / (loss) before tax	7,242	3,566	3,592	(5,440)	8,960
Tax expense / (benefit)	(28)	638	1,083	151	1,844
Net profit / (loss)	7,270	2,928	2,509	(5,592)	7,116
Net profit / (loss) attributable to non-controlling interests	0	0	32	0	32
Net profit / (loss) attributable to shareholders	7,270	2,928	2,477	(5,592)	7,084

1 Amounts presented for UBS AG standalone and UBS Switzerland AG standalone represent IFRS standalone information. Refer to the UBS AG standalone and UBS Switzerland AG standalone financial statements under "Complementary financial information" at ubs.com/investors for information prepared in accordance with Swiss GAAP. 2 The "Other subsidiaries" column includes consolidated information for the UBS Americas Holding LLC, UBS Europe SE and UBS Asset Management AG significant sub-groups, as well as standalone information for other subsidiaries.

Note 34 Supplemental guarantor information required under SEC regulations (continued)

Supplemental guarantor consolidated statement of comprehensive income

USD m For the year ended 31 December 2022	UBS AG (standalone)[1]	UBS Switzerland AG (standalone)[1]	Other subsidiaries[2]	Elimination entries	UBS AG (consolidated)
Comprehensive income attributable to shareholders					
Net profit / (loss)	7,270	2,928	2,477	(5,592)	7,084
Other comprehensive income					
Other comprehensive income that may be reclassified to the income statement					
Foreign currency translation, net of tax	(114)	(197)	(506)	298	(519)
Financial assets measured at fair value through other comprehensive income, net of tax[3]	(3)	0	9	0	6
Cash flow hedges, net of tax	(2,791)	(1,359)	(631)	(12)	(4,793)
Cost of hedging, net of tax	45				45
Total other comprehensive income that may be reclassified to the income statement, net of tax	(2,863)	(1,555)	(1,128)	286	(5,260)
Other comprehensive income that will not be reclassified to the income statement					
Defined benefit plans, net of tax	170	(112)	23	0	81
Own credit on financial liabilities designated at fair value, net of tax	796				796
Total other comprehensive income that will not be reclassified to the income statement, net of tax	966	(112)	23	0	877
Total other comprehensive income	(1,897)	(1,667)	(1,104)	286	(4,383)
Total comprehensive income attributable to shareholders	5,373	1,261	1,373	(5,306)	2,701
Total comprehensive income attributable to non-controlling interests			18		18
Total comprehensive income	5,373	1,261	1,391	(5,306)	2,719

1 Amounts presented for UBS AG standalone and UBS Switzerland AG standalone represent IFRS standalone information. Refer to the UBS AG standalone and UBS Switzerland AG standalone financial statements under "Complementary financial information" at ubs.com/investors for information prepared in accordance with Swiss GAAP. 2 The "Other subsidiaries" column includes consolidated information for the UBS Americas Holding LLC, UBS Europe SE and UBS Asset Management AG significant sub-groups, as well as standalone information for other subsidiaries. 3 Effective 1 April 2022, a portfolio of assets previously classified as Financial assets measured at fair value through other comprehensive income was reclassified to Other financial assets measured at amortized cost. Refer to Note 1b for more information.

Supplemental guarantor consolidated balance sheet

USD m As of 31 December 2022	UBS AG (standalone)[1]	UBS Switzerland AG (standalone)[1]	Other subsidiaries[2]	Elimination entries	UBS AG (consolidated)
Assets					
Cash and balances at central banks	48,689	84,465	36,291	0	169,445
Loans and advances to banks	39,691	6,357	19,063	(50,441)	14,671
Receivables from securities financing transactions measured at amortized cost	51,493	903	34,110	(18,691)	67,814
Cash collateral receivables on derivative instruments	35,594	1,221	10,074	(11,856)	35,033
Loans and advances to customers	90,168	229,861	101,231	(31,233)	390,027
Other financial assets measured at amortized cost	24,005	9,532	21,880	(2,029)	53,389
Total financial assets measured at amortized cost	289,641	332,339	222,649	(114,250)	730,379
Financial assets at fair value held for trading	95,810	173	13,899	(1,848)	108,034
of which: assets pledged as collateral that may be sold or repledged by counterparties	*41,056*	*0*	*5,578*	*(9,892)*	*36,742*
Derivative financial instruments	149,447	5,925	35,106	(40,368)	150,109
Brokerage receivables	9,763	0	7,814	0	17,576
Financial assets at fair value not held for trading	45,302	4,354	26,843	(17,091)	59,408
Total financial assets measured at fair value through profit or loss	300,321	10,453	83,661	(59,308)	335,127
Financial assets measured at fair value through other comprehensive income	1,953	0	286	0	2,239
Investments in subsidiaries and associates	54,323	33	0	(53,255)	1,101
Property, equipment and software	5,852	1,654	4,077	(267)	11,316
Goodwill and intangible assets	213	0	6,050	5	6,267
Deferred tax assets	1,624	276	7,470	(16)	9,354
Other non-financial assets	6,930	1,768	951	4	9,652
Total assets	660,856	346,522	325,144	(227,087)	1,105,436
Liabilities					
Amounts due to banks	41,395	37,123	51,555	(118,477)	11,596
Payables from securities financing transactions measured at amortized cost	9,425	247	13,303	(18,774)	4,202
Cash collateral payables on derivative instruments	35,528	1,518	11,191	(11,800)	36,436
Customer deposits	98,628	273,316	132,619	22,608	527,171
Funding from UBS Group AG	56,147	0		0	56,147
Debt issued measured at amortized cost	50,706	8,965	1	(173)	59,499
Other financial liabilities measured at amortized cost	4,903	2,221	5,554	(2,287)	10,391
Total financial liabilities measured at amortized cost	296,733	323,391	214,222	(128,903)	705,442
Financial liabilities at fair value held for trading	25,059	183	5,843	(1,570)	29,515
Derivative financial instruments	153,778	6,177	35,314	(40,363)	154,906
Brokerage payables designated at fair value	32,346	0	12,746	(7)	45,085
Debt issued designated at fair value	71,444	0	508	(110)	71,842
Other financial liabilities designated at fair value	17,888	0	17,074	(2,928)	32,033
Total financial liabilities measured at fair value through profit or loss	300,514	6,360	71,484	(44,977)	333,382
Provisions	1,904	239	1,041	(2)	3,183
Other non-financial liabilities	1,630	1,019	3,742	98	6,489
Total liabilities	600,782	331,009	290,490	(173,785)	1,048,496
Equity attributable to shareholders	60,075	15,513	34,313	(53,303)	56,598
Equity attributable to non-controlling interests			342	0	342
Total equity	60,075	15,513	34,655	(53,303)	56,940
Total liabilities and equity	660,856	346,522	325,144	(227,087)	1,105,436

1 Amounts presented for UBS AG standalone and UBS Switzerland AG standalone represent IFRS standalone information. Refer to the UBS AG standalone and UBS Switzerland AG standalone financial statements, available under "Complementary financial information" at ubs.com/investors, for information prepared in accordance with Swiss GAAP. 2 The "Other subsidiaries" column includes consolidated information for the UBS Americas Holding LLC, UBS Europe SE and UBS Asset Management AG significant sub-groups, as well as standalone information for other subsidiaries.

Note 34 Supplemental guarantor information required under SEC regulations (continued)

Supplemental guarantor consolidated statement of cash flows

USD m For the year ended 31 December 2022	UBS AG[1]	UBS Switzerland AG[1]	Other subsidiaries[1]	UBS AG (consolidated)
Net cash flow from / (used in) operating activities	17,286	(1,165)	(5,491)	10,630
Cash flow from / (used in) investing activities				
Purchase of subsidiaries, associates and intangible assets	0	(3)	0	(3)
Disposal of subsidiaries, associates and intangible assets[2]	157	453	1,120	1,729
Purchase of property, equipment and software	(562)	(292)	(624)	(1,478)
Disposal of property, equipment and software	161	0	0	161
Purchase of financial assets measured at fair value through other comprehensive income	(4,131)	0	(652)	(4,783)
Disposal and redemption of financial assets measured at fair value through other comprehensive income	3,188	0	896	4,084
Net (purchase) / redemption of debt securities measured at amortized cost	(8,159)	(1,820)	(2,013)	(11,993)
Net cash flow from / (used in) investing activities	(9,346)	(1,663)	(1,274)	(12,283)
Cash flow from / (used in) financing activities				
Net short-term debt issued / (repaid)	(12,215)	(3)	(31)	(12,249)
Distributions paid on UBS AG shares	(4,200)	0	0	(4,200)
Issuance of debt designated at fair value and long-term debt measured at amortized cost[3]	78,866	550	41	79,457
Repayment of debt designated at fair value and long-term debt measured at amortized cost[3]	(66,526)	(860)	(284)	(67,670)
Net cash flows from other financing activities	(258)	0	(337)	(595)
Net activity related to group internal capital transactions and dividends	5,217	(2,088)	(3,128)	0
Net cash flow from / (used in) financing activities	884	(2,401)	(3,740)	(5,257)
Total cash flow				
Cash and cash equivalents at the beginning of the year	57,895	92,799	57,061	207,755
Net cash flow from / (used in) operating, investing and financing activities	8,824	(5,229)	(10,505)	(6,911)
Effects of exchange rate differences on cash and cash equivalents	(3,111)	(1,338)	(1,196)	(5,645)
Cash and cash equivalents at the end of the year[4]	63,608	86,232	45,359	195,200
of which: cash and balances at central banks	*48,607*	*84,465*	*36,291*	*169,363*
of which: loans and advances to banks	*2,957*	*1,550*	*8,821*	*13,329*
of which: money market paper[5]	*12,044*	*216*	*248*	*12,508*

1 Cash flows generally represent a third-party view from a UBS AG consolidated perspective, except for Net activity related to group internal capital transactions and dividends. 2 Includes cash proceeds from the sales of: UBS AG's shareholding in Mitsubishi Corp.-UBS Realty Inc.; UBS AG's wholly owned subsidiary UBS Swiss Financial Advisers AG (including a loan portfolio in UBS Switzerland AG); UBS AG's US alternative investments administration business; and UBS AG's domestic wealth management business in Spain. Also includes dividends received from associates. 3 Includes funding from UBS Group AG to UBS AG. 4 Balances with an original maturity of three months or less. USD 4,253m of cash and cash equivalents were restricted. 5 Money market paper is included in the balance sheet under Financial assets at fair value held for trading, Financial assets measured at fair value through other comprehensive income, Financial assets at fair value not held for trading and Other financial assets measured at amortized cost.

Note 34 Supplemental guarantor information required under SEC regulations (continued)

Supplemental guarantor consolidated income statement

USD m For the year ended 31 December 2021	UBS AG (standalone)[1]	UBS Switzerland AG (standalone)[1]	Other subsidiaries[2]	Elimination entries	UBS AG (consolidated)
Interest income from financial instruments measured at amortized cost and fair value through other comprehensive income	3,130	3,652	2,456	(703)	8,534
Interest expense from financial instruments measured at amortized cost	(2,847)	(520)	(1,024)	1,025	(3,366)
Net interest income from financial instruments measured at fair value through profit or loss and other	1,229	254	228	(274)	1,437
Net interest income	1,512	3,386	1,660	48	6,605
Other net income from financial instruments measured at fair value through profit or loss	3,751	807	1,369	(83)	5,844
Fee and commission income	3,837	5,204	16,151	(770)	24,422
Fee and commission expense	(810)	(481)	(1,450)	755	(1,985)
Net fee and commission income	3,027	4,723	14,702	(14)	22,438
Other income	7,555	221	1,560	(8,396)	941
Total revenues	15,845	9,137	19,291	(8,445)	35,828
Credit loss expense / (release)	(65)	(98)	(10)	24	(148)
Personnel expenses	3,401	2,098	10,161	1	15,661
General and administrative expenses	4,255	3,442	4,474	(2,696)	9,476
Depreciation, amortization and impairment of non-financial assets	949	285	755	(114)	1,875
Operating expenses	8,605	5,825	15,390	(2,809)	27,012
Operating profit / (loss) before tax	7,305	3,409	3,910	(5,660)	8,964
Tax expense / (benefit)	203	622	1,090	(11)	1,903
Net profit / (loss)	7,102	2,788	2,820	(5,649)	7,061
Net profit / (loss) attributable to non-controlling interests	0	0	29	0	29
Net profit / (loss) attributable to shareholders	7,102	2,788	2,792	(5,649)	7,032

1 Amounts presented for UBS AG standalone and UBS Switzerland AG standalone represent IFRS standalone information. Refer to the UBS AG standalone and UBS Switzerland AG standalone financial statements under "Complementary financial information" at ubs.com/investors for information prepared in accordance with Swiss GAAP. 2 The "Other subsidiaries" column includes consolidated information for the UBS Americas Holding LLC, UBS Europe SE and UBS Asset Management AG significant sub-groups, as well as standalone information for other subsidiaries.

Supplemental guarantor consolidated statement of comprehensive income

USD m For the year ended 31 December 2021	UBS AG (standalone)[1]	UBS Switzerland AG (standalone)[1]	Other subsidiaries[2]	Elimination entries	UBS AG (consolidated)
Comprehensive income attributable to shareholders					
Net profit / (loss)	7,102	2,788	2,792	(5,649)	7,032
Other comprehensive income					
Other comprehensive income that may be reclassified to the income statement					
Foreign currency translation, net of tax	(1)	(419)	(607)	517	(510)
Financial assets measured at fair value through other comprehensive income, net of tax	0		(157)	0	(157)
Cash flow hedges, net of tax	(1,129)	(279)	(250)	(17)	(1,675)
Cost of hedging, net of tax	(26)				(26)
Total other comprehensive income that may be reclassified to the income statement, net of tax	(1,155)	(699)	(1,014)	500	(2,368)
Other comprehensive income that will not be reclassified to the income statement					
Defined benefit plans, net of tax	170	(135)	67	0	102
Own credit on financial liabilities designated at fair value, net of tax	46				46
Total other comprehensive income that will not be reclassified to the income statement, net of tax	217	(135)	67	0	148
Total other comprehensive income	(939)	(834)	(947)	500	(2,220)
Total comprehensive income attributable to shareholders	6,163	1,954	1,845	(5,149)	4,813
Total comprehensive income attributable to non-controlling interests			13		13
Total comprehensive income	6,163	1,954	1,858	(5,149)	4,826

1 Amounts presented for UBS AG standalone and UBS Switzerland AG standalone represent IFRS standalone information. Refer to the UBS AG standalone and UBS Switzerland AG standalone financial statements under "Complementary financial information" at ubs.com/investors for information prepared in accordance with Swiss GAAP. 2 The "Other subsidiaries" column includes consolidated information for the UBS Americas Holding LLC, UBS Europe SE and UBS Asset Management AG significant sub-groups, as well as standalone information for other subsidiaries.

Supplemental guarantor consolidated balance sheet

USD m As of 31 December 2021	UBS AG (standalone)[1]	UBS Switzerland AG (standalone)[1]	Other subsidiaries[2]	Elimination entries	UBS AG (consolidated)
Assets					
Cash and balances at central banks	53,839	91,031	47,946		192,817
Loans and advances to banks	39,681	7,066	19,858	(51,245)	15,360
Receivables from securities financing transactions measured at amortized cost	50,566	5,438	40,585	(21,577)	75,012
Cash collateral receivables on derivative instruments	29,939	779	10,314	(10,518)	30,514
Loans and advances to customers	101,458	230,170	93,252	(26,188)	398,693
Other financial assets measured at amortized cost	8,902	6,828	12,377	(1,870)	26,236
Total financial assets measured at amortized cost	284,385	341,312	224,332	(111,397)	738,632
Financial assets at fair value held for trading	116,370	79	16,740	(2,156)	131,033
of which: assets pledged as collateral that may be sold or repledged by counterparties	*47,891*	*0*	*6,073*	*(10,568)*	*43,397*
Derivative financial instruments	113,426	4,199	35,567	(35,047)	118,145
Brokerage receivables	14,563		7,283	(7)	21,839
Financial assets at fair value not held for trading	37,532	5,413	33,940	(17,243)	59,642
Total financial assets measured at fair value through profit or loss	281,891	9,691	93,531	(54,454)	330,659
Financial assets measured at fair value through other comprehensive income	1,007		7,837		8,844
Investments in subsidiaries and associates	54,204	37	40	(53,038)	1,243
Property, equipment and software	6,501	1,456	4,048	(293)	11,712
Goodwill and intangible assets	213		6,138	28	6,378
Deferred tax assets	936		7,903		8,839
Other non-financial assets	5,757	2,424	1,656	(1)	9,836
Total assets	634,894	354,921	345,484	(219,154)	1,116,145
Liabilities					
Amounts due to banks	34,691	33,453	50,405	(105,448)	13,101
Payables from securities financing transactions measured at amortized cost	16,711	526	9,910	(21,615)	5,533
Cash collateral payables on derivative instruments	30,260	153	11,845	(10,458)	31,801
Customer deposits	101,093	286,488	142,967	14,287	544,834
Funding from UBS Group AG	57,295				57,295
Debt issued measured at amortized cost	73,045	9,460		(73)	82,432
Other financial liabilities measured at amortized cost	4,477	2,477	5,057	(2,245)	9,765
Total financial liabilities measured at amortized cost	317,572	332,556	220,184	(125,551)	744,762
Financial liabilities at fair value held for trading	25,711	372	7,652	(2,046)	31,688
Derivative financial instruments	116,588	4,053	35,731	(35,063)	121,309
Brokerage payables designated at fair value	30,497		13,548	(1)	44,045
Debt issued designated at fair value	70,660		785	14	71,460
Other financial liabilities designated at fair value	11,127		24,454	(3,167)	32,414
Total financial liabilities measured at fair value through profit or loss	254,584	4,425	82,171	(40,263)	300,916
Provisions	2,023	297	1,153	(21)	3,452
Other non-financial liabilities	1,799	1,278	5,528	(33)	8,572
Total liabilities	575,978	338,556	309,036	(165,868)	1,057,702
Equity attributable to shareholders	58,916	16,365	36,108	(53,287)	58,102
Equity attributable to non-controlling interests			340		340
Total equity	58,916	16,365	36,448	(53,287)	58,442
Total liabilities and equity	634,894	354,921	345,484	(219,154)	1,116,145

1 Amounts presented for UBS AG standalone and UBS Switzerland AG standalone represent IFRS standalone information. Refer to the UBS AG standalone and UBS Switzerland AG standalone financial statements, available under "Complementary financial information" at ubs.com/investors, for information prepared in accordance with Swiss GAAP. 2 The "Other subsidiaries" column includes consolidated information for the UBS Americas Holding LLC, UBS Europe SE and UBS Asset Management AG significant sub-groups, as well as standalone information for other subsidiaries.

Supplemental guarantor consolidated statement of cash flows

USD m For the year ended 31 December 2021	UBS AG[1]	UBS Switzerland AG[1]	Other subsidiaries[1]	UBS AG (consolidated)
Net cash flow from / (used in) operating activities	5,714	2,131	22,718	30,563
Cash flow from / (used in) investing activities				
Purchase of subsidiaries, associates and intangible assets	0	(1)	0	(1)
Disposal of subsidiaries, associates and intangible assets[2]	16	0	577	593
Purchase of property, equipment and software	(656)	(276)	(650)	(1,581)
Disposal of property, equipment and software	294	0	1	295
Purchase of financial assets measured at fair value through other comprehensive income	(1,006)	0	(4,795)	(5,802)
Disposal and redemption of financial assets measured at fair value through other comprehensive income	189	0	4,863	5,052
Net (purchase) / redemption of debt securities measured at amortized cost	(807)	772	(380)	(415)
Net cash flow from / (used in) investing activities	(1,970)	495	(385)	(1,860)
Cash flow from / (used in) financing activities				
Net short-term debt issued / (repaid)	(3,073)	(21)	0	(3,093)
Distributions paid on UBS AG shares	(4,539)	0	0	(4,539)
Issuance of debt designated at fair value and long-term debt measured at amortized cost[3]	97,250	1,177	193	98,619
Repayment of debt designated at fair value and long-term debt measured at amortized cost[3]	(78,385)	(1,093)	(320)	(79,799)
Net cash flows from other financing activities	(280)	0	20	(261)
Net activity related to group internal capital transactions and dividends	5,240	(537)	(4,702)	0
Net cash flow from / (used in) financing activities	16,212	(475)	(4,811)	10,927

Total cash flow

Cash and cash equivalents at the beginning of the year	39,400	93,342	40,689	173,430
Net cash flow from / (used in) operating, investing and financing activities	19,957	2,151	17,523	39,630
Effects of exchange rate differences on cash and cash equivalents	(1,462)	(2,693)	(1,151)	(5,306)
Cash and cash equivalents at the end of the year[4]	57,895	92,799	57,061	207,755
of which: cash and balances at central banks	*53,729*	*91,031*	*47,946*	*192,706*
of which: loans and advances to banks	*3,258*	*1,588*	*8,975*	*13,822*
of which: money market paper[5]	*908*	*179*	*139*	*1,227*

1 Cash flows generally represent a third-party view from a UBS AG consolidated perspective, except for Net activity related to group internal capital transactions and dividends. 2 Includes cash proceeds from the sale of the minority stake in Clearstream Fund Centre AG and dividends received from associates. 3 Includes funding from UBS Group AG to UBS AG. 4 Balances with an original maturity of three months or less. USD 3,408m of cash and cash equivalents were restricted. 5 Money market paper is included in the balance sheet under Financial assets at fair value held for trading, Financial assets measured at fair value through other comprehensive income, Financial assets at fair value not held for trading and Other financial assets measured at amortized cost.

Note 34 Supplemental guarantor information required under SEC regulations (continued)

Supplemental guarantor consolidated income statement

USD m For the year ended 31 December 2020	UBS AG (standalone)[1]	UBS Switzerland AG (standalone)[1]	Other subsidiaries[2]	Elimination entries	UBS AG (consolidated)
Interest income from financial instruments measured at amortized cost and fair value through other comprehensive income	3,386	3,636	2,612	(818)	8,816
Interest expense from financial instruments measured at amortized cost	(3,694)	(513)	(1,261)	1,134	(4,333)
Net interest income from financial instruments measured at fair value through profit or loss and other	1,103	164	311	(273)	1,305
Net interest income	794	3,288	1,662	43	5,788
Other net income from financial instruments measured at fair value through profit or loss	4,857	911	1,044	118	6,930
Fee and commission income	3,731	4,585	13,651	(984)	20,982
Fee and commission expense	(644)	(829)	(1,263)	961	(1,775)
Net fee and commission income	3,087	3,756	12,388	(23)	19,207
Other income	4,671	233	2,585	(5,941)	1,549
Total revenues	13,410	8,188	17,679	(5,803)	33,474
Credit loss expense / (release)	352	286	56	0	695
Personnel expenses	3,458	2,017	9,211	0	14,686
General and administrative expenses	3,507	3,313	4,147	(2,481)	8,486
Depreciation, amortization and impairment of non-financial assets	1,013	261	750	(115)	1,909
Operating expenses	7,978	5,591	14,108	(2,596)	25,081
Operating profit / (loss) before tax	5,079	2,311	3,515	(3,207)	7,699
Tax expense / (benefit)	238	444	912	(107)	1,488
Net profit / (loss)	4,840	1,868	2,603	(3,100)	6,211
Net profit / (loss) attributable to non-controlling interests	0	0	15	0	15
Net profit / (loss) attributable to shareholders	4,840	1,868	2,588	(3,100)	6,196

1 Amounts presented for UBS AG standalone and UBS Switzerland AG standalone represent IFRS standalone information. Refer to the UBS AG standalone and UBS Switzerland AG standalone financial statements under "Complementary financial information" at ubs.com/investors for information prepared in accordance with Swiss GAAP. 2 The "Other subsidiaries" column includes consolidated information for the UBS Americas Holding LLC, UBS Europe SE and UBS Asset Management AG significant sub-groups, as well as standalone information for other subsidiaries.

Supplemental guarantor consolidated statement of comprehensive income

USD m For the year ended 31 December 2020	UBS AG (standalone)[1]	UBS Switzerland AG (standalone)[1]	Other subsidiaries[2]	Elimination entries	UBS AG (consolidated)
Comprehensive income attributable to shareholders					
Net profit / (loss)	4,840	1,868	2,588	(3,100)	6,196
Other comprehensive income					
Other comprehensive income that may be reclassified to the income statement					
Foreign currency translation, net of tax	81	1,228	690	(969)	1,030
Financial assets measured at fair value through other comprehensive income, net of tax	0	0	137	0	136
Cash flow hedges, net of tax	902	26	101	(18)	1,011
Cost of hedging, net of tax	(13)				(13)
Total other comprehensive income that may be reclassified to the income statement, net of tax	971	1,254	928	(988)	2,165
Other comprehensive income that will not be reclassified to the income statement					
Defined benefit plans, net of tax	(67)	(107)	40	0	(134)
Own credit on financial liabilities designated at fair value, net of tax	(293)				(293)
Total other comprehensive income that will not be reclassified to the income statement, net of tax	(360)	(107)	40	0	(427)
Total other comprehensive income	611	1,147	968	(988)	1,738
Total comprehensive income attributable to shareholders	5,451	3,015	3,556	(4,088)	7,934
Total comprehensive income attributable to non-controlling interests			36		36
Total comprehensive income	5,451	3,015	3,592	(4,088)	7,970

1 Amounts presented for UBS AG standalone and UBS Switzerland AG standalone represent IFRS standalone information. Refer to the UBS AG standalone and UBS Switzerland AG standalone financial statements under "Complementary financial information" at ubs.com/investors for information prepared in accordance with Swiss GAAP. 2 The "Other subsidiaries" column includes consolidated information for the UBS Americas Holding LLC, UBS Europe SE and UBS Asset Management AG significant sub-groups, as well as standalone information for other subsidiaries.

Note 34 Supplemental guarantor information required under SEC regulations (continued)

Supplemental guarantor consolidated statement of cash flows

USD m For the year ended 31 December 2020	UBS AG[1]	UBS Switzerland AG[1]	Other subsidiaries[1]	UBS AG (consolidated)
Net cash flow from / (used in) operating activities	(14,883)	24,661	26,804	36,581
Cash flow from / (used in) investing activities				
Purchase of subsidiaries, associates and intangible assets	0	(3)	(43)	(46)
Disposal of subsidiaries, associates and intangible assets[2]	14	0	660	674
Purchase of property, equipment and software	(714)	(162)	(697)	(1,573)
Disposal of property, equipment and software	361	0	3	364
Purchase of financial assets measured at fair value through other comprehensive income	(77)	0	(6,213)	(6,290)
Disposal and redemption of financial assets measured at fair value through other comprehensive income	79	0	4,451	4,530
Net (purchase) / redemption of debt securities measured at amortized cost	(3,021)	132	(1,277)	(4,166)
Net cash flow from / (used in) investing activities	(3,357)	(33)	(3,117)	(6,506)
Cash flow from / (used in) financing activities				
Net short-term debt issued / (repaid)	23,828	17	0	23,845
Distributions paid on UBS AG shares	(3,848)	0	0	(3,848)
Issuance of debt designated at fair value and long-term debt measured at amortized cost[3]	78,867	1,057	229	80,153
Repayment of debt designated at fair value and long-term debt measured at amortized cost[3]	(86,204)	(776)	(118)	(87,099)
Net cash flows from other financing activities	(290)	0	(263)	(553)
Net activity related to group internal capital transactions and dividends	2,984	(1,307)	(1,677)	0
Net cash flow from / (used in) financing activities	15,336	(1,009)	(1,829)	12,498

Total cash flow

Cash and cash equivalents at the beginning of the year	39,598	62,551	17,655	119,804
Net cash flow from / (used in) operating, investing and financing activities	(2,905)	23,619	21,859	42,573
Effects of exchange rate differences on cash and cash equivalents	2,706	7,171	1,175	11,053
Cash and cash equivalents at the end of the year[4]	39,400	93,342	40,689	173,430
of which: cash and balances at central banks	*34,283*	*91,638*	*32,167*	*158,088*
of which: loans and advances to banks	*4,085*	*1,695*	*8,148*	*13,928*
of which: money market paper[5]	*1,032*	*9*	*374*	*1,415*

1 Cash flows generally represent a third-party view from a UBS AG consolidated perspective, except for Net activity related to group internal capital transactions and dividends. 2 Includes cash proceeds from the sale of the majority stake in Fondcenter AG and dividends received from associates. 3 Includes funding from UBS Group AG to UBS AG. 4 Balances with an original maturity of three months or less. USD 3,828m of cash and cash equivalents were restricted. 5 Money market paper is included in the balance sheet under Financial assets at fair value held for trading, Financial assets measured at fair value through other comprehensive income, Financial assets at fair value not held for trading and Other financial assets measured at amortized cost.

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