HSBC Holdings plc

Pillar 3 Disclosures at 31 December 2022

HSBC

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Unless the context requires otherwise, 'HSBC Holdings' means HSBC Holdings plc and 'HSBC', the 'Group', 'we', 'us' and 'our' refer to HSBC Holdings together with its subsidiaries. Within this document the Hong Kong Special Administrative Region of the People's Republic of China is referred to as 'Hong Kong'. When used in the terms 'shareholders' equity' and 'total shareholders' equity', 'shareholders' means holders of HSBC Holdings ordinary shares and those preference shares and capital securities issued by HSBC Holdings classified as equity. The abbreviations '$m' and '$bn' represent millions and billions (thousands of millions) of US dollars respectively.

This document should be read in conjunction with the *Annual Report and Accounts 2022*, which has been published on our website at www.hsbc.com/investors.

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The Group has adopted the UK's regulatory transitional arrangements for IFRS 9 'Financial instruments'. The application of the transitional arrangements to the disclosures is indicated in the table of contents as follows:

a. Some figures have been prepared on an IFRS 9 transitional basis. Details are provided in the table footnotes.

b. All figures have been prepared on an IFRS 9 transitional basis.

All other tables report numbers on the basis of full adoption of IFRS 9.

Introduction

Pillar 3 Disclosures and Governance

Regulatory framework for disclosure

We are supervised on a consolidated basis in the United Kingdom ('UK') by the Prudential Regulation Authority ('PRA'), which receives information on the capital and liquidity adequacy of, and sets capital and liquidity requirements for, the Group as a whole. Individual banking subsidiaries are directly regulated by their local banking supervisors, who set and monitor their local capital and liquidity adequacy requirements. In most jurisdictions, non-banking financial subsidiaries are also subject to the supervision and capital requirements of local regulatory authorities.

At the consolidated Group level, capital is calculated for prudential regulatory purposes using the Basel III framework of the Basel Committee ('Basel') as implemented in the UK. Any references to EU regulations and directives (including technical standards) should, as applicable, be read as references to the UK's version of such regulation or directive, as onshored into UK law under the European Union (Withdrawal) Act 2018, and as may be subsequently amended under UK law.

The Basel III framework is structured around three 'pillars': the Pillar 1 minimum capital requirements and Pillar 2 supervisory review process are complemented by the requirements in Pillar 3 on market discipline. The aim of Pillar 3 is to produce disclosures that allow market participants to assess the scope of application by banks of the Basel III framework and the rules in their jurisdiction, their capital resources, risk exposures and risk management processes, and hence their capital adequacy.

The regulators of the Group's banking entities outside the UK are at varying stages of implementation of Basel's framework, so local regulation in 2022 may have been implemented on the basis of Basel I, II or III.

Our *Pillar 3 Disclosures at 31 December 2022* comprises both quantitative and qualitative information required under Pillar 3. These disclosures are made in accordance with part Eight of the Capital Requirements Regulation and Directive, as implemented ('CRR II') and the PRA Rulebook, and use the PRA's disclosure templates and instructions which came into force on 1 January 2022. They are supplemented by specific additional requirements of the PRA and discretionary disclosures on our part.

Following the end of the transition period of UK's withdrawal from the EU, any reference herein to EU regulations and directives (including technical standards) should, as applicable, be read as a reference to the UK's version of such regulations and/or directives, as onshored into UK law under the European Union (Withdrawal) Act 2018 and as may be subsequently amended under UK law.

Information relating to the rationale for withholding certain disclosures is provided in Appendix III.

We publish our Pillar 3 disclosures quarterly on our website www.hsbc.com.

Material risks

Pillar 3 requires all material risks to be disclosed to provide a comprehensive view of a bank's risk profile. In addition to the disclosure in this document, other information on material risks can be found on page 142 of the *Annual Report and Accounts 2022*. This includes further information on:

- Climate Risk (refer to page 139 of the *Annual Report and Accounts 2022*)
- Credit risk (refer to page 145 of the *Annual Report and Accounts 2022*)
- Treasury risk (refer to page 202 of the *Annual Report and Accounts 2022*)
- Market risk (refer to page 218 of the *Annual Report and Accounts 2022*)
- Resilience risk (refer to page 230 of the *Annual Report and Accounts 2022*)
- Regulatory compliance risk (refer to page 231 of the *Annual Report and Accounts 2022*)
- Financial crime risk (refer to page 231 of the *Annual Report and Accounts 2022*)
- Model risk (refer to page 232 of the *Annual Report and Accounts 2022*)
- Insurance manufacturing operations risk (refer to page 233 of the *Annual Report and Accounts 2022*)

Comparatives and references

To give insight into movements during the year, we provide comparative figures, commentary on variances and flow tables for capital requirements. In all tables where the term 'capital requirements' is used, this represents the minimum total capital charge set at 8% of RWAs by Article 92(1) of CRR II.

The regulatory numbers and ratios presented in this document were accurate as at the date of reporting. Small changes may exist between these numbers and ratios and those subsequently submitted in regulatory filings. Where differences are significant, we will restate comparatives.

Where disclosures have been enhanced, or are new, we do not generally restate or provide comparatives. Wherever specific rows and columns in the tables prescribed are not applicable or immaterial to our activities, we omit them and follow the same approach for comparatives.

Pillar 3 requirements may be met by inclusion in other disclosure media. Where we adopt this approach, references are provided to the relevant pages of the *Annual Report and Accounts 2022 of HSBC Holdings plc* or to other documents.

Governance

The Board continued to oversee the governance, smooth operation and oversight of the Group and its principal and material subsidiaries.

HSBC *Pillar 3 disclosures at 31 December 2022* are approved by the HSBC Holdings Board of Directors ('HSBC Board') and are governed by the Group's disclosure policy framework as approved by the Group Audit Committee ('GAC').

This Pillar 3 Disclosure Report was approved by the HSBC Board on 21 February 2023 and signed on its behalf by:

Georges Elhedery

Group Chief Financial Officer

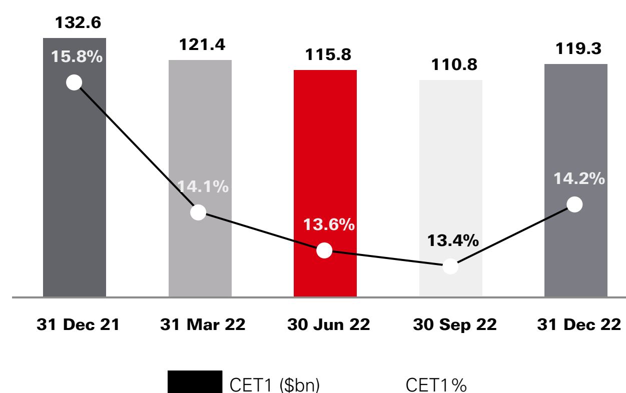
Highlights

Common equity tier 1 ratio ('CET1')

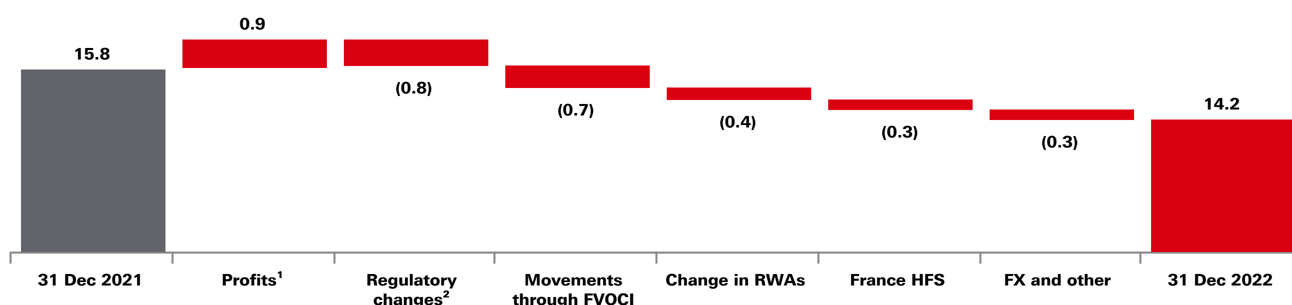
CET1 of 14.2% reduced by 1.6 percentage points, primarily driven by a decrease of a 0.8 percentage point from new regulatory requirements, a reduction of a 0.7 percentage point from the fall in the fair value through other comprehensive income ('FVOCI') and a 0.3 percentage point fall from the impairment following the reclassification of our retail banking operations in France to held for sale. Capital generation was mostly offset by an increase in risk-weighted assets ('RWAs') net of foreign exchange translation movements.

Common equity tier 1

$119.3bn and 14.2%



Common equity tier 1 ratio movement, %



1 *Includes profits, dividend accrual (at 32c per share) net of dividend paid on ordinary shares, and AT1 coupon paid and share buyback.*
2 *Regulatory changes include impacts from software capitalisation benefit reversal, IRB repair and the UK's implementation of the CRR II rules and standardised approach to counterparty credit risk exposure.*

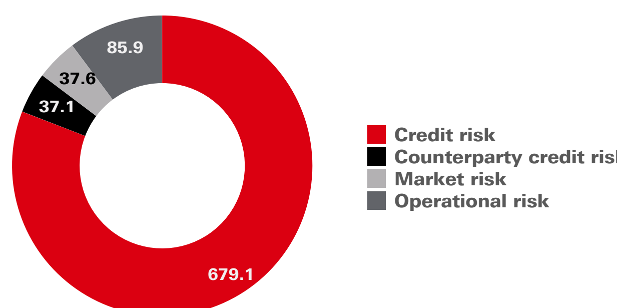
At 31 December 2022, our common equity tier 1 ('CET1') capital ratio was 14.2%, down 1.6 percentage points from 31 December 2021. Having fallen below 14% during 2022, we have returned to our target range of 14% to 14.5%. Our updated target dividend payout ratio is 50% for 2023 and 2024, excluding material significant items, from our previous target of 40% to 55% from 2022 onwards. Our dividend per share in respect of 2022 reflects adjustments to earnings per share ('EPS') for recognition of certain deferred tax assets (reducing EPS by $0.11) and for the planned sale of our banking operations in Canada and retail banking operations in France (increasing EPS by $0.09). No such adjustments were made in 2021 or 2020. From 30 September 2022, investments in non-financial institution subsidiaries or participations have been measured on an equity accounting basis to comply with UK regulatory requirements. This has no material impact on CET1 capital in prior periods. Changes due to the application of IFRS 17 from 01 January 2023 are expected to have a net nil impact to CET1.

Risk-weighted assets ('RWAs')

RWAs totalled $839.7 bn at 31 December 2022, a $1.4bn increase since 2021. Excluding a decrease of $41.9bn due to foreign currency translations, RWAs increased by $43.3bn, mainly driven by a $24.2bn increase due to methodology and policy, this includes data enhancements driven by internal and external reviews of our reporting processes and a $20.9bn increase in assets size.

Risk-weighted assets by risk type

$839.7bn (4Q21:$838.3bn)



Key metrics

Table 1: Key metrics (KM1/IFRS9-FL)

		At				
Ref*		**31 Dec 2022**	30 Sep 2022	30 Jun 2022	31 Mar 2022	31 Dec 2021
	Available capital ($bn)[1,2]					
1	Common equity tier 1 ('CET1') capital^	**119.3**	110.8	115.8	121.4	132.6
	CET1 capital as if IFRS 9 transitional arrangements had not been applied	**119.0**	110.5	115.4	121.0	131.8
2	Tier 1 capital^	**139.1**	130.5	137.5	143.9	156.3
	Tier 1 capital as if IFRS 9 transitional arrangements had not been applied	**138.8**	130.2	137.1	143.5	155.5
3	Total capital^	**162.4**	149.9	158.5	165.6	177.8
	Total capital as if IFRS 9 transitional arrangements had not been applied	**162.1**	149.6	158.1	165.2	177.0
	Risk-weighted assets ($bn)[2]					
4	Total RWAs^	**839.7**	828.3	851.7	862.3	838.3
	Total RWAs as if IFRS 9 transitional arrangements had not been applied	**839.4**	828.1	851.4	862.0	837.4
	Capital ratios (%)[1,2]					
5	CET1^ (%)	**14.2**	13.4	13.6	14.1	15.8
	CET1 as if IFRS 9 transitional arrangements had not been applied (%)	**14.2**	13.3	13.6	14.0	15.7
6	Tier 1^ (%)	**16.6**	15.8	16.1	16.7	18.6
	Tier 1 as if IFRS 9 transitional arrangements had not been applied (%)	**16.5**	15.7	16.1	16.6	18.6
7	Total capital^ (%)	**19.3**	18.1	18.6	19.2	21.2
	Total capital as if IFRS 9 transitional arrangements had not been applied (%)	**19.3**	18.1	18.6	19.2	21.1
	Additional own funds requirements based on Supervisory Review and Evaluation Process ('SREP') as a percentage of RWAs (%)[3]					
UK-7a	Additional CET1 SREP requirements (%)	**1.5**	1.5	1.5	1.5	N/A
UK-7b	Additional tier 1 ('AT1') SREP requirements (%)	**0.5**	0.5	0.5	0.5	N/A
UK-7c	Additional tier 2 ('T2') SREP requirements (%)	**0.6**	0.7	0.6	0.6	N/A
UK-7d	Total SREP own funds requirements (%)	**10.6**	10.7	10.6	10.6	N/A
	Combined buffer requirement as a percentage of RWAs (%)					
8	Capital conservation buffer requirement (%)	**2.5**	2.5	2.5	2.5	2.5
9	Institution-specific countercyclical capital buffer (%)	**0.4**	0.2	0.2	0.2	0.2
10	Global systemically important institution buffer (%)	**2.0**	2.0	2.0	2.0	2.0
11	Combined buffer requirement (%)	**4.9**	4.7	4.7	4.7	4.7
UK-11a	Overall capital requirements (%)	**15.5**	15.4	15.4	15.3	15.4
12	CET1 available after meeting the total SREP own funds requirements (%)	**8.2**	7.3	7.6	8.1	9.8
	Leverage ratio^,2,3,4					
13	Total exposure measure excluding claims on central banks ($bn)	**2,417.2**	2,414.8	2,484.2	2,532.9	N/A
14	Leverage ratio excluding claims on central banks (%)	**5.8**	5.4	5.5	5.7	N/A
	Average exposure measure excluding claims on central banks ($bn)	**2,416.6**	2,462.5	2,501.3	2,555.7	N/A
	Additional leverage ratio disclosure requirements (%)[2,3,4]					
14a	Fully loaded expected credit losses ('ECL') accounting model leverage ratio excluding claims on central banks (%)	**5.7**	5.4	5.5	5.7	N/A
14b	Leverage ratio including claims on central banks (%)^	**4.9**	4.7	4.8	4.9	N/A
14c	Average leverage ratio excluding claims on central banks (%)^	**5.6**	5.5	5.6	5.7	N/A
14d	Average leverage ratio including claims on central banks (%)^	**4.8**	4.7	4.8	4.9	N/A
14e	Countercyclical leverage ratio buffer (%)	**0.1**	0.1	0.1	0.1	N/A
EU-14d	Leverage ratio buffer requirement (%)	**0.8**	0.8	0.8	0.8	N/A
EU-14e	Overall leverage ratio requirements (%)	**4.1**	4.1	4.1	4.1	N/A
	Leverage ratio (under the Capital Requirements Regulation) ($bn)^,2,4					
	Total leverage ratio exposure measure	**N/A**	N/A	N/A	N/A	2,962.7
	Leverage ratio (%)	**N/A**	N/A	N/A	N/A	5.2
	Liquidity coverage ratio ('LCR')[5] - Average ($bn)					
15	Total high-quality liquid assets	**647.0**	662.9	675.5	688.3	688.2
UK-16a	Cash outflows – total weighted value	**668.1**	667.3	666.0	663.1	663.9
UK-16b	Cash inflows – total weighted value	**177.3**	170.4	165.6	161.6	168.8
16	Total net cash outflow	**490.8**	496.9	500.4	501.5	495.1
17	LCR ratio (%)	**132**	133	135	137	139
	Liquidity coverage ratio ('LCR')[5] - Period End ($bn)					
	Total high-quality liquid assets	**644.4**	605.5	656.6	694.6	717.0
	LCR ratio (%)	**132**	127	134	134	138
	Net stable funding ratio ('NSFR') ($bn)[3,5]					
18	Total available stable funding	**1,552.0**	1,538.8	1,566.5	1,596.6	N/A
19	Total required stable funding	**1,138.4**	1,123.9	1,138.7	1,158.1	N/A
20	NSFR ratio (%)	**136**	137	138	138	N/A

* *The references in this and subsequent tables identify lines prescribed in the relevant PRA template where applicable and where there is a value.*

^ *Figures have been prepared on an IFRS 9 transitional basis.*

1 *Capital figures and ratios are reported on a CRR II transitional basis for capital instruments.*

2 *From 30 September 2022, investments in non-financial institution subsidiaries or participations have been measured on an equity accounting basis in accordance with CRR II Prudential Consolidation provision article 18(7). Comparatives have not been restated as this change has no significant prior period impact on this disclosure.*

3 *These disclosures have been implemented from 1 January 2022, and are based on the PRA's disclosure templates and instructions which came into force at that time. N/A in prior periods indicated that the disclosure is new or changed and no comparatives are being provided.*

4 *The leverage ratio is calculated using the CRR II end point basis for capital. The 2021 comparative leverage exposures and ratios are separately reported based on the CRR II rules in force at that time and include claims on central banks.*

5 *From 30 September 2022, the LCR and NSFR ratios presented in this table and the Interim statement at 30 September 2022 are based on average value. The LCR is the average value of the preceding 12 months for each quarter and the NSFR is the average value of 4 preceding quarters.*

For further details of our application of IFRS 9 transitional regulatory arrangements, refer to page 208 of the Annual Report and Accounts 2022.

The Group is subject to the basic minimum capital requirements set out in Article 92 (1) of CRR, namely that it maintains:

- Common equity tier 1 capital – 4.5% of RWAs
- Tier 1 capital (CET1 capital plus AT1 capital) – 6% of RWAs
- Total capital (Tier 1 capital plus Tier 2 capital) – 8% of RWAs

Rows UK-7a to UK-7c in the table above show how the Group's additional capital requirement (set by the PRA at 2.6% of RWAs) is allocated to each of these tiers of capital. Row UK-7d adds the total of these additional requirements to the CRR minimum requirements to give a total capital SREP requirement of 10.6%.

Rows 8 to 11 set out buffer requirements to which the Group is also subject (and which must be satisfied by CET1). The Group's overall capital requirement in Row UK-11a, 15.5%, is the sum of these buffer requirements and the minimum capital requirements calculated above (in Row UK-7d).

Capital and liquidity changes

Changes in regulatory capital requirements implemented under CRR II and the PRA Rulebook, came into force on 1 January 2022. As a result, the CET1 capital ratio reduced by approximately 0.8 percentage points. The key changes are summarised below:

- Software assets are now deducted in full from CET1 capital. This reverses the beneficial treatment of software assets that was implemented as part of the EU's response to the Covid-19 pandemic;
- RWAs increased as a result of changes in regulations including the adoption of UK's version of CRR II, and the implementation of IRB modelling requirements
- Expiry of transitional provisions in relation to the UK's withdrawal from the EU.

In addition, we started managing funding risk based on the PRA's Net stable funding ratio ('NSFR') rules and implemented new leverage ratio rules.

IFRS 9 transitional arrangements

We have adopted the regulatory transitional arrangements in the amendments to the CRR II for IFRS 9 'Financial Instruments', including paragraph four within Article 473a. These transitional arrangements permit banks to add back to their capital base a proportion of the impact that IFRS 9 has upon their loan loss allowance during the first five years of use. The impact of IFRS 9 on loan loss allowance is defined as:

- the increase in loan loss allowances on day one of IFRS 9 adoption; and
- any subsequent increase in expected credit losses ('ECL') in the non-credit-impaired book thereafter.

Any add-back must be tax affected and accompanied by a recalculation of deferred tax, exposure and RWAs. The impact is calculated separately for portfolios using the standardised ('STD') and internal ratings based ('IRB') approaches. For IRB portfolios, there is no add-back to capital unless loan loss allowances exceed regulatory 12-month expected losses.

The EU's CRR 'Quick Fix' relief package increased the 2022 scalar from 25% to 75% for the relief that banks may take for loan loss allowances recognised since 1 January 2020 on the non-credit-impaired book.

In the current period, the add-back to CET1 capital amounted to $0.4bn under the STD approach with a tax impact of $0.1bn. At 31 December 2021, the add-back to the capital base under the STD approach was $1.0bn with a tax impact of $0.2bn.

Regulatory developments

Basel III Reforms

The Basel Committee on Banking Supervision ('Basel') completed the Basel III Reforms in July 2020. The reforms make significant changes to the way firms calculate risk-weighted assets ('RWAs') across all risk types and include the implementation of an RWA floor for banks that use internal models to calculate RWAs. Basel scheduled the implementation of its requirements for 1 January 2023.

In November 2022, the Prudential Regulation Authority ('PRA') issued a consultation on the implementation of the reforms with a proposed implementation date of 1 January 2025. While the PRA's proposals are generally consistent with Basel, it has proposed some limited adjustments to Basel's final rules, such as the treatment of unrated corporates under the standardised approach to credit risk, the removal of modelled approaches for sovereign exposures and the calibration of the exposure measure for counterparty risk. It has also proposed to remove certain of the EU's concessions under the current framework, such as the SME and infrastructure supporting factors, in addition to amending the scope of the EU's exemptions from the credit valuation adjustment ('CVA') charges.

Alongside the PRA's consultation, His Majesty's Treasury ('HMT') published its own consultation on the implementation of the Basel III reforms. HMT's consultation primarily focuses on the technical and legislative changes necessary to facilitate the implementation of the reforms by the PRA, including the proposed revocation of certain rules under the current regime that would be replaced by the new rules being proposed by the PRA. It is also consulting on the costs and benefits of improving ratings coverage in the UK.

We currently do not foresee a material net impact on our ratios from the initial implementation. The RWA output floor under Basel 3.1 is proposed to be subject to a five-year transitional provision. Any impact from the output floor would be towards the end of the transition period.

PRA's future approach to policy-making

In September 2022, the PRA published a discussion paper on its post-Brexit approach to policy-making. In the paper, the PRA committed to maintain strong prudential standards to support the stability of regulated firms. Furthermore, the PRA outlined that, while it would be proactive in its approach to facilitating the international competitiveness of the UK economy, it remained committed to the faithful implementation of international standards.

Hong Kong Mortgage Floor

In November 2022, the Hong Kong Monetary Authority ('HKMA') announced that the risk-weight floor for Hong Kong residential mortgage loans under the internal ratings-based approach will be reduced from the current 25% to 15% with effect from 1 January 2023.

Capital Buffers

In December 2022, the UK's countercyclical buffer ('CCyB') rate increased to 1%. A further increase to 2% is planned for July 2023.

Cryptoassets

In December 2022, Basel finalised its rules on the capital treatments for banks' exposures to cryptoassets, which are scheduled for implementation by 1 January 2025. The PRA has yet to consult on its implementation in the UK.

Environmental, Social and Governance ('ESG') risk

Globally, regulators and standard setters continue to publish multiple proposals and discussion papers on ESG topics. In 2022 this included multiple consultations on sustainability-related disclosure across jurisdictions including the UK, EU, US, and globally through the IFRS foundation.

In March 2022, the International Sustainability Standards Board ('ISSB') published a consultation on its first two sustainability related disclosure standards. The proposal is an important step towards the establishment of a global baseline standard and the ISSB is expected to finalise the standards in early 2023.

Also in March 2022, the US Securities and Exchange Commission published a consultation on its proposed climate-related disclosures required for both domestic and foreign private issuers. The proposed disclosure requirements cover the broad areas of governance, strategy, risk management and metrics and targets.

In April 2022, the European Financial Reporting Advisory Group launched a consultation on draft European Sustainability Reporting Standards ('ESRS') Exposure Drafts, the first set of standards required under the Corporate Sustainability Reporting Directive ('CSRD') which cover environmental, social and governance matters. The ESRS were finalised in November 2022 and the EU Commission is expected to adopt the final standards in June 2023.

The CSRD entered into force in January 2023 and strengthens the existing rules on non-financial reporting introduced in the Accounting Directive by the 2014 Non-Financial Reporting Directive. It also broadens the scope for EU entities and includes non-EU entities subject to meeting certain criteria.

In November 2022, the Taskforce on Nature-related Financial Disclosures released its latest framework for nature-related risk management and disclosures with final recommendations expected in September 2023.

Also in November 2022, the UK Transition Plan Taskforce published a consultation on a draft disclosure framework and accompanying guidance which makes recommendations for companies and financial institutions to develop and disclose gold-standard transition plans.

In 2022, there has been growing interest and work underway by regulators and standard setters on the extent to which climate risks are captured and dealt with in the prudential framework. The initial work by Basel concluded that climate risk drivers, including physical and transition risks, can be captured in traditional financial risk categories such as credit, market, operational and liquidity risks.

Basel's work is ongoing and is part of its wider efforts to improve ESG risk coverage. In December 2022, Basel published responses to Frequently Asked Questions which clarify how climate-related financial risks may be addressed in existing Pillar 1 requirements. The Bank of England is also considering how the regulatory capital framework can be adjusted to take account of climate-related risks and facilitated a climate and capital conference in October 2022 with the aim of providing more guidance on its approach.

Climate risk

Climate risk relates to the financial and non-financial impacts that may arise as a result of climate change and the move to a greener economy. Climate risk can materialise through:

- physical risk, which arises from the increased frequency and severity of weather events, such as hurricanes and floods, or chronic shifts in weather patterns;
- transition risk, which arises from the process of moving to a low-carbon economy, including changes in government or public policy, technology and end-demand; and
- greenwashing risk, which arises from the act of knowingly or unknowingly misleading stakeholders regarding our strategy relating to climate, the climate impact/benefit of a product or service, or the climate commitments or performance of our customers.

We are a signatory to the disclosure recommendations by the Financial Stability Board's Task Force on Climate-related Financial Disclosures.

Refer to page 64 and 221 of the Annual Report and Accounts 2022 *for further information*

Risk management

Our risk management framework

We aim to use a comprehensive risk management approach across the organisation and across all risk types, underpinned by our culture and values. This is outlined in our risk management framework, including the key principles and practices that we employ in managing material risks, both financial and non-financial.

The framework fosters continuous monitoring of the risk environment, and promotes risk awareness and a sound operational and strategic decision making and escalation process. It also ensures we have a consistent approach to monitoring, managing and mitigating the risks we accept and incur in our activities, with clear accountabilities.

Further information on our risk management framework is set out on page 133 of the Annual Report and Accounts 2022. *The management and mitigation of principal risks facing the Group is described in our top and emerging risks on page 135 of the* Annual Report and Accounts 2022.

Further details on our management of treasury risk can be found on page 14.

Commentary on hedging strategies and associated processes can be found in the Market risk and Securitisation sections of this document.

Culture

HSBC understands the importance of a strong culture. Our culture refers to our shared attitudes, beliefs, values and standards that shape behaviours including those related to risk awareness, risk taking and risk management. It is instrumental in aligning the behaviours of individuals with our attitude to assuming and managing risk, which helps to ensure that our risk profile remains in line with our risk appetite. The fostering of a strong culture is a key responsibility of our senior executives.

Our culture is also reinforced by our approach to remuneration. Individual awards, including those for senior executives, are based on compliance with our values and the achievement of financial and non-financial objectives which are aligned to our risk appetite and global strategy.

Further information on risk and remuneration is set out on page 294 of the Annual Report and Accounts 2022.

Remuneration

Our remuneration policy, including the remuneration committee membership and activities, remuneration strategy and remuneration details of HSBC's identified staff and material risk takers, is set out in the Directors' Remuneration Report on page 276 of the *Annual Report and Accounts 2022*.

Risk governance

The Board has ultimate responsibility for the effective management of risk and approves our risk appetite. It is advised on risk-related matters by the Group Risk Committee ('GRC').

The activities of the GRC are set out on pages 271 to 275 of the Annual Report and Accounts 2022.

Executive accountability for the ongoing monitoring, assessment and management of the enterprise-wide risk environment, and the effectiveness of the risk management framework resides with the Group Chief Risk and Compliance Officer ('GCRCO'). The GCRCO is supported by the Group Risk Management Meeting ('GRMM') of the Group Executive Committee ('GEC').

Further information is available on page 231 of the Annual Report and Accounts 2022.

Day-to-day responsibility for risk management is delegated to senior managers with individual accountability for decision making. These senior managers are supported by global functions. All our people have a role to play in risk management.

These roles are defined using the three lines of defence model, which takes into account our business and functional structures.

We use a defined executive risk governance structure to ensure appropriate oversight and accountability for risk, which facilitates the reporting and escalation to the RMM.

Further information about the Group's three lines of defence model and executive risk governance structures is available on page 134 of the Annual Report and Accounts 2022.

Risk appetite

Risk appetite is a key component of our management of risk. It defines our desired forward-looking risk profile, and informs the strategic and financial planning process. At HSBC, risk appetite is managed through a global risk appetite framework and articulated in a risk appetite statement ('RAS'), which is reviewed and approved by the Board, on the advice of the GRC, twice per year to make sure it remains fit for purpose.

Our risk appetite provides an objective baseline to guide strategic decision making, helping to ensure that planned business activities provide an appropriate balance of return for the risk assumed, while remaining within acceptable risk levels. It is also integrated within other risk management tools, such as stress testing, to ensure consistency in risk management.

Information about our risk management tools and risk appetite are set out from page 132 of the Annual Report and Accounts 2022.

Global Risk and Compliance function

We have a dedicated Global Risk and Compliance function, headed by the Group Chief Risk and Compliance Officer, which is responsible for the Group's risk management framework. This includes establishing global policy, monitoring risk profiles, and providing forward-looking risk identification and management capabilities. Global Risk and Compliance is made up of sub-functions covering both Financial and Non-financial risks. It is independent from the global businesses in order to provide challenge, appropriate oversight and balance in risk versus return decisions. The Global Risk and Compliance function operates in line with the three lines of defence model and plays an important role in reinforcing our culture and values. It focuses on creating an environment that encourages our people to speak up and do the right thing.

For further information see page 134 of the Annual Report and Accounts 2022.

Stress testing

HSBC operates a wide-ranging stress testing programme that supports our risk management and capital planning. It includes execution of stress tests mandated by our regulators and those to meet our own internal requirements. Our stress testing is supported by dedicated teams and infrastructure.

Our testing programme assesses the resilience of our balance sheet and our capital adequacy through a rigorous examination of our resilience to external shocks. Both the internal and regulatory driven stress tests help us to understand and mitigate risks, and informs our decision about capital and liquidity levels.

The Group stress testing programme is overseen by the GRC, and results are reported, where appropriate, to the GRMM and GRC.

Further information about stress testing and details of the Group's regulatory stress test results are set out on page 134 of the Annual Report and Accounts 2022.

Risk management and internal control systems

The Directors are responsible for maintaining and reviewing the effectiveness of risk management and internal control systems, and for determining the aggregate level and risk types they are willing to accept in achieving the Group's business objectives. On behalf of the Board, the GRC has responsibility for the oversight of risk management and internal controls other than for financial reporting, and the Group Audit Committee ('GAC') has responsibility for oversight of risk management and internal controls over financial reporting.

The Directors, through the GRC and the GAC receive regular updates and confirmation that management has taken, or was taking, the necessary actions to remediate any failings or weaknesses identified through the operation of our framework of controls.

HSBC's key risk management and internal control procedures are described on page 271 of the Annual Report and Accounts 2022, *where the Report of the Directors on the effectiveness of internal controls can also be found.*

Regulatory reporting processes and controls

The quality of regulatory reporting remains a key priority for management and regulators. We are progressing with a comprehensive programme to strengthen our processes, improve consistency, and enhance controls across our prudential regulatory reporting, focussing on PRA requirements initially. We commissioned a number of independent external reviews, some at the request of our regulators, including one on our credit risk RWA reporting process which concluded in December 2022. These reviews have so far resulted in higher RWAs and enhancements to LCR through improvements in reporting accuracy, which have been reflected in our year-end reported regulatory ratios. Our prudential regulatory reporting programme is being phased over a number of years, prioritising RWA, capital and liquidity reporting in the early stages of the programme. While this programme continues there may be further impacts on some of our regulatory ratios, such as the CET1, LCR and NSFR, as we implement recommended changes and continue to enhance the controls across the process

Risk measurement and reporting systems

Our risk measurement and reporting systems are designed to help ensure that risks are comprehensively captured with all the attributes necessary to support well-founded decisions, that those attributes are accurately assessed, and that information is delivered in a timely manner for those risks to be successfully managed and mitigated.

Risk measurement and reporting systems are also subject to a governance framework designed to ensure that their build and implementation are fit for purpose and functioning appropriately. Risk information system development is a key responsibility of the Global Risk and Compliance function, while the development and operation of risk rating and management systems and processes are ultimately subject to the oversight of the Board.

The ongoing programme to strengthen our regulatory reporting also considers the efficacy of our systems. Potential enhancements identified through this programme will be assessed and, where appropriate, implemented under the governance framework.

We remain committed to investing in the reliability and resilience of our IT systems and critical services, including those provided by third parties, that support all parts of our business. We do so to help protect our customers, affiliates and counterparties, and to help ensure that we minimise any disruption to services that could result in reputational and regulatory consequences.

In our approach to defend against these threats, we invest in business and technical controls to help us detect, manage and recover from issues, including data loss, in a timely manner.

Risk measurement and reporting structures deployed at Group level are applied throughout global businesses and major operating subsidiaries through a common operating model for integrated risk management and control. This model sets out the respective responsibilities of Group, global business, region and country level risk and compliance functions in respect of risk governance and oversight, approval authorities and lending guidelines, global and local scorecards, management information and reporting, and relations with third parties such as regulators, rating agencies and auditors.

Risk analytics and model governance

The Global Risk function manages a number of analytics disciplines supporting the development and management of models, including those for risk rating, scoring, economic capital and stress testing; covering different risk types and business segments.

The analytics functions support technical responses to industry developments and regulatory policy in the field of risk analytics, develop HSBC's global risk models, and oversee local model development and use around the Group as we work towards our implementation targets for IRB approaches. The Global Model Risk Committee ('GMRC') is the primary committee responsible for the oversight of Model Risk globally within HSBC. It serves an important role in providing strategic direction on the management of models and their associated risks to HSBC's businesses globally and is an essential element of the governance structure for model risk management. GMRC is supported by Global Model Oversight Forums ('GMOF') at the global and regional levels which are responsible for model risk management within their functional areas, including Wholesale credit risk, Market risk, Wealth and personal banking risk, and finance.

The GMRC meets regularly and reports to GRMM. It is chaired by the Group CRCO and membership includes the CEOs of the Global Businesses, and senior executives from Risk and Finance. Through its oversight of the GMOFs, it identifies emerging risks for all aspects of the risk rating system, ensuring that model risk is managed within our risk appetite statement, and formally advises GRMM on any material model-related issues.

Models are also subject to an independent validation process and governance oversight by the Model Risk Management team within Global Risk. The team provides robust challenge to the modelling approaches used across the Group. It also ensures that the performance of those models is transparent and that their limitations are visible to key stakeholders.

The development and use of data and models to meet local requirements are the responsibility of global businesses or functions, as well as regional and/or local entities under the governance of their own management, subject to overall Group policy and oversight.

Regulatory and other expectations continue to evolve with regards to our capability and practice of model risk management.

Further information is available on page 232 of the Annual Report and Accounts 2022.

Linkage to the Annual Report and Accounts 2022

This section demonstrates the links between the Group's audited financial balance sheet and its regulatory counterpart. In addition to this reconciliation, presented here in Table 2, our *Pillar 3 Disclosures at 31 December 2022* also provide:

- an analysis of the regulatory reporting balance sheet by risk type; and
- a reconciliation between accounting valuation and the regulatory measure of exposure

Structure of the regulatory group

The regulatory consolidation is consistent with the accounting consolidation, with the following exceptions:

- subsidiaries engaged in insurance activities are equity accounted in the regulatory consolidation and then deducted from CET1 capital, subject to thresholds;
- special purpose entities ('SPEs') where significant risk has been transferred to third parties. Exposures to these SPEs are risk weighted as securitisation positions for regulatory purposes;
- Participating interests in banking associates are proportionally consolidated for regulatory purposes by including our share of assets, liabilities, profits and losses, and RWAs in accordance with the PRA's regulatory requirements; and
- Non-participating significant investments are deducted from capital, subject to thresholds.

Table 2: Reconciliation of regulatory own funds to balance sheet in the audited financial statements (UK CC2)

	Ref[1]	Accounting balance sheet $m	Deconsolidation of insurance/ other entities $m	Consolidation of banking associates $m	Equity accounting of Insurance subsidiaries[1] $m	Regulatory balance sheet $m
Assets						
Cash and balances at central banks		**327,002**	**(5)**	**429**	**—**	**327,426**
Items in the course of collection from other banks		**7,297**	**—**	**—**	**—**	**7,297**
Hong Kong Government certificates of indebtedness		**43,787**	**—**	**—**	**—**	**43,787**
Trading assets		**218,093**	**(6,383)**	**14**	**—**	**211,724**
Financial assets designated and otherwise mandatorily measured at fair value through profit or loss		**45,063**	**(38,041)**	**807**	**—**	**7,829**
– *of which: debt securities eligible as tier 2 issued by Group Financial Sector Entities ('FSEs') that are outside the regulatory scope of consolidation*	*s*		***206***	**—**	**—**	***206***
Derivatives		**284,146**	**(266)**	**216**	**—**	**284,096**
Loans and advances to banks	*l*	**104,882**	**(1,526)**	**1,259**	**—**	**104,615**
Loans and advances to customers	*l*	**924,854**	**(1,125)**	**15,109**	**—**	**938,838**
– *of which: lending eligible as Tier 2 to Group FSEs outside the regulatory scope of consolidation*	*s*	**—**	***509***	**—**	**—**	***509***
expected credit losses on IRB portfolios	*h*	***(8,908)***	**—**	**—**	**—**	***(8,908)***
Reverse repurchase agreements – non-trading		**253,754**	**2,500**	**20**	**—**	**256,274**
Financial investments		**425,564**	**(76,864)**	**6,407**	**—**	**355,107**
– *of which: lending eligible as Tier 2 to Group FSEs outside the regulatory scope of consolidation*	*s*	**—**	***669***	**—**	**—**	***669***
Assets held for sale		**115,919**	**(1)**	**0**	**—**	**115,918**
– *of which: goodwill and intangible assets*		***325***	**—**	**—**	**—**	***325***
– *of which: expected credit losses on IRB portfolios*		***(324)***	**—**	**—**	**—**	***(324)***
Capital invested in insurance and other entities[1]		**—**	**3,371**	**—**	**13,200**	**16,571**
Prepayments, accrued income and other assets		**156,866**	**(7,685)**	**626**	**—**	**149,807**
– *of which: retirement benefit assets*	*j*	***7,282***			**—**	***7,282***
Current tax assets		**1,230**	**(1)**	**4**	**—**	**1,233**
Interests in associates and joint ventures		**29,254**	**(417)**	**(5,422)**	**—**	**23,415**
– *of which: positive goodwill on acquisition*	*e*	***489***	***(11)***		**—**	***478***
Goodwill and intangible assets	*e*	**21,321**	**(10,357)**	**904**	**—**	**11,868**
Deferred tax assets	*f, k*	**7,498**	**206**	**87**	**—**	**7,791**
Total assets at 31 Dec 2022		**2,966,530**	**(136,594)**	**20,460**	**13,200**	**2,863,596**
Liabilities and equity						
Hong Kong currency notes in circulation		**43,787**	**—**	**—**	**—**	**43,787**
Deposits by banks		**66,722**	**(11)**	**1,903**	**—**	**68,614**
Customer accounts		**1,570,303**	**2,841**	**16,733**	**—**	**1,589,877**
Repurchase agreements – non-trading		**127,747**	**(58)**	**74**	**—**	**127,763**
Items in course of transmission to other banks		**7,864**	**—**	**—**	**—**	**7,864**
Trading liabilities		**72,353**	**—**	**—**	**—**	**72,353**
Financial liabilities designated at fair value		**127,327**	**(4,402)**	**—**	**—**	**122,925**
– *of which: included in tier 2*	*o, q, i*	***9,562***	**—**	**—**	**—**	***9,562***
Derivatives		**285,764**	***20***	***151***	**—**	**285,935**
– *of which: debit valuation adjustment*	*l*	***132***	**—**	**—**	**—**	***132***
Debt securities in issue		**78,149**	**(913)**	**—**	**—**	**77,236**
Liabilities of disposals group held for sale		**114,597**	**—**	**—**	**—**	**114,597**
– *of which: credit-related contingent liabilities and contractual commitments on IRB portfolios*		***23***	**—**	**—**	**—**	***23***
Accruals, deferred income and other liabilities		**133,240**	**(3,108)**	**1,033**	**—**	**131,165**

Table 2: Reconciliation of regulatory own funds to balance sheet in the audited financial statements (UK CC2) (continued)

	Ref †	Accounting balance sheet	Deconsolidation of insurance/ other entities	Consolidation of banking associates	Equity accounting of Insurance subsidiaries[1]	Regulatory balance sheet
		$m	$m	$m	$m	$m
Liabilities and equity						
Current tax liabilities		1,135	(63)	71	—	1,143
Liabilities under insurance contracts		114,844	(114,844)	—	—	—
Provisions		1,958	(36)	72	—	1,994
– *of which: credit-related contingent liabilities and contractual commitments on IRB portfolios*	*h*	*460*	—	—	—	*460*
Deferred tax liabilities		2,422	(1,477)	5	—	950
Subordinated liabilities		22,290	—	417	—	22,707
– *of which: included in tier 2*	*o, p, q, r*	*20,483*	—	—	—	*20,483*
Total liabilities at 31 Dec 2022		2,770,502	(122,051)	20,459		2,668,910
Equity						
Called up share capital	*a*	10,147	—	—	—	10,147
Share premium account	*a*	14,664	—	—	—	14,664
Other equity instruments	*m*	19,746	—	—	—	19,746
Other reserves	*c, g*	(9,619)	2,243	(74)	15,054	7,604
Retained earnings	*b, c*	152,546	(15,446)	75	(1,854)	135,321
Total shareholders' equity		187,484	(13,203)	1	13,200	187,482
Non-controlling interests	*d, n, q*	8,544	(1,340)	—		7,204
Total equity at 31 Dec 2022		196,028	(14,543)	1	13,200	194,686
Total liabilities and equity at 31 Dec 2022		2,966,530	(136,594)	20,460	13,200	2,863,596

† *The references (a)–(s) identify balance sheet components that are used in the calculation of regulatory capital in Table 6: Own funds disclosure. This table shows such items at their accounting values, which may be subject to analysis or adjustment in the calculation of regulatory capital shown in Table 6.*

1 *From 30 September 2022, investments in non-financial institution subsidiaries or participations have been measured on an equity accounting basis in accordance with CRR II Prudential Consolidation provision Article 18(7).*

Table 3: Principal entities with a different regulatory and accounting scope of consolidation (LI3)

			At 31 Dec 2022			
			Method of regulatory consolidation			
	Principal activities	Method of accounting consolidation	Proportional consolidation	Neither consolidated nor deducted	Equity method	Deducted from capital subject to thresholds
Principal associates						
The Saudi British Bank	Banking	Equity	●			
Principal insurance entities[1]						
HSBC Life (International) Ltd	Life insurance	Fully consolidated			●	●
HSBC Assurances Vie (France)	Life insurance	Fully consolidated			●	●
Hang Seng Insurance Company Ltd	Life insurance	Fully consolidated			●	●
HSBC Insurance (Singapore) Pte Ltd	Life insurance	Fully consolidated			●	●
HSBC Life (UK) Ltd	Life insurance	Fully consolidated			●	●
HSBC Life Assurance (Malta) Ltd	Life insurance	Fully consolidated			●	●
HSBC Life Insurance Company Ltd	Life insurance	Fully consolidated			●	●
HSBC Seguros S.A. (Mexico)	Life insurance	Fully consolidated			●	●
HSBC Life (Singapore) Pte. Ltd.	Life insurance	Fully consolidated			●	●
Principal SPEs						
Metrix Portfolio Distribution plc	Securitisation	Fully consolidated		●		
Neon Portfolio Distribution DAC	Securitisation	Fully consolidated		●		
Regency Assets DAC	Securitisation	Fully consolidated		●		

1 *Subsidiaries engaged in insurance activities are equity accounted in the regulatory consolidation and then deducted from CET1 capital, subject to thresholds.*

Measurement of regulatory exposures

This section sets out the main reasons why the measurement of regulatory exposures is not directly comparable with the financial information presented in the *Annual Report and Accounts 2022*.

The *Pillar 3 Disclosures at 31 December 2022* are prepared in accordance with regulatory capital and liquidity adequacy concepts and rules, while the *Annual Report and Accounts 2022* are prepared in accordance with IFRSs. The regulatory exposure value includes an estimation of risk, and is expressed as the amount expected to be outstanding were the counterparty to default.

Moreover, regulatory exposure classes are based on different criteria from accounting asset types and are therefore not comparable on a line by line basis.

The following two tables show how the accounting values in the regulatory balance sheet link to regulatory exposure value.

Table 4 shows the difference between the accounting and regulatory scope of consolidation, and breaks the accounting balance down into the risk types that form the basis for regulatory capital requirements. Table 5 then shows the main differences between the accounting balances and regulatory exposures by risk type.

Table 4: Differences between accounting and regulatory scopes of consolidation and mapping of financial statement categories with regulatory risk categories (LI1)

			Carrying value of items				
	Carrying values as reported in published financial statements	Carrying values under scope of regulatory consolidation[1]	Subject to the credit risk framework	Subject to the counter-party credit risk framework[2]	Subject to the securitisation framework[3]	Subject to the market risk framework[4]	Not subject to own funds requirements or subject to deduction from own funds
	$bn	$bn	$bn	$bn	$bn	$bn	$bn
Assets							
Cash and balances at central banks	**327.0**	**327.4**	**327.4**	**—**	**—**	**—**	**—**
Items in the course of collection from other banks	**7.3**	**7.3**	**7.3**	**—**	**—**	**—**	**—**
Hong Kong Government certificates of indebtedness	**43.8**	**43.8**	**43.8**	**—**	**—**	**—**	**—**
Trading assets	**218.1**	**211.7**	**2.6**	**25.7**	**0.1**	**211.2**	**—**
Financial assets designated and otherwise mandatorily measured at fair value	**45.1**	**7.8**	**4.5**	**2.9**	**—**	**0.2**	**0.2**
Derivatives	**284.1**	**284.1**	**—**	**284.1**	**0.1**	**284.1**	**—**
Loans and advances to banks	**104.9**	**104.6**	**103.9**	**0.7**	**—**	**—**	**—**
Loans and advances to customers	**924.8**	**938.9**	**918.4**	**0.3**	**19.6**	**—**	**0.6**
Reverse repurchase agreements – non-trading	**253.7**	**256.3**	**—**	**256.3**	**—**	**—**	**—**
Financial investments	**425.6**	**355.1**	**353.0**	**—**	**1.4**	**—**	**0.7**
Assets held for sale	**115.9**	**115.9**	**109.0**	**5.7**	**—**	**4.0**	**(1.9)**
Capital invested in insurance and other entities[5]	**—**	**16.6**	**5.5**	**—**	**—**	**—**	**11.1**
Prepayments, accrued income and other assets	**156.9**	**149.8**	**41.3**	**76.7**	**—**	**15.9**	**24.2**
Current tax assets	**1.2**	**1.2**	**1.2**	**—**	**—**	**—**	**—**
Interests in associates and joint ventures[6]	**29.3**	**23.4**	**7.6**	**—**	**—**	**—**	**15.8**
Goodwill and intangible assets	**21.3**	**11.9**	**—**	**—**	**—**	**—**	**11.4**
Deferred tax assets	**7.5**	**7.8**	**5.9**	**—**	**—**	**—**	**1.9**
Total assets at 31 Dec 2022	**2,966.5**	**2,863.6**	**1,931.4**	**652.4**	**21.2**	**515.4**	**64.0**
Liabilities							
Hong Kong currency notes in circulation	**43.8**	**43.8**	**—**	**—**	**—**	**—**	**43.8**
Deposits by banks	**66.7**	**68.6**	**—**	**—**	**—**	**—**	**68.6**
Customer accounts	**1,570.4**	**1,589.9**	**—**	**—**	**—**	**—**	**1,589.9**
Repurchase agreements – non-trading	**127.7**	**127.8**	**—**	**127.8**	**—**	**—**	**—**
Items in course of transmission to other banks	**7.9**	**7.9**	**—**	**—**	**—**	**—**	**7.9**
Trading liabilities	**72.4**	**72.4**	**—**	**19.8**	**—**	**72.4**	**—**
Financial liabilities designated at FV	**127.3**	**122.9**	**—**		**—**	**46.0**	**76.9**
Derivatives	**285.8**	**285.9**	**—**	**285.9**	**—**	**285.9**	**—**
Debt securities in issue	**78.1**	**77.2**	**—**		**—**	**—**	**77.2**
Liabilities for disposal groups held for sale	**114.6**	**114.6**	**—**	**4.1**	**—**	**—**	**110.5**
Accruals, deferred income, and other liabilities	**133.2**	**131.2**	**—**	**70.2**	**—**	**—**	**61.0**
Current tax liabilities	**1.1**	**1.1**	**—**	**—**	**—**	**—**	**1.1**
Liabilities under insurance contract	**114.8**	**—**	**—**	**—**	**—**	**—**	**—**
Provisions	**2.0**	**2.0**	**0.6**	**—**	**—**	**—**	**1.4**
Deferred tax liabilities	**2.4**	**0.9**	**1.2**	**—**	**—**	**—**	**2.0**
Subordinated liabilities	**22.3**	**22.7**	**—**	**—**	**—**	**—**	**22.7**
Total liabilities at 31 Dec 2022	**2,770.5**	**2,668.9**	**1.8**	**507.8**	**—**	**404.3**	**2,063.0**

1 *The amounts shown do not equal the sum of the amounts shown in the remaining columns of this table for line items 'Derivatives', 'Trading assets', 'Assets held for sale' and 'Prepayments, accrued income and other assets' as some of the assets in this column are subject to regulatory capital charges for credit risk, counterparty credit risk and market risk.*

2 *The amounts shown include both non-trading book and trading book.*

3 *The amounts shown are non-trading book positions. Trading book securitisation positions are included in the market risk column.*

4 *The amounts shown do not consider exposures subject to foreign exchange risk RWA calculations.*

5 *From 30 September 2022, investments in non-financial institution subsidiaries or participations have been measured on an equity accounting basis in accordance with UK CRR Prudential Consolidation provision article 18(7).*

6 *Our investment in BoCom is recognised as a significant investment in a financial sector entity. At 31 December 2022, $15.8bn was deducted from CET1 and $19.0bn RWAs were reported for this investment, with a related exposure of $7.6bn.*

Table 5: Main sources of differences between regulatory exposure amounts and carrying values in financial statements (LI2)

			of which items subject to:			
		Total	*Credit risk framework*	*Securitisation framework*	*CCR framework*	*Market risk framework*[2]
		$bn	*$bn*	*$bn*	*$bn*	*$bn*
1	**Assets carrying value amount under the scope of regulatory consolidation (as per template LI1)**[1]	**2,799.6**	***1,931.4***	***21.2***	***652.4***	***515.4***
2	**Liabilities carrying value amount under the regulatory scope of consolidation (as per template LI1)**[1]	**605.9**	***1.8***	***—***	***507.8***	***404.3***
3	**Total net amount under the regulatory scope of consolidation**	**2,193.7**	***1,929.6***	***21.2***	***144.6***	***111.1***
4	**Off-balance-sheet amounts**	**906.6**	***880.1***	***24.1***	***2.4***	
5	Differences in valuations	**—**	***—***	***—***	***—***	
6	Differences due to different netting rules, other than those already included in row 2	**9.8**	***12.4***	***—***	***(2.6)***	
7	Differences due to consideration of provisions	**9.6**	***9.6***	***—***	***—***	
8	Differences due to the use of credit risk mitigation techniques (CRMs)	**(12.3)**	***(11.1)***	***(1.2)***	***—***	
9	Differences due to credit conversion factors	**(610.8)**	***(610.8)***	***—***	***—***	
10	Differences due to Securitisation with risk transfer	**(8.8)**	***—***	***(8.8)***	***—***	
11	Other differences	**16.9**	***4.9***	***(1.9)***	***13.9***	
12	**Exposure amounts considered for regulatory purposes at 31 Dec 2022**	**2,504.7**	***2,214.7***	***33.4***	***158.3***	

1 Excludes amounts subject to deduction from capital or not subject to regulatory capital requirements.
2 Exposure amounts considered for regulatory purposes disclosed only for credit risk and securitisation frameworks as a more meaningful measure for those risk types, no exposures are reported against the Market Risk framework.

Explanations of differences between accounting and regulatory exposure amounts

Off-balance sheet amounts

Off-balance sheet amounts include undrawn portions of committed facilities, various trade finance commitments and guarantees.

Differences in netting rules

The increase from carrying value due to differences in netting rules is the reversal of amounts deducted from gross loans and advances to customers in the published financial statements in accordance with the offsetting criteria of IAS 32 ‘Financial instruments: presentation’.

Differences due to consideration of provisions

The carrying value of assets is net of credit risk adjustments. The regulatory exposure value under IRB approaches is before deducting credit risk adjustments.

Differences due to the use of credit risk mitigation techniques (CRMs)

Exposure value under the standardised approach is calculated after deducting credit risk mitigation whereas accounting value is before such deductions.

Differences due to credit conversion factors

Exposure value of off-balance sheet items are calculated after the application of the relevant conversion factors as defined in the CRR.

Differences due to securitisation with risk transfer

Securitisation exposure is based on risk transfer of exposure at default (EAD) of underlying loans instead of accounting value.

Other differences

Other differences primarily related to EAD modelling impacts, potential future exposures (PFE) for counterparty credit risk, IFRS 9 transitional arrangements applicable to standardised credit risk exposure and dilution risk.

Explanation of differences between accounting fair value and regulatory prudent valuation

Fair value is defined as the best estimate of the price that would be received to sell an asset or be paid to transfer a liability in an orderly transaction between market participants at the measurement date.

Some fair value adjustments already reflect valuation uncertainty to some degree. These are market data uncertainty and model uncertainty.

However, it is recognised that a variety of valuation techniques using stressed assumptions and combined with the range of plausible market parameters at a given point in time may still generate unexpected uncertainty beyond fair value.

A series of additional valuation adjustments (‘AVAs’) are therefore required to reach a specified degree of confidence (the ‘prudent value’) set by regulators that differs both in terms of scope and measurement from HSBC’s own quantification for disclosure purposes.

AVAs should consider at the minimum: market price uncertainty, bid-offer (close-out) uncertainty, model risk, concentration, administrative costs, unearned credit spreads and investing and funding costs.

AVAs are not limited to level 3 exposures, for which a 95% uncertainty range is already computed and disclosed, but must also be calculated for any exposure for which the exit price cannot be determined with a high degree of certainty. Table 62 presents further information on the prudent valuation adjustment.

Further details on level 3 exposures are available in Note 12 of the Financial Statements in the Annual Report and Accounts 2022.

Treasury Risk Management

Treasury risk is the risk of having insufficient capital, liquidity or funding resources to meet financial obligations and satisfy regulatory requirements, including the risk of adverse impact on earnings or capital due to structural or transactional foreign exchange exposures and changes in market interest rates, together with pension and insurance risk.

The Global Head of Traded and Treasury Risk Management and Risk Analytics is the accountable risk steward for all treasury risks. The Group Treasurer is the risk owner for all treasury risks, with the exception of pension risk and insurance risk. The Group Treasurer co-owns pension risk with the Group Head of Performance, Reward and Employee Relations. Insurance risk is owned by the Chief Executive Officer for Global Insurance.

The Global Treasury function actively manages capital risk, liquidity risk, interest rate risk in the banking book and non-trading book foreign exchange risk on an ongoing basis, supported by the Holdings Asset and Liability Management Committee ('ALCO') and local ALCOs, overseen by Treasury Risk Management and the Risk Management Meeting ('RMM'). Pension risk is overseen by a network of local and regional pension risk management meetings.

For further details of our approach to treasury risk management including capital risk, liquidity risk, interest rate in the banking book, non-trading foreign exchange exposure and pension risk, please see page 202 of the Annual Report and Accounts 2022*.*

Capital risk

Our approach to capital management is driven by our strategic and organisational requirements, taking into account the regulatory, economic and commercial environment. We aim to maintain a strong capital base to support the risks inherent in our business and invest in accordance with our strategy, meeting both consolidated and local regulatory capital requirements at all times.

As at 31 December 2022, capital securities included in the capital base of HSBC have been issued on a fully compliant or grandfathered basis in accordance with the Capital Requirements Regulation. Capital securities are regularly reviewed for compliance with guidelines. A list of the main features of our capital instruments in accordance with Annex VIII of CRR II is also published on our website at www.hsbc.com with reference to our balance sheet on 31 December 2022. The full terms and conditions of our securities are also available at www.hsbc.com.

Liquidity risk

We aim to ensure that management has oversight of our liquidity and funding risks at Group and entity level by maintaining comprehensive policies, metrics and controls. We maintain a strong liquidity base to support the risks inherent in our business and invest in accordance with our strategy, meeting both consolidated and local regulatory requirements at all times. We manage liquidity and funding risk at an operating entity level to make sure that obligations can be met in the jurisdiction where they fall due, generally without reliance on other parts of the Group.

Interest rate risk in the banking book

Interest rate risk in the banking book is the risk of an adverse impact to earnings or capital due to changes in market interest rates. It is generated by our non-traded assets and liabilities, specifically loans, deposits and financial instruments that are not held for trading intent or in order to hedge positions held with trading intent. Interest rate risk that can be economically hedged may be transferred to Global Treasury. Hedging is generally executed through interest rate derivatives or fixed-rate government bonds. Any interest rate risk that Global Treasury cannot economically hedge is not transferred and will remain within the global business where the risks originate.

Global Treasury uses a number of measures to monitor and control interest rate risk in the banking book, including:

- net interest income sensitivity; and
- economic value of equity sensitivity.

Further details on IRRBB can be found on page 22.

Non-trading book foreign exchange exposures

Structural foreign exchange exposures arise from net assets or capital investments in foreign operations, together with any associated hedging. A foreign operation is defined as a subsidiary, associate, joint arrangement or branch where the activities are conducted in a currency other than that of the reporting entity. An entity's functional reporting currency is normally that of the primary economic environment in which the entity operates.

Our structural foreign exchange exposures are managed with the primary objective of ensuring, where practical, that our consolidated capital ratios and the capital ratios of individual banking subsidiaries are largely protected from the effect of changes in exchange rates. We hedge structural foreign exchange positions where it is capital efficient to do so, and subject to approved limits. This is achieved through a combination of net investment hedges and economic hedges. Hedging positions are monitored and rebalanced periodically to manage RWA or downside risks associated with HSBC's foreign currency investments.

Transactional foreign exchange risk arises primarily from day-to-day transactions in the banking book generating profit and loss or fair value through other comprehensive income ('FVOCI') reserves in a currency other than the reporting currency of the operating entity.

Transactional foreign exchange exposure generated through profit and loss is periodically transferred to Markets and Securities Services and managed within limits with the exception of limited residual foreign exchange exposure arising from timing differences or for other reasons. Transactional foreign exchange exposure generated through OCI reserves is managed by Global Treasury within agreed appetite.

Own funds

Table 6: Composition of Regulatory own funds (UK CC1)

			At	
		Ref †	**31 Dec 2022 $m**	31 Dec 2021 $m
	Common equity tier 1 ('CET1') capital: instruments and reserves			
1	Capital instruments and the related share premium accounts		**23,406**	23,513
	– ordinary shares	a	**23,406**	23,513
2	Retained earnings[1,2]	b	**127,155**	121,059
3	Accumulated other comprehensive income (and other reserves)[1,2]	c	**4,105**	8,273
5	Minority interests (amount allowed in consolidated CET1)	d	**4,444**	4,186
UK-5a	Independently reviewed interim net profits net of any foreseeable charge or dividend[2]	b	**8,633**	5,887
6	**Common equity tier 1 capital before regulatory adjustments**		**167,743**	162,918
	Common equity tier 1 capital: regulatory adjustments			
7	Additional value adjustments (negative amount)[3]		**(1,171)**	(1,217)
8	Intangible assets (net of related deferred tax liability) (negative amount)	e	**(12,141)**	(9,123)
10	Deferred tax assets that rely on future profitability excluding those arising from temporary differences (net of related tax liability where the conditions in Article 38 (3) CRR are met) (negative amount)	f	**(4,233)**	(1,520)
11	Fair value reserves related to gains or losses on cash flow hedges of financial instruments that are not valued at fair value	g	**3,601**	170
12	Negative amounts resulting from the calculation of expected loss amounts	h	**(1,248)**	(2,020)
13	Any increase in equity that results from securitised assets (negative amount)			
14	Gains or losses on liabilities valued at fair value resulting from changes in own credit standing[1]	i	**(280)**	1,571
15	Defined-benefit pension fund assets (negative amount)	j	**(5,448)**	(7,146)
16	Direct and indirect holdings of own CET1 instruments (negative amount)[4]		**(40)**	(40)
19	Direct, indirect and synthetic holdings by the institution of the CET1 instruments of financial sector entities where the institution has a significant investment in those entities (amount above 10% threshold and net of eligible short positions)[2'5]		**(25,058)**	(11,794)
22	Amount exceeding the 17.65% threshold (negative amount)[2,5]		**(2,102)**	—
23	– *direct, indirect and synthetic holdings by the institution of the CET1 instruments of financial sector entities where the institution has a significant investment in those entities*[2,5]		***(1,546)***	—
25	– *of which: deferred tax assets arising from temporary differences*	k	***(556)***	—
27	Qualifying AT1 deductions that exceed the additional tier 1 ('AT1') items of the institution (negative amount)			
27a	Other regulatory adjustments to CET1 capital (including IFRS 9 transitional adjustments when relevant)[1]	l	**(332)**	766
28	**Total regulatory adjustments to common equity tier**		**(48,452)**	(30,353)
29	**Common equity tier 1 ('CET1') capital**		**119,291**	132,565
	Additional tier 1 ('AT1') capital: instruments			
30	Capital instruments and the related share premium accounts		**19,746**	22,414
31	– classified as equity under IFRSs	m	**19,746**	22,414
33	Amount of qualifying items referred to in Article 484 (4) CRR and the related share premium accounts subject to phase out from AT1 as described in Article 486(3) CRR		**—**	900
34	Qualifying tier 1 capital included in consolidated AT1 capital (including minority interests not included in CET1) issued by subsidiaries and held by third parties	n	**90**	473
35	– *of which:* *instruments issued by subsidiaries subject to phase out*		**—**	*406*
	instruments issued by subsidiaries grandfathered under CRR2			
36	**Additional tier 1 capital before regulatory adjustments**		**19,836**	23,787
	Additional tier 1 capital: regulatory adjustments			
37	Direct and indirect holdings of own AT1 instruments (negative amount)[4]		**(60)**	(60)
43	**Total regulatory adjustments to additional tier 1 capital**		**(60)**	(60)
44	**Additional tier 1 capital**		**19,776**	23,727
45	**Tier 1 capital (T1 = CET1 + AT1)**		**139,067**	156,292
	Tier 2 capital: instruments and provisions			
46	Capital instruments and the related share premium accounts[1]	o	**18,287**	11,765
	– *of which: instruments grandfathered under CRR II*			
UK-47b	Amount of qualifying items referred to in Article 494b (2) CRR subject to phase out from T2[1]	p	**4,055**	7,140
48	Qualifying own funds instruments included in consolidated T2 capital (including minority interests and AT1 instruments not included in CET1 or AT1) issued by subsidiaries and held by third parties	q, r	**2,437**	4,113
49	– *of row 48: instruments issued by subsidiaries subject to phase out*[1]			*615*
	– *of row 48: instruments issued by subsidiaries grandfathered under CRR II*	r	***1,210***	*1,264*
51	**Tier 2 capital before regulatory adjustments**		**24,779**	23,018
	Tier 2 capital: regulatory adjustments			
52	Direct, indirect and synthetic holdings by an institution of own T2 instruments and subordinated loans (negative amount)[4]		**(40)**	(40)
55	Direct and indirect holdings by the institution of the T2 instruments and subordinated loans of financial sector entities where the institution has a significant investment in those entities (net of eligible short positions)	s	**(1,383)**	(1,484)
57	**Total regulatory adjustments to tier 2 capital**		**(1,423)**	(1,524)
58	**Tier 2 capital**		**23,356**	21,494
59	**Total capital (TC = T1 + T2)**		**162,423**	177,786
60	**Total Risk exposure amount**		**839,720**	838,263

Table 6: Composition of Regulatory own funds (UK CC1) (continued)

			At	
			31 Dec 2022	31 Dec 2021
		Ref †	**$m**	$m
	Capital ratios and buffers (%)			
61	Common equity tier 1 (as a percentage of total risk exposure amount)		**14.2**	15.8
62	Tier 1 (as a percentage of total risk exposure amount)		**16.6**	18.6
63	Total capital (as a percentage of total risk exposure amount)		**19.3**	21.2
64	Institution CET1 overall capital requirement (per Article 92 (1) CRR, plus additional requirement in accordance with point (a) of Article 104(1) CRD, and combined buffer requirement in accordance with Article 128(6) CRD) as a percentage of risk exposure amount)[1]		**10.9**	4.7
65	– capital conservation buffer requirement		**2.5**	2.5
66	– countercyclical buffer requirement		**0.4**	0.2
67a	– Global systemically important institution ('G-SII') buffer		**2.0**	2.0
68	Common equity tier 1 available to meet buffers		**8.2**	9.8
	Amounts below the threshold for deduction (before risk weighting)			
72	Direct and indirect holdings of own funds and eligible liabilities of financial sector entities where the institution does not have a significant investment in those entities (amount below 10% threshold and net of eligible short positions)		**2,532**	3,116
73	Direct and indirect holdings by the institution of the CET1 instruments of financial sector entities where the institution has a significant investment in those entities (amount below 17.65% thresholds and net of eligible short positions)		**13,134**	14,359
75	Deferred tax assets arising from temporary differences (amount below 17.65% threshold, net of related tax liability where the conditions in Article 38 (3) CRR are met)		**4,711**	4,812
	Applicable caps on the inclusion of provisions in tier 2			
77	Cap on inclusion of credit risk adjustments in T2 under standardised approach		**1,962**	2,027
79	Cap for inclusion of credit risk adjustments in T2 under internal ratings-based approach		**3,204**	3,157
	Capital instruments subject to phase out arrangements (only applicable between 1 Jan 2014 and 1 Jan 2022)			
82	Current cap on AT1 instruments subject to phase out arrangements		**—**	1,730
83	Amount excluded from AT1 due to cap (excess over cap after redemptions and maturities)		**—**	541
84	Current cap on T2 instruments subject to phase out arrangements		**—**	894
85	Amount excluded from T2 due to cap (excess over cap after redemptions and maturities)		**—**	444

† *The references (a)–(s) identify balance sheet components in 'Table 2: Reconciliation of regulatory own funds to balance sheet in the audited financial statements (UK CC2) ', which are used in the calculation of regulatory capital. This table shows how they contribute to the regulatory capital calculation. Their contribution may differ from their accounting value in Table 2 as a result of adjustment or analysis to apply regulatory definitions of capital.*

1 *These disclosures are based on updated rules implemented from 1 January 2022 and are based on the PRA's disclosure templates and instructions which came into force at that time. The presentation of comparatives has been amended only for CRR II grandfathered instruments to align to the updated template's rows and instructions.*

2 *From 30 September 2022, investments in non-financial institution subsidiaries or participations have been measured on an equity accounting basis in accordance with CRR II Prudential Consolidation provision article 18(7). Comparatives have not been restated as this change has no significant prior period impact on this disclosure.*

3 *Additional value adjustments are calculated on assets measured at fair value.*

4 *The minimum deductions for holdings of own CET1, AT1 and T2 instruments are set by the PRA.*

5 *The threshold deduction for significant investments relates to balances recorded on numerous lines on the balance sheet and includes; investments in insurance subsidiaries and non-consolidated associates, other CET1 equity held in financial institutions, connected funding of a capital nature, and other balance sheet lines.*

At 31 December 2022, our common equity tier 1 ('CET1') capital ratio decreased to 14.2% from 15.8% at 31 December 2021. This primarily reflected a decrease of $13.3bn in our CET1 capital. The key drivers of the fall in our CET1 ratio were:

- a 0.8 percentage point impact from new regulatory requirements, which reduced CET1 capital by $3.5bn and increased RWAs by $27.1bn at implementation;
- a 0.7 percentage point decrease from a $5.6bn fall in the fair value of securities;
- a 0.4 percentage point impact from underlying RWA growth during the year;
- a 0.3 percentage point impact from the $2.0bn impairment on the reclassification of our French retail operations to held for sale; and
- a 0.1 percentage point impact from unfavourable foreign exchange translation, reducing CET1 capital by $6.6bn and RWAs by $41.9bn.

Profits and other movements added $4.4bn to CET1 capital and 0.7 percentage points to the CET1 ratio. This included capital deductions for deferred tax, dividends and the share buy-back.

Our Pillar 2A requirement at 31 December 2022, as per the PRA's Individual Capital Requirement based on a point-in-time assessment, was 2.6% of RWAs, of which 1.5% was required to be met by CET1. Structural foreign exchange risk is now capitalised in RWAs under Pillar 1 and assessed for Pillar 2A in the same manner as other risks.

Impact of regulatory and other developments

We expect the recently announced reduction of HKMA's risk-weight floor for residential mortgages from 25% to 15% to improve our CET1 ratio by 0.1 percentage points with effect from 1 January 2023. This reduction will be partly offset by a change to the sourcing and risk-weighting of balances we proportionally consolidate for our associates.

During 2023, our CET1 ratio will continue to be affected by strategic decisions we have taken. Based on our capital position at 31 December 2022, we would expect that on completing the planned sale of our banking operations in Canada, branch operations in Greece, and our retail banking operations in France, we would improve our CET1 ratio by around 1.4 percentage points, net of the impact from foreign exchange hedges related to the proceeds from the planned sale of our Canada business. The exact timing and impact on our capital position of these transactions may change as the balance sheets being disposed evolve in 2023.

Leverage ratio

The risk of excessive leverage is managed as part of HSBC's global risk appetite framework and monitored using a leverage ratio metric within our risk appetite statement ('RAS'). The RAS articulates the aggregate level and types of risk that HSBC is willing to accept in its business activities in order to achieve its strategic business objectives.

The RAS is monitored via the risk appetite profile report, which includes comparisons of actual performance against the risk appetite and tolerance thresholds assigned to each metric. This is to ensure that any excessive risk is highlighted, assessed and mitigated appropriately. The risk appetite profile report is presented monthly to the Risk Management Meeting ('RMM') of the Group Executive Committee ('GEC') and the Group Risk Committee ('GRC').

Our approach to risk appetite is described on page 132 of the Annual Report and Accounts 2022.

Table 7: Leverage ratio common disclosure (UK LR2-LRCom)

		At 31 Dec 2022 $m
	On-balance sheet exposures (excluding derivatives and securities financing transactions ('SFTs'))	
1	On-balance sheet items (excluding derivatives, SFTs, but including collateral)[1]	**2,268,101**
2	Gross-up for derivatives collateral provided, where deducted from the balance sheet assets pursuant to the applicable accounting framework	**10,918**
3	(Deductions of receivables assets for cash variation margin provided in derivatives transactions)	**(60,793)**
6	(Asset amounts deducted in determining tier 1 capital (leverage))[1]	**(50,531)**
7	**Total on-balance sheet exposures (excluding derivatives and SFTs)**	**2,167,695**
	Derivative exposures	
8	Replacement cost associated with SA-CCR derivatives transactions (i.e. net of eligible cash variation margin)	**57,876**
9	Add-on amounts for potential future exposure associated with SA-CCR derivatives transactions	**113,147**
10	(Exempted CCP leg of client-cleared trade exposures) (SA-CCR)	**(43,106)**
11	Adjusted effective notional amount of written credit derivatives	**91,927**
12	(Adjusted effective notional offsets and add-on deductions for written credit derivatives)	**(86,771)**
13	**Total derivative exposures**	**133,073**
	SFT exposures	
14	Gross SFT assets (with no recognition of netting), after adjusting for sales accounting transactions	**434,410**
15	(Netted amounts of cash payables and cash receivables of gross SFT assets)	**(139,502)**
16	Counterparty credit risk exposure for SFT assets	**12,021**
18	**Total securities financing transaction exposures**	**306,929**
	Other off-balance sheet exposures	
19	Off-balance sheet exposures at gross notional amount	**912,473**
20	(Adjustments for conversion to credit equivalent amounts)	**(686,870)**
22	**Total off-balance sheet exposures**	**225,603**
	Capital and total exposures measure	
23	**Tier 1 capital (leverage)**	**139,067**
24	Total exposure measure including claims on central banks	**2,833,300**
UK-24a	(-) Claims on central banks excluded	**(416,099)**
UK-24b	**Total exposure measure excluding claims on central banks**	**2,417,201**
	Leverage ratios	
25	**Leverage ratio excluding claims on central banks (%)**	**5.75**
UK-25a	Fully loaded ECL accounting model leverage ratio excluding claims on central banks (%)	**5.74**
UK-25b	Leverage ratio excluding central bank reserves as if the temporary treatment of unrealised gains and losses measured at fair value through other comprehensive income had not been applied (%)	**5.75**
UK-25c	Leverage ratio including claims on central banks (%)	**4.91**
26	Regulatory minimum leverage ratio requirement (%)	**3.25**
	Additional leverage ratio disclosure requirements – leverage ratio buffers	
27	Leverage ratio buffer (%)	**0.80**
UK-27a	– *of which: G-SII or O-SII additional leverage ratio buffer (%)*	***0.70***
UK-27b	– *of which: countercyclical leverage ratio buffer (%)*	***0.10***
	Additional leverage ratio disclosure requirements – disclosure of mean values	
28	Mean of daily values of gross SFT assets, after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivable	**287,021**
29	Quarter-end value of gross SFT assets, after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables	**294,908**
UK-31	Average total exposure measure including claims on central banks	**2,840,599**
UK-32	Average total exposure measure excluding claims on central banks	**2,416,643**
UK-33	Average leverage ratio including claims on central banks (%)	**4.76**
UK-34	Average leverage ratio excluding claims on central banks (%)	**5.59**

1 *From 30 September 2022, investments in non-financial institution subsidiaries or participations have been measured on an equity accounting basis in accordance with CRR II Prudential Consolidation provision article 18(7).*

The below tables provide a reconciliation of the total assets in our published balance sheet under IFRS and the total leverage exposure (Table 8) and a breakdown of on-balance sheet exposures excluding derivatives, SFTs and exempted exposures, by asset class (Table 9).

Table 8: Summary reconciliation of accounting assets and leverage ratio exposures (UK LR1- LRSum)

		At 31 Dec 2022 $m
1	Total assets as per published financial statements	**2,966,530**
2	Adjustment for entities which are consolidated for accounting purposes but are outside the scope of prudential consolidation[1]	**(102,934)**
3	(Adjustment for securitised exposures that meet the operational requirements for the recognition of risk transference)	**(828)**
4	(Adjustment for exemption of exposures to central banks)	**(416,099)**
6	Adjustment for regular-way purchases and sales of financial assets subject to trade date accounting	**(12,283)**
7	Adjustment for eligible cash pooling transactions	**(5,818)**
8	Adjustment for derivative financial instruments	**(201,765)**
9	Adjustment for securities financing transactions ('SFTs')	**20,266**
10	Adjustment for off-balance sheet items (i.e. conversion to credit equivalent amounts of off-balance sheet exposures)	**225,603**
11	(Adjustment for prudent valuation adjustments and specific and general provisions which have reduced tier 1 capital (leverage))[1]	**(50,531)**
12	Other adjustments	**(4,940)**
13	**Total leverage ratio exposure**	**2,417,201**

1 *From 30 September 2022, investments in non-financial institution subsidiaries or participations have been measured on an equity accounting basis in accordance with CRR II Prudential Consolidation provision article 18(7).*

Table 9: Leverage ratio – split of on-balance sheet exposures (excluding derivatives, SFTs and exempted exposures) (UK LR3-LRSpl)

		At	
		31 Dec 2022 $m	31 Dec 2021 $m
UK-1	Total on-balance sheet exposures (excluding derivatives, SFTs and exempted exposures), of which[1,2]:	**1,791,209**	2,338,391
UK-2	Trading book exposures	**183,806**	220,163
UK-3	Banking book exposures, – *of which:*	***1,607,403***	*2,118,228*
UK-4	*Covered bonds*	***1,961***	*2,029*
UK-5	*Exposures treated as sovereigns*	***320,864***	*792,975*
UK-6	*Exposures to regional governments, multilateral development banks, international organisations and public sector entities not treated as sovereigns*	***8,529***	*11,185*
UK-7	*Institutions*	***71,593***	*65,935*
UK-8	*Secured by mortgages of immovable properties*	***387,404***	*399,909*
UK-9	*Retail exposures*	***76,349***	*90,613*
UK-10	*Corporates*	***522,553***	*558,083*
UK-11	*Exposures in default*	***15,046***	*13,398*
UK-12	*Other exposures (e.g. equity, securitisations and other non-credit obligation assets)*	***203,104***	*184,101*

1 *This calculation is in line with the UK leverage rules that were implemented on 1 January 2022, and excludes central bank claims. Comparatives for 2021 are reported based on the disclosure rules in force at that time, and include claims on central banks.*
2 *From 30 September 2022, investments in non-financial institution subsidiaries or participations have been measured on an equity accounting basis in accordance with CRR II Prudential Consolidation provision article 18(7).*

Our leverage ratio was 5.8% at 31 December 2022, up from 5.2% at 31 December 2021. The improvement was mainly due to the exclusion of central bank claims following the implementation of the UK leverage ratio framework from 1 January 2022 and foreign exchange translation movement. This was partly offset by a decline in tier 1 capital.

At 31 December 2022, our UK minimum leverage ratio requirement of 3.25% was supplemented by a leverage ratio buffer of 0.8%, which consists of an additional leverage ratio buffer of 0.7% and a countercyclical leverage ratio buffer of 0.1%.

These buffers translated into capital values of $16.9bn and $2.4bn respectively. We exceeded these leverage requirements.

Our average leverage ratio for the fourth quarter was less than the leverage ratio as at 31 December 2022, mainly due to the lower average tier 1 capital.

Capital buffers

Our geographical breakdown and institution-specific countercyclical capital buffer ('CCyB') disclosure is provided in Appendix I. The G-SIB Indicators disclosure is published annually on our website, www.hsbc.com.

Pillar 1 minimum capital requirements and RWA flow

Pillar 1 covers the minimum capital resource requirements for credit risk, counterparty credit risk ('CCR'), equity, securitisation, market risk and operational risk. These requirements are expressed in terms of RWAs.

Risk category	Scope of permissible approaches	Our approach
Credit risk	The Basel Committee's framework applies three approaches of increasing sophistication to the calculation of Pillar 1 credit risk capital requirements. The most basic level, the standardised approach, requires banks to use external credit ratings to determine the risk weightings applied to rated counterparties. Other counterparties are grouped into broad categories, and standardised risk weightings are applied to these categories. The next level, the foundation IRB ('FIRB') approach, allows banks to calculate their credit risk capital requirements on the basis of their internal assessment of a counterparty's probability of default ('PD'), but subjects their quantified estimates of exposure at default ('EAD') and loss given default ('LGD') to standard supervisory parameters. Finally, the advanced IRB ('AIRB') approach allows banks to use their own internal assessment in both determining PD and quantifying EAD and LGD.	For consolidated Group reporting, we have adopted the AIRB approach for the majority of our business. Some portfolios remain on the standardised or FIRB approaches: • pending the issuance of local regulations or model approval; • following supervisory prescription of a non-advanced approach; or • under exemptions from IRB treatment.
Counterparty credit risk	CCR covers the risk of counterparty default and potential mark to market losses in derivatives and SFTs. The potential for mark to market losses is known as Credit Valuation Adjustment ('CVA') risk. Default exposures, for a given netting set, are determined either by the Credit Risk Mitigation ('CRM') approach, Standardised Approach For Counterparty Risk ('SA-CCR'), or by internal modelling ('IMM'). For CVA, permissible approaches are Standardised Approach to Credit Valuation Adjustment ('SA-CVA'), Basic Approach to Credit Valuation Approach ('BA-CVA') and a proxy approach.	We primarily use SA and IMM approaches for CCR. Details of the IMM permission we have received from the PRA can be found in the Financial Services Register on the PRA website. Our aim is to increase the proportion of positions on IMM over time.
Equity	Capital requirements for non-trading book holdings of equity can be assessed under the standardised or IRB approaches. Underlying equity positions within collective investment undertakings must be treated using the IRB equity simple risk-weight approach.	We calculate capital requirements for: • non-trading book equity holdings using the standardised approach; and • underlying equity positions within collective investments undertakings using the IRB equity simple risk-weight approach.
Securitisation	The framework prescribes the following approaches: • internal ratings-based approach ('SEC-IRBA'); • standardised approach ('SEC-SA'); • external ratings-based approach ('SEC-ERBA'); and • internal assessment approach ('IAA').	Under the framework: • Our originated positions are reported under SEC-IRBA. • Our positions in the sponsored Solitaire programme and our investment in third-party positions are reported under SEC-SA and SEC-ERBA. • Our sponsored positions in Regency are reported under IAA. Our IAA approach is audited annually by internal model review and is subject to review by the PRA.
Market risk	Market risk capital requirements can be determined under either the standardised rules or the internal models approach ('IMA'). The latter involves the use of internal value at risk ('VaR') models to measure market risks and determine the appropriate capital requirement. In addition to the VaR models, other internal models permitted under IMA include stressed VaR, incremental risk charge ('IRC') and comprehensive risk measure.	The market risk capital requirement is measured using internal market risk models, where approved by the PRA, or under the standardised rules. Our internal market risk models comprise VaR, stressed VaR and IRC. Non-proprietary details of the scope of our IMA permission are available in the Financial Services Register on the PRA website.
Operational risk	The Basel Committee allows firms to calculate their operational risk capital requirement under the basic indicator approach, the standardised approach or the advanced measurement approach.	We currently use the standardised approach in determining our operational risk capital requirement. We have in place an operational risk model that is used for economic capital calculation purposes.

Table 10: Overview of risk-weighted exposure amounts (OV1)

		At		
		31 Dec 2022	30 Sep 2022	**31 Dec 2022**
		RWAs	RWAs	**Capital requirement[1]**
		$m	$m	**$m**
1	**Credit risk (excluding counterparty credit risk)**	**672,007**	664,838	**53,761**
2	– standardised approach[2]	**153,584**	147,923	**12,287**
3	– foundation IRB approach	**78,790**	76,235	**6,303**
4	– slotting approach	**27,031**	25,816	**2,163**
5	– advanced IRB approach	**412,602**	414,864	**33,008**
6	**Counterparty credit risk**	**36,857**	41,880	**2,949**
7	– standardised approach[3]	**9,997**	12,027	**800**
8	– internal model method	**11,777**	14,796	**942**
UK-8a	– risk exposure amount for contributions to the default fund of a central counterparty	**839**	579	**67**
UK-8b	– credit valuation adjustment	**3,284**	3,511	**263**
9	– other counterparty credit risk[4]	**10,960**	10,967	**877**
15	**Settlement risk**	**215**	177	**17**
16	**Securitisation exposures in the non-trading book (after the cap)**	**7,085**	6,943	**567**
17	– internal ratings-based approach ('SEC-IRBA')	**1,764**	1,152	**141**
18	– external ratings-based approach ('SEC-ERBA') including internal assessment approach ('IAA')	**2,424**	2,987	**194**
19	– standardised approach ('SEC-SA')	**2,583**	2,506	**207**
UK-19a	– 1250%/deduction	**314**	298	**25**
20	**Position, foreign exchange and commodities risks (market risk)**	**37,630**	33,484	**3,010**
21	– standardised approach	**13,705**	9,930	**1,096**
22	– internal models approach	**23,925**	23,554	**1,914**
23	**Operational risk**	**85,926**	80,993	**6,874**
UK-23b	– standardised approach	**85,926**	80,993	**6,874**
29	**Total**	**839,720**	828,315	**67,178**
24	*– of which: Amounts below the thresholds for deduction (subject to 250% risk weight)[5]*	***44,683***	*41,573*	***3,575***

1 *'Capital requirement' in this table represents the minimum capital charge set at 8% of RWAs by Article 92(1) of CRR II.*
2 *These balances include underlying equity exposures within collective investment undertakings ('CIUs') calculated using the IRB simple risk-weight method.*
3 *The standardised approach to CCR was implemented with effect from 1 January 2022 and replaces the previous mark-to-market method.*
4 *Other counterparty credit risk includes RWAs on securities financing transactions and free deliveries.*
5 *These balances are included in rows 2 and 5 of the table.*

Credit risk, including amounts below the thresholds for deduction

RWAs increased by $7.1bn from 30 September 2022, driven by increases due to foreign currency translation differences of $17.0bn being offset by RWAs reducing by $9.8bn.

A $8.6bn decrease due to asset size movements mainly reflected Commercial Banking ('CMB') and Global Banking and Markets ('GBM') the corporate lending fall in Asia, Europe and North America.

Changes in asset quality led to a $1.8bn increase in RWAs, largely due to Asia credit migration, partly offset by portfolio mix changes.

The implementation of a credit card model in Hong Kong was the main driver of the $1.7bn decrease of RWAs through model updates.

Changes to methodology and policy decreased RWAs by $1.3bn, primarily due to data enhancements driven by internal and external review of our regulatory reporting processes, in Commercial Banking and Global Banking and Markets, mostly in Europe and Asia.

Counterparty credit risk, including settlement risk

Counterparty credit risk RWAs fell by $5.0bn primarily due to mark-to-market movements and management initiatives, mainly in Asia and Europe.

Market risk

The $4.1bn rise in market risk RWAs was predominantly due to asset size movements, mostly attributable to heightened market risk volatility (including the impact of higher capital multipliers as a result of back-testing breaches), and an increase in transactional and structural foreign exchange exposure.

Securitisation

An increase of $0.1bn in securitisation RWAs, due to new synthetic positions in Europe, was mostly offset by restructuring of legacy swap positions as part of management initiatives.

Operational risk

RWAs rose by $4.9bn due to higher average revenue in the annual recalculation of operational risk and foreign currency translation differences.

Table 11: RWA flow statements of credit risk exposures under the IRB approach[1] (CR8)

		Quarter ended			
		31 Dec 2022	30 Sep 2022	30 Jun 2022	31 Mar 2022
		$m	$m	$m	$m
1	**RWAs at the opening period**	**505,157**	511,846	516,747	496,271
2	Asset size	**(10,354)**	6,178	6,973	11,875
3	Asset quality	**1,505**	(127)	1,168	(881)
4	Model updates	**(1,688)**	(1,274)	1,748	—
5	Methodology and policy	**(1,733)**	9,047	3,438	17,352
6	Acquisitions and disposals	**—**	(232)	—	(1,503)
7	Foreign exchange movements[2]	**14,011**	(20,281)	(18,228)	(6,367)
8	Other	**—**		—	
9	**RWAs at the closing period**	**506,898**	505,157	511,846	516,747

1 Table excludes securitisation positions and non-credit obligation assets and includes free deliveries.
2 Foreign exchange movements in this disclosure are computed by retranslating the RWAs into US dollars for non-US dollar branches, subsidiaries, joint ventures and associates.

Excluding foreign currency translation differences, RWAs under the IRB approach decreased by $12.3bn in the fourth quarter of the year, mostly driven by:

- An asset size decrease of $10.4bn, primarily due to a fall in lending in Asia, Europe and North America,
- An increase in asset quality of $1.5bn ,primarily due to credit migration in Asia, partly offset by portfolio mix changes,
- Changes in methodology and policy includes data enhancements made driven by internal and external reviews which led to a $1.7bn fall in RWAs, and
- The implementation of a credit card model in Hong Kong led to a $1.7bn fall in model updates.

Table 12: RWA flow statements of CCR exposures under IMM (CCR7)

		Quarter ended			
		31 Dec 2022	30 Sep 2022	30 Jun 2022	31 Mar 2022
		$m	$m	$m	$m
1	**RWAs at the opening period**	**14,778**	13,958	14,244	12,626
2	Asset size	**(3,004)**	992	(366)	1,518
3	Asset quality	**7**	(15)	(105)	172
4	Model updates (IMM only)	**—**	—	(46)	300
5	Methodology and policy (IMM only)	**(23)**	(157)	231	(372)
9	**RWAs at the closing period**	**11,758**	14,778	13,958	14,244

RWAs under the internal model method decreased by $3.0bn in 4Q22, predominately due to mark-to-market movements and management initiatives in Asia and Europe.

Table 13: RWA flow statements of market risk exposures under IMA (MR2-B)

		VaR	**Stressed VaR**	**Incremental risk charge ('IRC')**	**Other**	**Total RWAs**	**Total capital requirements**
		$m	**$m**	**$m**	**$m**	**$m**	**$m**
1	**RWAs at 1 Oct 2022**	**7,575**	**10,922**	**3,634**	**1,423**	**23,554**	**1,884**
2	Movement in risk levels	**55**	**169**	**182**	**352**	**758**	**61**
4	Methodology and policy	**—**	**—**	**(387)**	**—**	**(387)**	**(31)**
8	**RWAs at 31 Dec 2022**	**7,630**	**11,091**	**3,429**	**1,775**	**23,925**	**1,914**
1	RWAs at 1 Jul 2022	5,808	6,188	3,598	1,562	17,156	1,373
2	Movement in risk levels	1,934	5,197	51	(128)	7,054	563
4	Methodology and policy	(167)	(463)	(15)	(11)	(656)	(52)
8	RWAs at 30 Sep 2022	7,575	10,922	3,634	1,423	23,554	1,884
1	RWAs at 1 Apr 2022	5,139	6,633	3,469	1,688	16,929	1,354
2	Movement in risk levels	669	(445)	129	(126)	227	19
8	RWAs at 30 Jun 2022	5,808	6,188	3,598	1,562	17,156	1,373
1	RWAs at 1 Jan 2022	5,202	9,585	3,208	1,594	19,589	1,567
2	Movement in risk levels	(63)	(2,952)	261	94	(2,660)	(213)
8	RWAs at 31 Mar RWAs at 31 Mar 2022	5,139	6,633	3,469	1,688	16,929	1,354

RWAs under the internal models approach increased by $0.4bn in 4Q22, mainly in value at risk driven by higher volatility in Europe and Asia.

Interest rate risk in the banking book

Interest rate risk in the banking book ('IRRBB') is the risk of an adverse impact to earnings or capital due to changes in market interest rates. It is generated by our non-traded assets and liabilities, specifically loans, deposits and financial instruments that are not held for trading intent.

Risk management and governance

Global Treasury measures, monitors and manages interest rate risk in the banking book. This includes reviewing and challenging the interest rate management impacts of new products and the proposed behavioural assumptions used for hedging activities. Global Treasury is also responsible for maintaining and updating the transfer pricing framework, informing the Holdings Asset and Liability Committee ('ALCO') of the Group's overall banking book interest rate risk exposure.

All material interest rate risk must be identified, measured, monitored, managed and controlled by metrics within limits for each local entity. Key metrics used to monitor IRRBB include: projected net interest income ('NII') and economic value of equity ('EVE') sensitivities under varying interest rate scenarios as prescribed by the regulators and internally calibrated scenarios and shocks. A stressed VaR is used for the portfolio of liquid securities held by Markets Treasury that are accounted for at fair value through other comprehensive income.

EVE and NII sensitivities are monitored against thresholds at both entity and consolidated levels. Global Treasury is subject to an independent oversight and challenge from Treasury Risk, Internal Audit and model governance. Calculations exclude pension, insurance and investments in subsidiaries.

Stress testing is used to assess how the bank copes with severe economic scenarios, in particular looking at bank's resilience to make sure there is enough capital to withstand extreme shocks.

At HSBC, stress testing also forms a key part of our risk management framework. HSBC runs various internal and regulatory stress tests during the year both at a Group and individual entity level which helps us to identify key economic risks the Group is exposed to and how they impact on the Group's financial and capital position in a severe economic shock. Identifying these risks allow the Group to actively assess and put in place effective risk management strategies to help mitigate before those risks occur. The results of the various stress tests also help to ensure that the Group has adequate capital and liquidity to withstand extreme hypothetical economic shocks as defined in the stress scenarios and thus to help determine our capital requirements under ICAAP.

Economic value of equity and net interest income sensitivity

EVE sensitivities represent the expected movement in EVE due to pre-specified interest rate shocks, where all other economic variables are held constant representing the present value of the future banking book cash flows that could be distributed to equity providers under a managed run-off scenario. This can be used to assess the economic capital required to support interest rate risk in the banking book and provides a comprehensive view of the potential long term effects of the changes in interest rates. The Group and the operating entities monitor EVE sensitivities as a percentage of capital resources and this is currently calculated on a quarterly basis.

NII sensitivities apply varying interest rate scenarios (i.e. simulation modelling) under a static balance sheet whilst all other economic variables are held constant. Sensitivity of net interest income reflects the bank's sensitivity of earnings due to changes in market interest rates, and is assessed over both 1 year and 5 years horizon.

Active management of IRRBB

Interest rate risk that can be economically hedged is transferred to the Markets Treasury business. Hedging is generally executed through interest rate derivatives or fixed-rate government bonds. Any interest rate risk that Markets Treasury cannot economically hedge is not transferred and will remain within the global business where the risks originate.

Markets Treasury safeguards the entities by ensuring risk remains within appetite and seeks to generate sustainable returns through management of those risks within the risk appetite set by Treasury Risk. Markets Treasury manages a variety of risks including duration, spread, cross currency basis, inflation and convexity utilising products including liquid fixed income securities, interest rate swaps, cross currency swaps, and money markets loans and deposits. Treasury Risk measures and monitors (against limits) the Markets Treasury activities using metrics including present value of one basis point, credit spread of one basis point and VaR on an a daily basis.

The large majority of Markets Treasury activity is on a banking book basis. The only Markets Treasury activity treated as trading is the use of FX swaps to manage cash. Markets Treasury operates in all of the banking entities within the Group and manages at entity level. All returns generated by Markets Treasury are transferred into global businesses.

Interest rate shock and stress scenarios applied

The NII sensitivities are indicative and based on scenarios and shocks prescribed by the PRA instructions (Rule 9.4A of the PRA Rulebook: CRR Firms: Interest Rate Risk Arising from Non Trading Activities Instrument 2020 and in accordance with Article 448(1) CRR II). Calculations are done under the following scenarios:

- Parallel up;
- Parallel down;
- An immediate shock of +/-200 basis points ('bps') for USD, EUR, HKD and +/-250 bps for GBP to the current market-implied path of interest rates across all currencies (effects over one year); and
- Other currency shocks as per regulatory guidelines (effects over one year).

The EVE sensitivities are based on six Basel Standard Outlier shocks:

- Parallel up;
- Parallel down;
- Steepener;
- Flattener;
- Short rates shock up; and
- Short rates shock down.

Key modelling assumptions

For EVE sensitivities, commercial margins and other spread components have been excluded from the interest cash flows calculation and all balance sheet items are discounted at the risk free rate. All equity instruments that have no coupon or call dates are excluded. Interest rate floors start at -1.0% for overnight yield curve tenors and increase 5bps per year to 0.0% at 20 year tenors. 100% of the negative values are netted with 50% of the positive values by currency as per regulatory guidelines.

For NII sensitivities we assume constant balance sheet, and we include commercial margin. All forecasted market rates are based on implied forward rates from the reporting date. Interest rate floors start at -1.0% for overnight yield curve tenors and increase 5bps per year to 0.0% at 20 year tenors. We apply pass on assumptions to managed rate products. Customer pricing includes flooring where there is contractual obligations and customer optionality including prepayment and early redemption risk is included where present.

Non-maturing deposits ('NMD') are deposits that have no explicit maturity and no explicit repricing dates thus behaviouralisation assumptions are applied.

Pillar 3 disclosure has different assumptions to Group IRRBB internal model assumptions as well as individual entities. Those include, but are not limited to treatment of NMD, shocks, scenarios and flooring.

The average repricing maturity for NMD in the fourth quarter of 2022 was four months. The longest repricing maturity for NMD in the fourth quarter of 2022 was 115 months or 9.6 years (excluding a legacy portfolio that is expected to be disposed of in 2023).

Besides this portfolio the longest repricing maturity does not exceed 10 years across the Group. As of 31 December 2022, the maximum decline in EVE is the parallel shock up which would lead to a 3.52% maximum EVE compared with tier 1 capital ratio.

The most adverse NII scenario over the next 12 months was the parallel shock down, resulting in a decreased projected NII of $8,497m.

Table 14:Quantitative information on IRRBB (UK IRRBB1)

		ΔEVE		ΔNII		Tier 1 capital	
		31 Dec 2022	31 Dec 2021	**31 Dec 2022**	31 Dec 2021	**31 Dec 2022**	31 Dec 2021
		$m	$m	**$m**	$m	**$m**	$m
10	Parallel shock up	**(4,891)**	(3,218)	**7,094**	12,379		
20	Parallel shock down	**1,937**	(3,492)	**(8,497)**	(8,278)		
30	Steepener shock	**(325)**	337				
40	Flattener shock	**(1,441)**	(3,165)				
50	Short rates shock up	**(3,630)**	(2,707)				
60	Short rates shock down	**1,058**	46				
70	Maximum	**(4,891)**	(3,492)	**(8,497)**	(8,278)		
80	Tier 1 capital					**139,067**	156,292

Minimum requirement for own funds and eligible liabilities

Overview and requirements

A minimum requirement for total loss-absorbing capacity ('TLAC') in line with the final standards adopted by the Financial Stability Board, came into effect in the UK in January 2019. This includes a minimum requirement for own funds and eligible liabilities ('MREL').

MREL includes own funds and liabilities that can be written down or converted into capital resources in order to absorb losses or recapitalise a bank in the event of its failure. The framework is complemented with disclosure requirements and these disclosures are based on the formats provided in the Basel Committee Standards for Pillar 3 disclosures requirements.

HSBC's preferred resolution strategy is a multiple point of entry ('MPE') bail-in, as determined by the BoE in co-ordination with HSBC's other regulators and members of HSBC's Global Crisis Management Group. This strategy provides flexibility for HSBC to be resolved (i) through a bail-in at the HSBC Holdings level, which facilitates recapitalisation of operating bank subsidiaries in the Group (as required) through the write-down or conversion to equity of TLAC/ MREL issued on an intra-group basis, while restructuring actions are undertaken, with the Group remaining together; and/ or (ii) at a resolution group level pursuant to the application of statutory resolution powers by host resolution authorities locally.

HSBC considers that the first option is the optimal strategy to deliver the most effective resolution outcome for its stakeholders, as it should help reduce the risk of disrupting the continuity of critical functions, including cross-border; wholesale services to clients between resolution groups and across the HSBC network, avoid the destruction of value associated with a disorderly and/ or sudden break-up of our global business lines, and minimise the risk to public funds.

HSBC issues loss absorbing instruments to external investors from HSBC Holdings in order to ensure loss absorbing capacity is available to support the objectives of a resolution, were such an event to occur.

In the event of a resolution of the Group, it is anticipated that the BoE will apply statutory powers to write down or convert to equity the TLAC/MREL issued externally by HSBC Holdings. This would enable operating bank subsidiaries of the Group to be recapitalised, as needed, to support the resolution objectives and maintain the provision of critical functions globally. Recapitalisation of operating bank subsidiaries could be achieved through the write-down, or conversion to equity, of internally issued TLAC/MREL as required. This approach to recapitalising the Group's operating bank subsidiaries would aim to allow the Group to stay together in order to ensure an effective stabilisation of the Group as a whole and the continuity of critical functions, while also facilitating an orderly restructuring process, as needed, to address the cause of failure.

It is anticipated that any resolution of HSBC as a group would be coordinated by the BoE and the PRA as HSBC's home resolution authority and prudential regulator, respectively. HSBC expects that the BoE would coordinate closely with the Group's host resolution authorities outside the UK in the run-up to resolution and would seek to apply our resolution strategy pre-emptively to recapitalise operating bank subsidiaries as needed.

Given the Group's corporate structure, HSBC is overseen by various regulators and resolution authorities. Host resolution authorities outside the UK could also use their statutory resolution powers in respect of their resolution groups for which they are responsible. This may occur, for example, in the event that host resolution authorities felt that holding the Group together may no longer achieve their resolution objectives. The application of these local statutory resolution powers may or may not result in such subsidiaries ceasing to be part of the Group, depending on the resolution strategy adopted by the relevant resolution host authority. HSBC's operating bank subsidiaries that are not part of the three resolution groups would be subject to relevant statutory proceedings independently of the rest of the Group, if the conditions to initiating such proceedings were met.

In line with its existing structure and business model, HSBC has three resolution groups – the European resolution group, the Asian resolution group and the US resolution group. There are some smaller entities that fall outside of these resolution groups.The table below lists the resolution groups, the related resolution entities and their material subsidiaries subject to TLAC requirements.

Resolution structure

Resolution group	Resolution entity	Material entity/subgroup with MREL requirements
European resolution group	HSBC Holdings plc	HSBC Bank plc
		HSBC UK Bank plc
		HSBC Continental Europe
Asian resolution group	HSBC Asia Holdings Limited	The Hongkong and Shanghai Banking Corporation Limited
		Hang Seng Bank Limited
US resolution group	HSBC North America Holdings Inc	N/A

MREL / TLAC position versus requirements of Group RWAs

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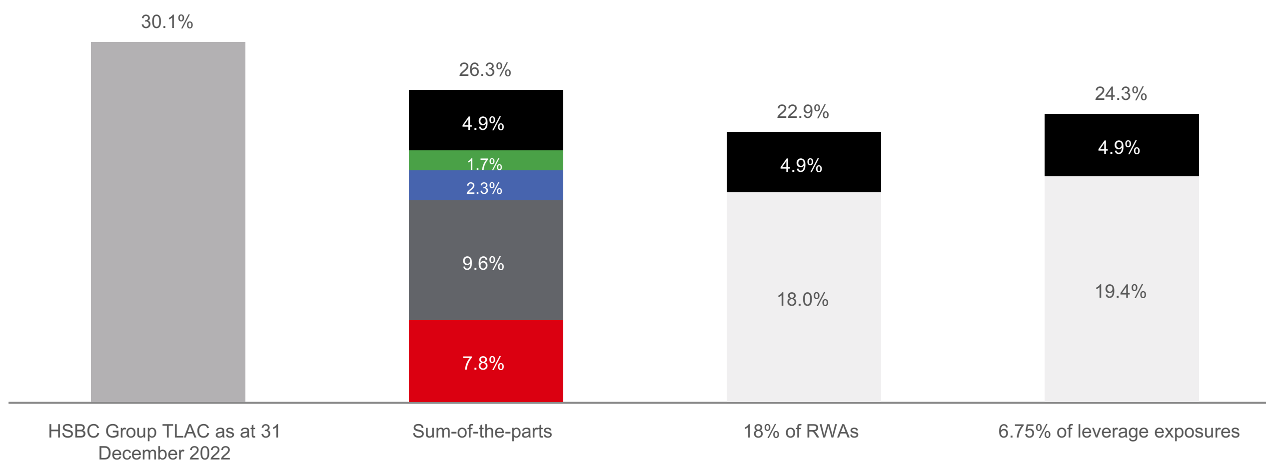

* *Capital or TLAC requirements relating to other Group entities.*

1 *Group CET1 buffers are shown in addition to the MREL requirements. The buffers shown in addition to the RWA, leverage and sum-of-the-parts ('SOTP') TLAC/MREL requirement are calculated in accordance with the PRA Supervisory statement 16/16 updated in December 2020.*

The external MREL requirement applicable in 2022 was the highest of:

- 18% of the Group's consolidated RWAs;
- 6.75% of the Group's consolidated leverage exposure; or
- the sum of all loss absorbing capital ('LAC') requirements and other capital requirements relating to other Group entities or sub-groups.

In its updated MREL Statement of Policy in December 2021, the BoE confirmed that, from 1 January 2022, non-CET1 own funds instruments issued to external holders would be only eligible as external or internal MREL if they were issued by a resolution entity. Therefore, since 1 January 2022, non-CET1 own funds instruments issued externally by HSBC Bank plc, HSBC Bank USA NA, The Hongkong and Shanghai Banking Corporation Limited, HSBC Trinkaus and Burkhardt AG, and HSBC Continental Europe SA no longer qualify as external MREL for the Group (or, as applicable, as internal MREL for HSBC Bank plc). This change does not affect the eligibility of such instruments as own funds instruments for other purposes.

HSBC Holdings is the provider of own funds, MREL-eligible debt and other types of funding to its subsidiaries. These investments are funded by HSBC Holdings' own equity capital and MREL-eligible debt.

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We identified an error in the RWA calculations of the European resolution group whereby $35bn of non-capital MREL instruments issued by the Asian and US resolution groups and held by the European resolution group were excluded from these calculations and were only deducted from MREL, whereas the relevant UK legislation requires these instruments to be both risk-weighted and deducted from MREL.

In rectifying this error, we changed our treatment of $35bn of non-capital MREL investments held by the European resolution group from entities outside its group to deduct them from the European resolution group's own funds rather than from solely its MREL, allowing us to exclude them from RWAs. The change in treatment significantly reduced the European resolution group's total capital and increased its leverage ratio at 31 December 2022, although the European resolution group has no capital requirements. There was no impact on the Group's capital, MREL ratios and 2023 issuance plans. We will continue to review the treatment and consider the impact on any future issuance plans.

Further details of our approach to capital management can be found in 'Treasury risk management' on page 202 of the Annual Report and Accounts 2022.

Key metrics of the resolution groups

The following tables summarise key metrics for each of the Group's three resolution groups. Fully loaded values and ratios are calculated without applying any regulatory transitional arrangements for ECL that may be available to the resolution group.

Table 15.i: Key metrics of the European resolution group[1] (KM2)

		At				
		31 Dec 2022 $bn	30 Sep 2022 $bn	30 Jun 2022 $bn	31 Mar 2022 $bn	31 Dec 2021 $bn
1	Total loss absorbing capacity ('TLAC') available	**94.8**	83.0	87.9	99.7	107.7
1a	Fully loaded ECL accounting model TLAC available	**94.7**	83.0	87.8	99.6	107.6
2	Total RWAs at the level of the resolution group	**260.6**	259.8	309.1	314.8	307.1
3	TLAC as a percentage of RWA (row1/row2) (%)	**36.4**	32.0	28.4	31.7	35.1
3a	Fully loaded ECL accounting model TLAC as a percentage of fully loaded ECL accounting model RWA (%)	**36.4**	31.9	28.4	31.6	35.1
4	Leverage exposure measure at the level of the resolution group[2]	**846.2**	839.5	909.2	943.5	1,277.6
5	TLAC as a percentage of leverage exposure measure (row1/row4)[2] (%)	**11.2**	9.9	9.7	10.6	8.4
5a	Fully loaded ECL accounting model TLAC as a percentage of fully loaded ECL accounting model leverage exposure measure[2] (%)	**11.2**	9.9	9.7	10.5	8.4
6a	Does the subordination exemption in the antepenultimate paragraph of section 11 of the FSB TLAC term sheet apply?	**No**	No	No	No	No
6b	Does the subordination exemption in the penultimate paragraph of section 11 of the FSB TLAC term sheet apply?	**No**	No	No	No	No
6c	If the capped subordination exemption applies, the amount of funding issued that ranks *pari passu* with excluded liabilities and that is recognised as external TLAC, divided by funding issued that ranks *pari passu* with excluded liabilities and that would be recognised as external TLAC if no cap was applied	**N/A**	N/A	N/A	N/A	N/A

Table 15.ii: Key metrics of the Asian resolution group[3]

		At				
		31 Dec 2022 $bn	30 Sep 2022 $bn	30 Jun 2022 $bn	31 Mar 2022 $bn	31 Dec 2021 $bn
1	Total loss absorbing capacity ('TLAC') available	**108.0**	102.3	103.0	96.6	101.9
1a	Fully loaded ECL accounting model TLAC available	**108.0**	102.3	103.0	96.6	101.9
2	Total RWA at the level of the resolution group	**413.3**	405.9	414.5	409.5	404.8
3	TLAC as a percentage of RWA (row1/row2) (%)	**26.1**	25.2	24.9	23.6	25.2
3a	Fully loaded ECL accounting model TLAC as a percentage of fully loaded ECL accounting model RWA (%)	**26.1**	25.2	24.9	23.6	25.2
4	Leverage exposure measure at the level of the resolution group	**1,192.3**	1,179.6	1,200.0	1,207.5	1,177.8
5	TLAC as a percentage of leverage exposure measure (row1/row4) (%)	**9.1**	8.7	8.6	8.0	8.7
5a	Fully loaded ECL accounting model TLAC as a percentage of fully loaded ECL accounting model Leverage exposure measure (%)	**9.1**	8.7	8.6	8.0	8.7
6a	Does the subordination exemption in the antepenultimate paragraph of Section 11 of the FSB TLAC Term Sheet apply?	**No**	No	No	No	No
6b	Does the subordination exemption in the penultimate paragraph of Section 11 of the FSB TLAC Term Sheet apply?	**No**	No	No	No	No
6c	If the capped subordination exemption applies, the amount of funding issued that ranks *pari passu* with excluded liabilities and that is recognised as external TLAC, divided by funding issued that ranks *pari passu* with excluded liabilities and that would be recognised as external TLAC if no cap was applied	**N/A**	N/A	N/A	N/A	N/A

Table 15.iii: Key metrics of the US resolution group

		At				
		31 Dec 2022 $bn	30 Sep 2022 $bn	30 Jun 2022 $bn	31 Mar 2022 $bn	31 Dec 2021 $bn
1	Total loss absorbing capacity ('TLAC') available	**23.8**	25.5	26.4	26.6	26.2
1a	Fully loaded ECL accounting model TLAC available[4]	**23.8**	25.5	26.4	26.6	26.2
2	Total RWAs at the level of the resolution group	**108.5**	112.8	110.4	109.5	107.1
3	TLAC as a percentage of RWA (row1/row2) (%)	**21.9**	22.6	23.9	24.3	24.5
3a	Fully loaded ECL accounting model TLAC as a percentage of fully loaded ECL accounting model RWA (%)[4]	**21.9**	22.6	23.9	24.3	24.5
4	Leverage exposure measure at the level of the resolution group[5]	**215.6**	220.8	221.0	232.1	314.6
5	TLAC as a percentage of leverage exposure measure (row1/row4) (%)[5]	**11.0**	11.6	11.9	11.5	8.3
5a	Fully loaded ECL accounting model TLAC as a percentage of fully loaded ECL accounting model leverage exposure measure (%)[4,5]	**11.0**	11.6	11.9	11.5	8.3
6a	Does the subordination exemption in the antepenultimate paragraph of section 11 of the FSB TLAC term sheet apply?	**No**	No	No	No	No
6b	Does the subordination exemption in the penultimate paragraph of section 11 of the FSB TLAC term sheet apply?	**No**	No	No	No	No
6c	If the capped subordination exemption applies, the amount of funding issued that ranks *pari passu* with excluded liabilities and that is recognised as external TLAC, divided by funding issued that ranks *pari passu* with excluded liabilities and that would be recognised as external TLAC if no cap was applied	**No**	No	N/A	N/A	N/A

1 *The European resolution group reports in accordance with the applicable provisions of the Capital Requirements Regulation as amended by CRR II. Unless otherwise stated, all figures are calculated using the EU's regulatory transitional arrangements for IFRS 9 in article 473a of the Capital Requirements Regulation. From 30 September 2022, investments in non-financial institution subsidiaries or participations have been measured on an equity accounting basis as per UK CRR Prudential Consolidation provision article 18(7). Comparatives have not been restated as this change has no significant prior period impact on this disclosure.*

2 *The leverage exposure is calculated in line with the UK leverage rules that were implemented on 1 January 2022, and excludes central bank claims. Comparatives for 2021 are reported based on the disclosure rules in force at that time, and include claims on central banks.*

3 *Reporting for the Asian resolution group follows the Hong Kong Monetary Authority regulatory rules. For the Asian resolution group, there are no IFRS 9 transitional arrangements. During the year, the group issued various capital and LAC instruments to maintain ratios above required levels, including buffers.*

4 *The US accounting standard for current expected credit losses corresponding to IFRS 9 has been effective since 31 March 2020 with transitional adjustments.*

5 *For the US resolution group, the leverage exposure and ratio for the current period are based on 'total assets for the leverage ratio' as reported in the regulatory capital calculations. This is a change based on US resolution group's new Category IV designation under US tailoring rules. Leverage exposures and ratios for the prior periods are calculated under the US supplementary leverage ratio rules with Covid-19 relief (reducing on-balance sheet assets by US treasury securities and deposits at the US Federal Reserve Board).*

Given the MPE resolution strategy, and the fact that the BoE framework includes requirements set on the basis of HSBC group consolidated position, the following table presents data for both the consolidated Group and the resolution groups.

The difference between Group CET1 and the aggregate of resolution groups' CET1 is driven by entities that fall outside of the resolution groups and by differences in regulatory frameworks.

Table 16: TLAC composition (TLAC1)

		At 31 Dec 2022				At 31 Dec 2021			
			Resolution group				Resolution group		
		Group[1]	**European[1]**	**Asian[2]**	**US[3]**	Group[1]	European[1]	Asian[2]	US[3]
	Regulatory capital elements of TLAC and adjustments ($bn)								
	Common equity tier 1 capital before adjustments	**119.3**	**115.8**	**63.1**	**13.5**	132.6	118.9	62.2	15.1
	Deduction of CET1 exposures between MPE resolution groups and other group entities[4]	**—**	**111.6**	**—**	**—**	—	101.8	—	—
1	Common equity tier 1 capital ('CET1')	**119.3**	**4.2**	**63.1**	**13.5**	132.6	17.1	62.2	15.1
2	Additional tier 1 capital ('AT1') before TLAC	**19.8**	**19.7**	**6.9**	**1.8**	23.7	23.4	5.9	1.8
4	Other adjustments[4]	**—**	**19.7**	**—**	**—**	—	6.3	—	—
5	AT1 instruments eligible under the TLAC framework (row 2 minus row 3 minus row 4)	**19.8**	**—**	**6.9**	**1.8**	23.7	17.1	5.9	1.8
6	Tier 2 capital ('T2') before TLAC adjustments	**23.4**	**23.9**	**7.9**	**2.3**	21.5	22.5	7.6	3.2
7	Amortised portion of T2 instruments where remaining maturity > 1 year	**3.3**	**3.3**	**—**	**—**	2.5	2.5	—	—
8	T2 capital ineligible as TLAC as issued out of subsidiaries to third parties	**2.2**	**2.2**	**—**	**—**	—	—	0.4	—
9	Other adjustments[4]	**—**	**23.9**	**—**	**2.3**	—	6.6	—	2.2
10	T2 instruments eligible under the TLAC framework (row 6 plus row 7 minus row 8 minus row 9)	**24.5**	**1.1**	**7.9**	**—**	24.0	18.4	7.2	1.0
11	TLAC arising from regulatory capital	**163.6**	**5.3**	**77.9**	**15.3**	180.3	52.6	75.3	18.0
	Non-regulatory capital elements of TLAC								
12	External TLAC instruments issued directly by the bank and subordinated to excluded liabilities[4]	**89.5**	**89.5**	**30.1**	**8.5**	90.5	55.1	26.6	8.3
17	TLAC arising from non-regulatory capital instruments before adjustments	**89.5**	**89.5**	**30.1**	**8.5**	90.5	55.1	26.6	8.3
	Non-regulatory capital elements of TLAC: adjustments			**—**					
18	TLAC before deductions	**253.1**	**94.8**	**108.0**	**23.8**	270.8	107.7	101.9	26.2
20	Deduction of investments in own other TLAC	**—**	**—**	**—**	**—**	—	—	—	—
22	TLAC after deductions (row 18 minus row 19 minus row 20 minus row 21)	**253.1**	**94.8**	**108.0**	**23.8**	270.8	107.7	101.9	26.2
	Risk-weighted assets and leverage exposure measure for TLAC purposes								
23	Total risk-weighted assets	**839.7**	**260.6**	**413.3**	**108.5**	838.3	270.7	404.8	107.1
24	Leverage exposure measure[5,6]	**2,417.2**	**846.2**	**1,192.3**	**215.6**	2,962.7	1,277.6	1,177.8	314.6
	TLAC ratios and buffers								
25	TLAC (as a percentage of risk-weighted assets)	**30.1**	**36.4**	**26.1**	**21.9**	32.3	39.8	25.2	24.5
26	TLAC (as a percentage of leverage exposure)	**10.5**	**11.2**	**9.1**	**11.0**	9.1	8.4	8.7	8.3
27	CET1 (as a percentage of risk-weighted assets) available after meeting the resolution group's minimum capital and TLAC requirements[7]	**8.2**	**N/A**	**N/A**	**3.9**	9.8	N/A	N/A	6.5
28	Institution-specific buffer requirement expressed as a percentage of risk-weighted assets	**4.9**	**N/A**	**N/A**	**2.5**	4.7	N/A	N/A	2.5
29	– *of which:* *capital conservation buffer requirement*	***2.5***	***N/A***	***N/A***	***2.5***	*2.5*	*N/A*	*N/A*	*2.5*
30	*bank specific countercyclical buffer requirement*	***0.4***	***N/A***	***N/A***	***N/A***	*0.2*	*N/A*	*N/A*	*N/A*
31	*higher loss absorbency (G-SIB) requirement*	***2.0***	***N/A***	***N/A***	***N/A***	*2.0*	*N/A*	*N/A*	*N/A*

1 *The Group and the European resolution group both report in accordance with the applicable provisions of the Capital Requirements Regulation as amended by CRR II. Unless otherwise stated, all figures are calculated using the EU's regulatory transitional arrangements for IFRS 9 in article 473a of CRR II. From 30 September 2022, investment in non-financial institution subsidiaries or participations have been measured on an equity accounting basis as per CRR II Prudential Consolidation provision article 18(7). Comparatives have not been restated as this change has no significant prior period impact on this disclosure.*

2 *Reporting for the Asian resolution group follows the Hong Kong Monetary Authority regulatory rules. For the Asian resolution group, there are no IFRS 9 transitional arrangements. During the year, the group issued various capital and loss-absorbing capacity ('LAC') instruments in order to operate above required levels, including buffers.*

3 *The US accounting standard corresponding to IFRS 9 is in force with transitional adjustments.*

4 *We have changed our treatment of non-capital MREL investments held by the European resolution group from entities outside its group to deduct them from own funds rather than from solely its MREL.*

5 *For the US resolution group, Leverage exposure and ratio for current year are based on 'total assets for the leverage ratio' as reported in the regulatory capital calculations. This is a change based on US resolution group's new Category IV designation under US tailoring rules. Leverage exposures and ratios for 2021 are calculated under the US supplementary leverage ratio rules with Covid-19 relief (reducing on-balance sheet assets by US treasury securities and deposits at the US Federal Reserve Board).*

6 *The leverage exposure is calculated in line with the UK leverage rules that were implemented on 1 January 2022, and excludes central bank claims. Comparatives for 2021 are reported based on the disclosure rules in force at that time, and include claims on central banks.*

7 *For the Group, minimum capital requirement is defined as the sum of Pillar 1 and Pillar 2A capital requirements set by the PRA. The minimum requirements represent the total capital requirement to be met by CET1.*

Creditor ranking at legal entity level

The following tables present information regarding the ranking of creditors in the liability structure of legal entities at 31 December 2022. The tables present the ranking of creditors of HSBC Holdings plc, its resolution entities, and their material sub-group entities. Nominal values are disclosed.

The main features of capital instruments disclosure for the Group, Asia and US resolution groups is published on our website, https://www.hsbc.com/investors/fixed-income-investors/regulatory-capital-securities.

European resolution group

The European resolution group comprises HSBC Holdings plc, the designated resolution entity, together with its material operating entities – namely HSBC Bank plc and its subsidiaries, and HSBC UK Bank plc and its subsidiaries.

The following tables present information regarding the ranking of creditors of HSBC Holdings plc, HSBC Bank plc and HSBC UK Bank plc.

Table 17: HSBC Holdings plc creditor ranking (TLAC3)

		Creditor ranking ($m)				
		1 (most junior)	2	3	4 (most senior)	Sum of 1 to 4
1	Description of creditor ranking	**Ordinary shares[1]**	**Preference shares, AT1 instruments and certain Subordinated notes**	**Subordinated notes**	**Senior notes and other *pari passu* liabilities**	
2	Total capital and liabilities net of credit risk mitigation	10,147	20,415	26,731	100,417	157,710
3	*– of row 2 that are excluded liabilities[2]*	—	—	—	*554*	*554*
4	Total capital and liabilities less excluded liabilities (row 2 minus row 3)[3]	10,147	20,415	26,731	99,863	157,156
5	*– of row 4 that are potentially eligible as TLAC[3]*	*10,147*	*19,515*	*26,731*	*95,378*	*151,771*
6	*– of row 5: with 1 year ≤ residual maturity < 2 years*	—	—	*2,000*	*12,779*	*14,779*
7	*with 2 years ≤ residual maturity < 5 years*	—	—	*5,384*	*40,208*	*45,592*
8	*with 5 years ≤ residual maturity < 10 years*	—	—	*4,654*	*36,726*	*41,380*
9	*with residual maturity ≥ 10 years, but excluding perpetual securities*	—	—	*14,693*	*5,665*	*20,358*
10	*that are perpetual securities*	*10,147*	*19,515*	—	—	*29,662*

1 Excludes the value of share premium and reserves attributable to ordinary shareholders.
2 Excluded liabilities are defined in CRR II Article 72a (2), the current balance mainly relates to accruals for service company recharges and a liability with a maturity of less than 7 days with a settlement agent.
3 The difference between rows 4 and 5 relates to TLAC eligible securities of $3.2bn which are maturing within one year, pari passu liabilities of $1.3bn and the ineligible internal subordinated notes issued to HSBC Capital Funding (Dollar 1) LP of $0.9bn .

Table 18: HSBC UK Bank plc creditor ranking (TLAC2)

		Creditor ranking ($m)				
		1 (most junior)	2	3	4 (most senior)	Sum of 1 to 4
1	Is the resolution entity the creditor/investor?[1]	Yes	Yes	Yes	Yes	
2	Description of creditor ranking	**Ordinary shares[2]**	**AT1 instruments**	**Subordinated loans**	**Senior subordinated loans**	
3	Total capital and liabilities net of credit risk mitigation	—	2,645	3,706	11,858	18,209
4	*– of row 3 that are excluded liabilities*	—	—	—	—	—
5	Total capital and liabilities less excluded liabilities (row 3 minus row 4)	—	2,645	3,706	11,858	18,209
6	*– of row 5 that are eligible as TLAC*	—	*2,645*	*3,706*	*11,858*	*18,209*
7	*– of row 6: with 1 year ≤ residual maturity < 2 years*	—	—	—	—	—
8	*with 2 years ≤ residual maturity < 5 years*	—	—	—	*5,545*	*5,545*
9	*with 5 years ≤ residual maturity < 10 years*	—	—	*2,923*	*6,313*	*9,236*
10	*with residual maturity ≥ 10 years, but excluding perpetual securities*	—	—	*783*	—	*783*
11	*that are perpetual securities*	—	*2,645*	—	—	*2,645*

1 The entity's capital and TLAC are owned by HSBC Holdings plc.
2 The nominal value of ordinary shares is £50,002. This excludes the value of share premium and reserves attributable to ordinary shareholders.

Table 19: HSBC Bank plc creditor ranking (TLAC2)

		Creditor ranking ($m)				Sum of 1 to 4
		1 (most junior)	2	3	4 (most senior)	
1	Is the resolution entity the creditor/investor?[1]	Yes	Yes	No	Partially	
2	Description of creditor ranking	Ordinary shares[2]	Third Dollar preference shares and AT1 instruments	Undated primary capital notes	Subordinated notes and subordinated loans	
3	Total capital and liabilities net of credit risk mitigation	960	5,137	1,550	17,674	25,321
4	– *of row 3 that are excluded liabilities*	—	—	—	—	—
5	Total capital and liabilities less excluded liabilities (row 3 minus row 4)[3]	960	5,137	1,550	17,674	25,321
6	– *of row 5 that are eligible as TLAC*	*960*	*5,137*	—	*15,855*	*21,952*
7	– *of row 6: with 1 year ≤ residual maturity < 2 years*	—	—	—	*1,601*	*1,601*
8	*with 2 years ≤ residual maturity < 5 years*	—	—	—	*750*	*750*
9	*with 5 years ≤ residual maturity < 10 years*	—	—	—	*12,404*	*12,404*
10	*with residual maturity ≥ 10 years, but excluding perpetual securities*	—	—	—	*1,100*	*1,100*
11	*that are perpetual securities*	*960*	*5,137*	—	—	*6,097*

1 The entity's ordinary shares are owned by HSBC Holdings plc.
2 Excludes the value of share premium and reserves attributable to ordinary shareholders.
3 The difference between row 5 and 6 relates to externally issued non-CET1 own funds. From 1 January 2022, in line with the Bank of England Statement of Policy on MREL (December 2021), non-CET1 own fund instruments issued externally by HSBC Bank plc and its subsidiaries no longer count towards MREL for HSBC Bank plc.

Asian resolution group

The Asian resolution group comprises HSBC Asia Holdings Ltd, The Hongkong and Shanghai Banking Corporation Limited, Hang Seng Bank Limited and their subsidiaries. HSBC Asia Holdings Ltd is the designated resolution entity. The following tables present information regarding the ranking of creditors of HSBC Asia Holdings Limited, The Hongkong and Shanghai Banking Corporation Limited, and Hang Seng Bank Limited.

Table 20: HSBC Asia Holdings Ltd creditor ranking[1] (TLAC3)

		Creditor ranking ($m)				Sum of 1 to 4
		1 (most junior)	2	3	4 (most senior)	
1	Description of creditor ranking	Ordinary shares[2]	AT1 instruments	Tier 2 instruments	LAC loans	
2	Total capital and liabilities net of credit risk mitigation	57,587	6,700	2,541	32,102	98,930
3	– *of row 2 that are excluded liabilities*	—	—	—	—	—
4	Total capital and liabilities less excluded liabilities (row 2 minus row 3)	57,587	6,700	2,541	32,102	98,930
5	– *of row 4 that are potentially eligible as TLAC*	*57,587*	*6,700*	*2,541*	*32,102*	*98,930*
6	– *of row 5 with 1 year ≤ residual maturity < 2 years*	—	—	—	*9,102*	*9,102*
7	– *of row 5 with 2 years ≤ residual maturity < 5 years*	—	—	—	*6,657*	*6,657*
8	– *of row 5 with 5 years ≤ residual maturity < 10 years*	—	—	*2,541*	*13,928*	*16,469*
9	– *of row 5 with residual maturity ≥ 10 years, but excluding perpetual securities*	—	—	—	*2,415*	*2,415*
10	– *of row 5 that are perpetual securities*	*57,587*	*6,700*	—	—	*64,287*

1 The entity's capital and loss-absorbing capacity ('LAC') are held by HSBC Holdings plc.
2 Excludes the value of share premium and reserves attributable to ordinary shareholders.

Table 21: The Hongkong and Shanghai Banking Corporation Ltd creditor ranking (TLAC2)

		Creditor ranking ($m)					Sum of 1 to 5
		1 (most junior)	2	3	4	5 (most senior)	
1	Is the resolution entity the creditor/investor?	Yes	Yes	No	Yes	Yes	
2	Description of creditor ranking	Ordinary shares[2]	AT1 instruments	Primary[1] capital notes	Tier 2 instruments	LAC loans	
3	Total capital and liabilities net of credit risk mitigation	23,113	6,700	400	2,541	32,102	64,856
4	– *of row 3 that are excluded liabilities*	—	—	—	—	—	—
5	Total capital and liabilities less excluded liabilities (row 3 minus row 4)	23,113	6,700	400	2,541	32,102	64,856
6	– *of row 5 that are eligible as TLAC*	*23,113*	*6,700*	—	*2,541*	*32,102*	*64,456*
7	– *of row 6 with 1 year ≤ residual maturity < 2 years*	—	—	—	—	*9,102*	*9,102*
8	– *of row 6 with 2 years ≤ residual maturity < 5 years*	—	—	—	—	*6,657*	*6,657*
9	– *of row 6 with 5 years ≤ residual maturity < 10 years*	—	—	—	*2,541*	*13,928*	*16,469*
10	– *of row 6 with residual maturity ≥ 10 years, but excluding perpetual securities*	—	—	—	—	*2,415*	*2,415*
11	– *of row 6 that are perpetual securities*	*23,113*	*6,700*	—	—	—	*29,813*

1 The company's primary capital notes are held by third parties.
2 Excludes the value of share premium and reserves attributable to ordinary shareholders.

Table 22: Hang Seng Bank Ltd creditor ranking (TLAC2)

		Creditor ranking ($m)			
		1	2	3	
		(most junior)		(most senior)	Sum of 1 to 3
1	Is the resolution entity the creditor/investor?[1]	No	No	No	
2	Description of creditor ranking	Ordinary shares[2]	AT1 instruments	LAC loans	
3	Total capital and liabilities net of credit risk mitigation	1,239	1,500	3,527	6,266
4	*– of row 3 that are excluded liabilities*	—	—	—	—
5	Total capital and liabilities less excluded liabilities (row 3 minus row 4)	1,239	1,500	3,527	6,266
6	*– of row 5 that are eligible as TLAC*	*1,239*	*1,500*	*3,527*	*6,266*
7	*– of row 6 with 1 year ≤ residual maturity < 2 years*	—	—	—	—
8	*– of row 6 with 2 years ≤ residual maturity < 5 years*	—	—	*1,442*	*1,442*
9	*– of row 6 with 5 years ≤ residual maturity < 10 years*	—	—	*2,085*	*2,085*
10	*– of row 6 with residual maturity ≥ 10 years, but excluding perpetual securities*	—	—	—	—
11	*– of row 6 that are perpetual securities*	*1,239*	*1,500*		*2,739*

1 62.14% of Hang Seng Bank Limited's ordinary share capital is owned by The Hongkong and Shanghai Banking Corporation Limited. Hang Seng Bank Limited's other TLAC eligible securities are directly held by The Hongkong and Shanghai Banking Corporation Limited.
2 Excludes the value of reserves attributable to ordinary shareholders.

US resolution group

The US resolution group comprises HSBC North America Holdings Inc. and its subsidiaries. HSBC North America Holdings Inc. is the designated resolution entity.

The following table presents information regarding the ranking of creditors of HSBC North America Holdings Inc.

Table 23: HSBC North America Holdings Inc. creditor ranking[1] (TLAC3)

		Creditor ranking ($m)				
		1	2	3	4	
		(most junior)			(most senior)	Sum of 1 to 4
1	Description of creditor ranking	Common stock[2]	Preferred stock	Subordinated loans	Senior unsecured loans and other *pari passu* liabilities	
2	Total capital and liabilities net of credit risk mitigation	—	1,840	—	10,222	12,062
3	*– of row 2 that are excluded liabilities*[3]	—		—	352	*352*
4	Total capital and liabilities less excluded liabilities (row 2 minus row 3)[4]	—	1,840	—	9,870	11,710
5	*– of row 4 that are potentially eligible as TLAC*	—	1,840	—	8,500	*10,340*
6	*– of row 5: with 1 year ≤ residual maturity < 2 years*	—	—	—	—	—
7	*with 2 years ≤ residual maturity < 5 years*	—	—	—	5,000	*5,000*
8	*with 5 years ≤ residual maturity < 10 years*	—	—	—	3,500	*3,500*
9	*with residual maturity ≥ 10 years, but excluding perpetual securities*	—	—	—	—	—
10	*that are perpetual securities*	—	1,840	—	—	*1,840*

1 The entity's capital and TLAC are held by HSBC Overseas Holdings (UK) Limited.
2 The nominal value of common stock is $2. This excludes the value of share premium and reserves attributable to ordinary shareholders.
3 Excluded liabilities consists of 'unrelated liabilities' as defined in the Final US TLAC rules. This mainly represents accrued employee benefit obligations.
4 Row 4 includes liabilities related to intercompany borrowings with URG subsidiaries that are not eligible as TLAC.

Pillar 2 and ICAAP

Pillar 2

We conduct an Internal Capital Adequacy Assessment Process ('ICAAP') to determine a forward-looking assessment of our capital requirements given our business strategy, risk profile, risk appetite and capital plan. This process incorporates the Group's risk management processes and governance framework. Our base capital plan undergoes stress testing. This, coupled with our economic capital framework and other risk management practices, is used to assess our internal capital adequacy requirements and inform our view of our internal capital planning buffer. The ICAAP is formally approved by the Board, which has the ultimate responsibility for the effective management of risk and approval of HSBC's risk appetite.

The ICAAP is reviewed by the PRA and by a college of supervisors, as part of the joint risk assessment and decision process, during the Supervisory Review and Evaluation Process. This process occurs periodically to enable the regulator to define the individual capital requirement ('ICR') or minimum capital requirements for HSBC and to define the PRA buffer, where required. The PRA buffer is not intended to duplicate the Capital Requirements Regulation and Directive (CRD IV) buffers and, where necessary, will be set according to vulnerability in a stress scenario, as identified and assessed through the annual PRA stress testing exercise.

The processes of internal capital adequacy assessment and supervisory review lead to a final determination by the PRA of the ICR and any PRA buffer that may be required.

Pillar 2 comprises Pillar 2A and Pillar 2B. Pillar 2A considers, in addition to the minimum capital requirements for Pillar 1 risks described above, any supplementary requirements for those risks and any requirements for risk categories not captured by Pillar 1. The risk categories covered under Pillar 2A depend on the specific circumstances of a firm and the nature and scale of its business.

Pillar 2B consists of guidance from the PRA on the capital buffer a firm would require in order to remain above its ICR in adverse circumstances that may be largely outside the firm's normal and direct control; for example, during a period of severe but plausible downturn stress, when asset values and the firm's capital surplus may become strained. This is quantified via any PRA buffer requirement the PRA may consider necessary. The assessment of this is informed by stress tests and a rounded judgement of a firm's business model, also taking into account the PRA's view of a firm's options and capacity to protect its capital position under stress; for instance, through capital generation. Where the PRA assesses that a firm's risk management and governance are significantly weak, it may also increase the PRA buffer to cover the risks posed by those weaknesses until they are addressed. The PRA buffer is intended to be drawn upon in times of stress, and its use is not of itself a breach of capital requirements that would trigger automatic restrictions on distributions. In specific circumstances, the PRA should agree a plan with a firm for its restoration over an agreed timescale.

Internal capital adequacy assessment

The Board manages the Group ICAAP and, together with RMM and GRC, it examines the Group's risk profile from a regulatory and economic capital viewpoint. They aim to ensure that capital resources:

- remain sufficient to support our risk profile and outstanding commitments;
- meet current regulatory requirements, and that HSBC is well placed to meet those expected in the future;
- allow the group to remain adequately capitalised in the event of a severe economic downturn stress scenario; and
- remain consistent with our strategic and operational goals, and our shareholder and investor expectations.

The minimum regulatory capital that we are required to hold is determined by the rules and guidance established by the PRA for the consolidated Group and by local regulators for individual Group companies. These capital requirements are a primary factor in influencing and shaping the business planning process, in which RWA targets are established for our global businesses in accordance with the Group's strategic direction and risk appetite.

Economic capital is the internally calculated capital requirement that we deem necessary to support the risks to which we are exposed. The economic capital assessment is a more risk-sensitive measure than the regulatory minimum, and takes account of the substantial diversification of risk accruing from our operations. Both the regulatory and the economic capital assessments rely upon the use of models that are integrated into our risk management processes. Our economic capital models are calibrated to quantify the level of capital that is sufficient to absorb potential losses over a one-year time horizon to a 99.95% level of confidence for our banking and trading activities, to a 99.5% level of confidence for our insurance activities and pension risks, and to a 99.9% level of confidence for our operational risks.

Preserving our strong capital position remains a priority, and the level of integration of our risk and capital management helps to optimise our response to business demand for regulatory and economic capital. Risks that are explicitly assessed through economic capital are credit risk (including CCR), market risk, operational risk, interest rate risk in the banking book ('IRRBB'), insurance risk, pension risk and structural foreign exchange risk.

Credit risk

Overview and responsibilities

Credit risk represents our largest regulatory capital requirement.

The principal objectives of our credit risk management function are:

- to maintain across HSBC a strong culture of responsible lending and a robust credit risk policy and control framework;
- to both partner and challenge our businesses in defining, implementing and continually re-evaluating our credit risk appetite under actual and stress scenario conditions; and
- to ensure there is independent, expert scrutiny of credit risks, their costs and their mitigation.

The credit risk functions within Wholesale Credit and Market Risk and Wealth and Personal Banking ('WPB') are the constituent parts of Global Risk that support the Group CRCO in overseeing credit risks. Their major duties comprise undertaking independent reviews of large and high-risk credit proposals, overseeing large exposure policy and reporting on our wholesale and retail credit risk management disciplines. They also own our credit policy and credit systems programmes, oversee portfolio management and report on risk matters to senior executive management and regulators.

These credit risk functions work closely with other parts of Global Risk; for example, with Operational Risk on the internal control framework and with Risk Strategy on the risk appetite process. In addition, they work jointly with Risk Strategy and Global Finance on stress testing.

The credit responsibilities of Global Risk are described on page 134 of the Annual Report and Accounts 2022.

The credit risk functions form a network of credit risk management offices around the Group reporting within regional risk functions. They fulfil an essential role as independent risk control units distinct from business line management providing objective scrutiny of risk rating assessments, credit proposals for approval and other risk matters.

Our credit risk procedures operate through a hierarchy of personal credit limit approval authorities. Operating company chief executives, acting under authorities delegated by their boards and Group standards, are accountable for credit risk and other risks in their business. In turn, chief executives delegate authority to operating company chief risk officers and management teams on an individual basis. Each operating company is responsible for the quality and performance of its credit portfolios in accordance with Group standards. Above these thresholds of delegated personal credit limited approval authorities, approval must be sought from the regional and, as appropriate, the global credit risk function.

Credit risk management

Credit risk

Our exposure to credit risk arises from a wide range of customer types and products, and the risk rating systems in place to measure and monitor these risks are correspondingly diverse. Senior management receives a variety of reports on our credit risk exposures, including expected credit losses, total exposures and RWAs, as well as updates on specific portfolios that are considered to have heightened credit risk.

Credit risk exposures are generally measured and managed in portfolios of either customer types or product categories. Risk rating systems are designed to assess the default propensity of, and loss severity associated with, distinct customers who are typically managed as individual relationships or, in the case of retail business exposures, on a product portfolio basis.

Risk rating systems for retail exposures are generally quantitative in nature, applying techniques such as behavioural analysis across product portfolios comprising large numbers of homogeneous transactions.

Rating systems for individually managed relationships typically use customer financial statements and market data analysis, but also qualitative elements and a final judgemental overlay to better reflect any idiosyncratic elements of the customer's risk profile.

See 'Application of the IRB Approach' on page 46 for more information.

A fundamental principle of our policy and approach is that analytical risk rating systems and scorecards are all valuable tools at the disposal of management.

For wholesale lending the credit process provides for at least an annual review of the PD. For retail lending revolving facilities, an annual review is undertaken. Review may be more frequent, as required by circumstances such as the emergence of adverse risk factors.

We seek to improve the quality of our risk management. Group IT systems that process credit risk data continue to be enhanced in order to deliver both comprehensive management information in support of business strategy and solutions to evolving regulatory reporting requirements.

Group standards govern the process through which risk rating systems are initially developed, judged fit for purpose, approved and implemented. They also govern the conditions under which analytical risk model outcomes can be overridden by decision takers and the process of model performance monitoring and reporting. The emphasis is on an effective dialogue between business line and risk management, suitable independence of decision takers, and a good understanding and robust challenge on the part of senior management.

Like other facets of risk management, analytical risk rating systems are not static. They are subject to review and modification in light of the changing environment, the greater availability and quality of data, and any deficiencies identified through internal and external regulatory review. Structured processes and metrics are in place to capture relevant data and feed this into continuous model improvement.

See 'Model performance' on page 58 for more information.

Dilution risk

Dilution risk is the risk that an amount receivable is reduced through cash or non-cash credit to the obligor, and arises mainly from factoring and invoice discounting transactions.

Where there is recourse to the seller, we treat these transactions as loans secured by the collateral of the debts purchased and do not report dilution risk for them. For our non-recourse portfolio we obtain an indemnity from the seller that indemnifies us against this risk. Moreover, factoring transactions involve lending at a discount to the face-value of the receivables, which provides protection against dilution risk.

Credit risk model governance

All new or materially changed IRB capital models require the PRA's pre-approval, as set out in more detail on page 46. Throughout HSBC, such models fall directly under the remit of the respective Global Functional Model Oversight Forum ('GMOF'), operating in line with HSBC's model risk policy, and under the oversight of the Group Model Risk Committee.

Global Risk sets internal standards for the development, validation, independent review, approval, implementation and performance monitoring of credit risk rating models. Independent reviews of our models are performed by our Independent Model Review team within the Model Risk Management function which is separate from our Risk Analytics functions that are responsible for the development of models.

Further information is available on page 232 of the Annual Report and Accounts 2022.

Compliance with Group standards is subject to examination by Risk oversight and review from within the Risk function itself, and by Global Internal Audit.

Credit quality of assets

Our credit risk is diversified across a number of asset classes and geographies with a credit quality profile mainly concentrated in the higher quality bands.

The following table provides information about the gross carrying amount of exposures and related impairment with further details of the IFRS 9 stage, accumulated partial write off and collateral. The IFRS 9 stages have the following characteristics:

- Stage 1: These financial assets are unimpaired and without a significant increase in credit risk. A 12-month allowance for ECL is recognised;
- Stage 2: A significant increase in credit risk has been experienced on these financial assets since initial recognition. A lifetime ECL is recognised;
- Stage 3: There is objective evidence of impairment and the financial assets are therefore considered to be in default or otherwise credit impaired. A lifetime ECL is recognised.
- Purchased or originated credit-impaired ('POCI'): Financial assets purchased or originated at a deep discount are seen to reflect incurred credit losses and a lifetime ECL is recognised. These exposures are included in stage 3 in the table below.

Credit-impaired (stage 3) exposures are disclosed on page 171 and 188 of the Annual Report and Accounts 2022.

Table 24: Performing and non-performing exposures and related provisions (CR1)

		Gross carrying amount/ nominal amount[1,2,3]						Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions							Collateral and financial guarantees received	
		Performing exposures			Non-performing exposures			Performing exposures			Non-performing exposures					
			of which: stage 1	of which: stage 2		of which: stage 2	of which: stage 3		of which: stage 1	of which: stage 2		of which: stage 2	of which: stage 3	Accumulated partial write-off	On performing exposures	On non-performing exposures
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
005	Cash balances at central banks and other demand deposits	374.4	372.9	1.5	0.1	—	0.1	—	—	—	—	—	—		—	—
010	**Loans and advances**	1,275.5	1,129.1	143.2	20.4	—	20.4	(4.9)	(1.1)	(3.8)	(7.1)	—	(7.1)	(0.8)	887.6	9.3
020	Central banks	32.5	32.5	—	—	—	—	—	—	—	—	—	—	—	11.7	—
030	General governments	11.1	10.6	0.5	0.3	—	0.3	—	—	—	—	—	—	—	3.5	0.2
040	Credit institutions	131.8	131.4	0.3	—	—	—	(0.1)	—	(0.1)	—	—	—	—	89.4	—
050	Other financial corporations	237.7	230.0	4.8	0.5	—	0.5	(0.1)	—	(0.1)	(0.1)	—	(0.1)	—	172.3	0.1
060	Non-financial corporations	446.8	358.1	88.5	16.2	—	16.2	(2.6)	(0.5)	(2.1)	(6.2)	—	(6.2)	(0.6)	243.9	7.0
070	– *of which: SMEs*	36.0	28.6	7.4	3.0	—	3.0	(0.3)	(0.1)	(0.2)	(0.5)	—	(0.5)	—	27.5	1.7
080	Households	415.6	366.5	49.1	3.4	—	3.4	(2.1)	(0.6)	(1.5)	(0.8)	—	(0.8)	(0.2)	366.8	2.0
090	**Debt securities**	355.0	351.2	2.2	—	—	—	(0.1)	(0.1)	—	—	—	—	—	22.2	—
100	Central banks	26.0	24.8	1.2	—	—	—	—	—	—	—	—	—	—	—	—
110	General governments	288.3	286.7	0.8	—	—	—	—	—	—	—	—	—	—	21.4	—
120	Credit institutions	24.6	24.5	0.1	—	—	—	—	—	—	—	—	—	—	0.7	—
130	Other financial corporations	13.0	12.7	—	—	—	—	—	—	—	—	—	—	—	—	—
140	Non-financial corporations	3.1	2.5	0.1	—	—	—	(0.1)	(0.1)	—	—	—	—	—	0.1	—
150	**Off-balance-sheet exposures**	954.1	608.3	37.3	2.6	—	1.9	(0.4)	(0.1)	(0.2)	(0.2)	—	(0.1)		129.4	0.5
160	Central banks	1.1	1.1	—	—	—	—	—	—	—	—	—	—		—	—
170	General governments	4.3	2.9	0.3	—	—	—	—	—	—	—	—	—		—	—
180	Credit institutions	48.9	42.3	0.5	—	—	—	—	—	—	—	—	—		0.1	—
190	Other financial corporations	87.8	65.5	3.2	—	—	—	—	—	—	—	—	—		14.1	—
200	Non-financial corporations	567.5	255.9	29.6	1.8	—	1.1	(0.4)	(0.1)	(0.2)	(0.2)	—	(0.1)		57.6	0.2
210	Households	244.5	240.6	3.7	0.8	—	0.8	—	—	—	—	—	—		57.6	0.3
220	**Total at 31 Dec 2022**	2,959.0	2,461.5	184.2	23.1	—	22.4	(5.4)	(1.3)	(4.0)	(7.3)	—	(7.2)	(0.8)	1,039.2	9.8

Table 24: Performing and non-performing exposures and related provisions (CR1) (continued)

		Gross carrying amount/ nominal amount[1,2,3]						Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions							Collateral and financial guarantees received	
		Performing exposures			Non-performing exposures			Performing exposures			Non-performing exposures					
			of which: stage 1	of which: stage 2		of which: stage 2	of which: stage 3		of which: stage 1	of which: stage 2		of which: stage 2	of which: stage 3	Accumulated partial write-off	On performing exposures	On non-performing exposures
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
010	Loans and advances	1,810.9	1,679.3	126.5	19.9	—	19.9	(4.8)	(1.4)	(3.4)	(7.2)	—	(7.2)	(0.9)	987.9	8.6
020	Central banks	458.3	455.7	2.6	—	—	—	—	—	—	—	—	—	—	19.3	—
030	General governments	9.3	8.2	1.1	—	—	—	—	—	—	—	—	—	—	3.1	—
040	Credit institutions	140.2	140.0	0.1	—	—	—	—	—	—	—	—	—	—	90.7	—
050	Other financial corporations	216.4	207.8	4.0	0.4	—	0.4	(0.1)	(0.1)	—	—	—	—	—	153.8	—
060	Non-financial corporations	510.0	407.6	102.1	14.4	—	14.4	(2.8)	(0.7)	(2.1)	(5.9)	—	(5.9)	(0.6)	296.5	5.7
070	– *of which: SMEs*	59.0	48.5	10.5	0.9	—	0.9	(0.4)	(0.1)	(0.3)	(0.3)	—	(0.3)	—	48.7	0.6
080	Households	476.7	460.0	16.6	5.1	—	5.1	(1.9)	(0.6)	(1.3)	(1.3)	—	(1.3)	(0.3)	424.5	2.9
090	Debt securities	378.5	375.0	1.9	—	—	—	(0.1)	(0.1)	—	—	—	—	—	30.5	—
100	Central banks	33.4	32.7	0.7	—	—	—	—	—	—	—	—	—	—	—	—
110	General governments	274.1	273.1	0.3	—	—	—	(0.1)	(0.1)	—	—	—	—	—	6.4	—
120	Credit institutions	32.3	31.7	0.6	—	—	—	—	—	—	—	—	—	—	5.3	—
130	Other financial corporations	35.9	35.3	0.3	—	—	—	—	—	—	—	—	—	—	18.8	—
140	Non-financial corporations	2.8	2.2	—	—	—	—	—	—	—	—	—	—	—	—	—
150	Off-balance-sheet exposures	750.5	628.8	35.8	1.8	—	1.3	(0.5)	(0.2)	(0.2)	(0.2)	—	(0.1)		94.8	0.1
160	Central banks	—	—	—	—	—	—	—	—	—	—	—	—		—	—
170	General governments	3.2	2.3	0.1	—	—	—	—	—	—	—	—	—		—	—
180	Credit institutions	12.5	7.4	0.4	—	—	—	—	—	—	—	—	—		—	—
190	Other financial corporations	106.7	102.1	2.4	—	—	—	—	—	—	—	—	—		5.2	—
200	Non-financial corporations	387.4	278.1	31.1	1.6	—	1.1	(0.4)	(0.1)	(0.2)	(0.2)	—	(0.1)		39.7	0.1
210	Households	240.7	238.9	1.8	0.2	—	0.2	(0.1)	(0.1)	—	—	—	—		49.9	—
220	Total at 31 Dec 2021	2,939.9	2,683.1	164.2	21.7	—	21.2	(5.4)	(1.7)	(3.6)	(7.4)	—	(7.3)	(0.9)	1,113.2	8.7

1 *Includes reverse repos and settlement accounts.*
2 *The staging analysis is non-additive as totals include instruments not eligible for staging, such as those held at fair value through profit and loss.*
3 *The counterparty sector classifications of this disclosure have been revised. 31 December 2021 data has been restated.*

Table 25: Maturity of exposures (CR1-A)

		Net exposure value[1]					
		On demand	**<= 1 year**	**> 1 year <= 5 years**	**> 5 years**	**No stated maturity**	**Total**
		$m	**$m**	**$m**	**$m**	**$m**	**$m**
1	Loans and advances	**231,779**	**904,387**	**490,137**	**468,358**	**—**	**2,094,661**
2	Debt securities	**—**	**162,925**	**128,019**	**65,295**	**—**	**356,239**
3	**Total**	**231,779**	**1,067,312**	**618,156**	**533,653**	**—**	**2,450,900**

1 *Includes on-balance sheet reverse repos and excludes assets held for sale, cash balances with central banks and other demand deposits, securitisation positions and settlement accounts.*

Table 26: Changes in the stock of non-performing loans and advances (CR2)

		Twelve months to 31 Dec	
		2022	2021
		Gross carrying value	Gross carrying value[2]
		$m	$m
10	**Initial stock of non-performing loans and advances**	**20,021**	20,613
20	Inflows to non-performing portfolios	**11,825**	8,727
30	Outflows from non-performing portfolios	**(2,956)**	(1,870)
40	Outflows due to write-offs	**(2,801)**	(2,615)
50	Outflow due to other situations[1]	**(4,478)**	(4,834)
60	**Final stock of non-performing loans and advances**	**21,611**	20,021

1 *Other situations include foreign exchange movements, repayments and changes in assets held for sale in default.*
2 *Prior period balances restated to exclude debt securities.*

Non-performing and forborne exposures

Tables 27 to 31 are presented in accordance with the EBA's 'Guidelines on disclosure of non-performing and forborne exposures'. For our wholesale portfolios, we adopted the EBA 'Guidelines on the application of definition of default' in 2021 and, for our retail portfolios, these guidelines were adopted during H1 2022. Adoption of these guidelines did not have a material impact on our portfolios and comparative disclosures have not been restated.

The EBA defines non-performing exposures as exposures with material amounts that are more than 90 days past due or exposures where the debtor is assessed as unlikely to pay its credit obligations in full without the realisation of collateral, regardless of the existence of any past due amounts or number days past due. For our retail portfolios a past due credit obligation is recognised where any amount of principal, interest or fees has not been paid at the date it was due (or cycle date). Any debtors that are in default for regulatory purposes or impaired under the applicable accounting framework are always considered as non-performing exposures. The Annual Report and Accounts 2022 definition of stage 3 credit-impaired is aligned to the EBA's definition of non-performing exposures. The IFRS 9 accounting standard expected credit losses are classified as Pillar 3 specific credit risk adjustments.

Forborne exposures are defined by the EBA as exposures where the bank has made concessions to a debtor that is experiencing or about to experience financial difficulties in meeting its financial commitments.

Until the end of 2021 HSBC classed loans as forborne when we modified the contractual payment terms where we had significant concerns about the borrowers' ability to meet contractual payments when due. In 2022, our definition of forborne has been expanded to capture non-payment related concessions.

For wholesale portfolio, non-payment related concessions have been identified from 2021 when our internal policies were changed; for retail portfolios this was during 2022.

In the *Annual Report and Accounts 2022*, forborne exposures are reported within the table 'Forborne loans and advances to customers at amortised cost by stage allocation'. In 2022 the Annual Report and Accounts presentation was aligned to the EBA definition, including adoption of the cure criteria.

The 31 December 2021 comparatives disclosures have been presented under the prior definition of forborne for the wholesale and retail portfolios.

Forbearance measures consist of concessions towards a debtor that is experiencing or about to experience difficulties in meeting its financial commitments ('financial difficulties').

Under the EBA definition, exposures cease to be reported as forborne if they pass three tests:

- The forborne exposure must have been considered to be performing for a 'probation period' of at least two years,
- Regular payments of more than an insignificant aggregate amount of principal or interest have been made during at least half of the probation period, and
- No exposure to the debtor is more than 30 days past due during or at the end of the probation period.

The Prudential Regulation Authority's (PRA) approach to the EBA Guidelines relating to the management of non-performing exposures (NPEs) and forborne exposures (FBEs) was outlined in a statement published in May 2022.

The PRA acknowledged that, whilst they are not applicable in the UK, the prudential aspects of these guidelines broadly represent good credit risk management standards.

It is therefore important to note that, although not obliged to follow the guidelines, we have already embedded, and intend to continue maintaining, certain thematic elements from the guidelines in our credit practices.

Table 27: Credit quality of forborne exposures (CQ1)

		Gross carrying amount/nominal amount				Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions		Collateral received and financial guarantees received on forborne exposures	
			Non-performing forborne						
		Performing forborne	Total	*of which: defaulted*	*of which: impaired*	On performing forborne exposures	On non performing forborne exposures	Total	*of which: forborne non-performing exposures*
		$m	$m	*$m*	*$m*	$m	$m	$m	*$m*
005	**Cash balances at central banks and other demand deposits**	—	—	—	—	—	—	—	—
010	**Loans and advances**	**5,524**	**5,854**	***5,854***	***5,854***	**(276)**	**(1,825)**	**4,341**	***2,259***
020	Central banks	—	—	—	—	—	—	—	—
030	General governments	—	—	—	—	—	—	—	—
040	Credit institutions	—	—	—	—	—	—	—	—
050	Other financial corporations	**43**	**14**	***14***	***14***	**(1)**	**(8)**	**26**	***2***
060	Non-financial corporations	**4,831**	**4,670**	***4,670***	***4,670***	**(151)**	**(1,516)**	**3,568**	***1,627***
070	Households	**650**	**1,170**	***1,170***	***1,170***	**(124)**	**(301)**	**747**	***630***
080	**Debt securities**	—	—	—	—	—	—	—	—
090	**Loan commitments given**	**137**	**210**	***210***	***210***	**(4)**	**(1)**	**68**	***40***
100	**Total at 31 Dec 2022**	**5,661**	**6,064**	***6,064***	***6,064***	**(280)**	**(1,826)**	**4,409**	***2,299***
005	Cash balances at central banks and other demand deposits	—	—	—	—	—	—	—	—
010	Loans and advances	447	6,972	*6,972*	*6,972*	(22)	(1,724)	3,632	*3,492*
020	Central banks	—	—	—	—	—	—	—	—
030	General governments	—	—	—	—	—	—	—	—
040	Credit institutions	—	—	—	—	—	—	—	—
050	Other financial corporations	35	14	*14*	*14*	—	(5)	3	*1*
060	Non-financial corporations	412	4,710	*4,710*	*4,710*	(22)	(1,321)	2,259	*2,121*
070	Households	—	2,248	*2,248*	*2,248*	—	(398)	1,370	*1,370*
080	Debt securities	—	—	—	—	—	—	—	—
090	Loan commitments given	—	121	*121*	*121*	—	—	—	—
100	Total at 31 Dec 2021	447	7,093	*7,093*	*7,093*	(22)	(1,724)	3,632	*3,492*

Table 28 presents an analysis of performing and non-performing exposures by days past due. The gross non-performing loan ('NPL') ratio at 31 December 2022 was 1.57% calculated in line with the EBA guidelines.

Table 28: Credit quality of performing and non-performing exposures by past due days (CQ3)

		Gross carrying amount/nominal amount											
		Performing exposures			Non-performing exposures								
		Total	Not past due or past due ≤ 30 days	Past due > 30 days ≤ 90 days	Total	Unlikely to pay that are not past due or are past due ≤ 90 days	Past due > 90 days ≤ 180 days	Past due > 180 days ≤ 1 year	Past due > 1 year ≤ 2 years	Past due > 2 years ≤ 5 years	Past due > 5 years ≤ 7 years	Past due > 7 years	*of which: defaulted*
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	*$bn*
005	**Cash balances at central banks and other demand**	374.4	374.4	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
010	**Loans and advances**	1,275.5	1,273.5	2.0	20.4	12.9	2.0	2.3	1.0	1.5	0.2	0.5	*20.4*
020	Central banks	32.5	32.5	—	—	—	—	—	—	—	—	—	—
030	General governments	11.1	11.1	—	0.3	0.3	—	—	—	—	—	—	*0.3*
040	Credit institutions	131.8	131.8	—	—	—	—	—	—	—	—	—	—
050	Other financial corporations	237.7	237.3	0.4	0.5	0.2	—	0.3	—	—	—	—	*0.5*
060	Non-financial corporations	446.8	446.0	0.8	16.2	10.5	1.4	1.6	0.9	1.2	0.2	0.4	*16.2*
070	– *of which SMEs*	*36.0*	*35.8*	*0.2*	*3.0*	*1.2*	*0.2*	*1.2*	*0.1*	*0.1*	*0.1*	*0.1*	3.0
080	Households	415.6	414.8	0.8	3.4	1.9	0.6	0.4	0.1	0.3	—	0.1	*3.4*
090	**Debt securities**	355.0	355.0	—	—	—	—	—	—	—	—	—	—
100	Central banks	26.0	26.0	—	—	—	—	—	—	—	—	—	—
110	General governments	288.3	288.3	—	—	—	—	—	—	—	—	—	—
120	Credit institutions	24.6	24.6	—	—	—	—	—	—	—	—	—	—
130	Other financial corporations	13.0	13.0	—	—	—	—	—	—	—	—	—	—
140	Non-financial corporations	3.1	3.1	—	—	—	—	—	—	—	—	—	—
150	**Off-balance-sheet**	954.1			2.6								*2.6*
160	Central banks	1.1			—								—
170	General governments	4.3			—								—
180	Credit institutions	48.9			—								—
190	Other financial corporations	87.8			—								—
200	Non-financial corporations	567.5			1.8								*1.8*
210	Households	244.5			0.8								*0.8*
220	**Total at 31 Dec 2022**	2,959.0	2,002.9	2.0	23.1	13.0	2.0	2.3	1.0	1.5	0.2	0.5	*23.1*

The table below provides information on the instruments that were cancelled in exchange for collateral obtained by taking possession and on the value of the collateral. The value at initial recognition represents the gross carrying amount of the collateral obtained by taking possession at initial recognition on the balance sheet, whilst the accumulated negative changes is the accumulated impairment or negative change in the value of the collateral since initial recognition, including amortisation in the case of property, plant & equipment and investment properties.

Table 29: Collateral obtained by taking possession and execution processes (CQ7)

		At 31 Dec 2022		At 31 Dec 2021	
		Collateral obtained by taking possession		Collateral obtained by taking possession	
		Value at initial recognition	**Accumulated negative changes**	Value at initial recognition	Accumulated negative changes
		$m	**$m**	$m	$m
010	Property plant and equipment (PP&E)	—	—	—	—
020	Other than property, plant and equipment	75.8	(8.2)	71.1	(8.0)
030	Residential immovable property	58.7	(7.7)	60.3	(5.5)
040	Commercial immovable property	6.5	(0.5)	7.5	(0.5)
050	Movable property (auto, shipping, etc.)	—	—	—	—
060	Equity and debt instruments	—	—	—	—
070	Other	10.6	—	3.3	(2.0)
080	**Total**	75.8	(8.2)	71.1	(8.0)

Concentration risk

Concentrations of credit risk arise when a number of counterparties or exposures have comparable economic characteristics, are engaged in similar activities or operate in the same geographical areas or industry sectors so that their collective ability to meet contractual obligations is uniformly affected by changes in economic, political or other conditions.

We have a number of global businesses with a broad range of products. We operate in a number of geographical markets with the majority of our exposures in Asia and Europe. We use a number of controls and measures to minimise undue concentration of exposure in our portfolios across industries, countries and global businesses. These include portfolio and counterparty limits, approval and review controls, and stress testing. The following tables present information on the concentration of exposures by geography and industry.

Table 30: Quality of non-performing exposures by geography (CQ4)

		a	b	c	d	e	f	g
		Gross carrying/ Nominal amount						
		Total	*of which: non-performing*	*of which: defaulted*	*of which: subject to impairment*	Accumulated impairment	Provisions on off-balance sheet commit-ments and financial guarantee given	Accumulated negative changes in fair value due to credit risk on non-performing exposures
		$m	*$m*	*$m*	*$m*	$m	$m	$m
010	**On balance sheet exposures**[1]	1,650,915	*20,391*	*20,391*	*1,646,188*	(12,114)		—
020	United Kingdom	333,439	*5,952*	*5,952*	*331,655*	(2,511)		—
030	Hong Kong	357,883	*4,117*	*4,117*	*357,386*	(2,247)		—
040	United States	249,322	*486*	*486*	*248,618*	(326)		—
070	Other countries	710,271	*9,836*	*9,836*	*708,529*	(7,030)		—
080	**Off balance sheet exposures**	956,752	*2,635*	*2,635*			(582)	
090	Hong Kong	215,287	*832*	*832*			(47)	
100	United Kingdom	119,840	*458*	*458*			(147)	
110	United States	116,053	*124*	*124*			(57)	
140	Other countries	505,572	*1,221*	*1,221*			(331)	
150	**Total at 31 Dec 2022**	2,607,667	*23,026*	*23,026*	*1,646,188*	(12,114)	(582)	—

1 *Excludes cash and balances at central banks.*

Table 31: Credit quality of loans and advances to non-financial corporations by industry (CQ5)

		Gross carrying amount					
		Total	*of which: non-performing*	*of which: defaulted*	*of which: subject to impairment*	Accumulated impairment	Accumulated negative changes in fair value due to credit risk on non-performing exposures
		$m	*$m*	*$m*	*$m*	$m	$m
010	Agriculture, forestry and fishing	6,643	*259*	*259*	*6,643*	(122)	—
020	Mining and quarrying	8,529	*234*	*234*	*8,529*	(173)	—
030	Manufacturing	93,419	*2,174*	*2,174*	*93,419*	(1,281)	—
040	Electricity, gas, steam and air conditioning supply	17,893	*312*	*312*	*17,893*	(114)	—
050	Water supply	3,001	*26*	*26*	*3,001*	(21)	—
060	Construction	14,399	*991*	*991*	*14,399*	(551)	—
070	Wholesale and retail trade	90,033	*3,063*	*3,063*	*90,031*	(1,823)	—
080	Transport and storage	25,975	*555*	*555*	*25,975*	(250)	—
090	Accommodation and food service activities	17,137	*786*	*786*	*17,137*	(244)	—
100	Information and communication	18,065	*276*	*276*	*18,065*	(117)	—
110	Real estate activities	101,476	*4,861*	*4,861*	*101,476*	(2,856)	—
120	Financial and insurance actvities	—	*—*	*—*	*—*	—	—
130	Professional, scientific and technical activities	17,946	*542*	*542*	*17,946*	(271)	—
140	Administrative and support service activities	25,126	*1,005*	*1,005*	*25,126*	(409)	—
150	Public administration and defense, compulsory social security	1,188	*—*	*—*	*1,188*	(1)	—
160	Education	2,471	*119*	*119*	*2,471*	(60)	—
170	Human health services and social work activities	3,898	*266*	*266*	*3,898*	(90)	—
180	Arts, entertainment and recreation	1,862	*146*	*146*	*1,862*	(77)	—
190	Other services	13,888	*600*	*600*	*13,789*	(273)	—
200	**Total at 31 Dec 2022**	462,949	*16,215*	*16,215*	*462,848*	(8,733)	—

Risk mitigation

Our approach when granting credit facilities is to do so on the basis of capacity to repay, rather than placing primary reliance on credit risk mitigants. Depending on a customer's standing and the type of product, facilities may be provided unsecured.

Mitigation of credit risk is a key aspect of effective risk management and takes many forms. Our general policy is to promote the use of credit risk mitigation, justified by commercial prudence and capital efficiency. Detailed policies cover the acceptability, structuring and terms with regard to the availability of credit risk mitigation such as in the form of collateral security. These policies, together with the setting of suitable valuation parameters, are subject to regular review to ensure that they are supported by empirical evidence and continue to fulfil their intended purpose.

Collateral

The most common method of mitigating credit risk is to take collateral. In our retail residential and commercial real estate ('CRE') businesses, a mortgage over the property is usually taken to help secure claims. Physical collateral is also taken in various forms of specialised lending and leasing transactions where income from the physical assets that are financed is also the principal source of facility repayment. In the commercial and industrial sectors, charges are created over business assets such as premises, stock and debtors. Loans to private banking clients may be made against a pledge of eligible marketable securities, cash or real estate. Facilities to small- and medium-sized enterprises ('SMEs') are commonly granted against guarantees given by their owners and/or directors.

For credit risk mitigants in the form of immovable property, the key determinant of concentration at Group level is geographic. Use of immovable property mitigants for risk management purposes is predominantly in Asia and Europe.

Further information regarding collateral held over CRE and residential property is provided on pages 180 and 193, respectively, of the Annual Report and Accounts 2022.

Financial collateral

In the institutional sector, trading facilities are supported by charges over financial instruments, such as cash, debt securities and equities. Financial collateral in the form of marketable securities is used in much of the Group's derivatives activities and in securities financing transactions, such as repos, reverse repos, securities lending and borrowing. Netting is used extensively and is a prominent feature of market standard documentation.

Further information regarding collateral held for trading exposures is on page 186 of the Annual Report and Accounts 2022.

In the non-trading book, we provide customers with working capital management products. In some cases, these products combine loans and advances to customers with customer accounts over which we have right of offset which comply with the regulatory requirements for on-balance sheet netting. Where this applies, the customer accounts are treated as cash collateral and are reflected in our LGD estimates.

Under on-balance sheet netting agreements, the customer accounts are treated as though they are covered by cash collateral and the effects of this collateral are incorporated in our LGD estimates. For risk management purposes, the net amounts of such exposures are subject to limits and the relevant customer agreements are subject to review to ensure the legal right of offset remains appropriate.

Other forms of credit risk mitigation

Our Global Banking and Markets ('GBM') business utilises credit risk mitigation to manage the credit risk of its portfolios, with the goal of reducing concentrations in individual names, sectors or portfolios. The techniques in use include credit default swap ('CDS') purchases, structured credit notes and securitisation structures. Buying credit protection creates credit exposure against the protection provider, which is monitored as part of the overall credit exposure to them. Where applicable, the transaction is entered into directly with a central clearing house counterparty; otherwise our exposure to CDS protection providers is diversified among mainly banking counterparties with strong credit ratings.

In our corporate lending, we also take guarantees from corporates and export credit agencies ('ECA'). Corporates would normally provide guarantees as part of a parent/subsidiary or common parent relationship and would span a number of credit grades.
The ECAs will normally be investment grade.

Policy and procedures

Policies and procedures cover the end to end Credit lending process including the governance of the protection of our position from the outset of a customer relationship; for instance, in requiring standard terms and conditions or specifically agreed documentation permitting the offset of credit balances against debt obligations, and through controls over the integrity, current valuation and, if necessary, realisation of collateral security.

Valuing collateral

Valuation strategies are established to monitor collateral mitigants to ensure that they will continue to provide the anticipated secure secondary repayment source. The frequency of valuation increases with the volatility of the collateral. For market trading activities such as collateralised over-the-counter ('OTC') derivatives and securities financing transactions ('SFTs'), we typically carry out daily valuations. In the residential mortgage business, Group policy prescribes revaluation of the portfolio at intervals of up to three years, or more frequently as the need arises; for example, where market conditions are subject to significant change, and for non performing loans on a regular basis (at least annually) . Residential property collateral values are determined through a combination of professional appraisals, house price indices or statistical analysis.

For commercial real estate, where the facility exceeds regulatory threshold requirements, Group policy requires an independent review of the valuation at least every three years, or more frequently as the need arises. Revaluations are sought where, for example, material concerns arise in relation to the performance of the collateral. CRE revaluation also occurs commonly in circumstances where an obligor's credit quality has declined sufficiently to cause concern that the principal payment source may not fully meet the obligation.

Recognition of risk mitigation under the IRB approach

Within an IRB approach, risk mitigants are considered in two broad categories:

- those which reduce the intrinsic PD of an obligor and therefore operate as determinants of PD; and
- those which affect the estimated recoverability of obligations and require adjustment of LGD or, in certain limited circumstances, EAD.

The first category typically includes full parental guarantees where one obligor within a group guarantees another. In these circumstances, the parent guarantor materially influences the PD of the guaranteed obligor. PD estimates are also subject to a 'sovereign ceiling', constraining the risk ratings assigned to obligors in countries of higher risk, and where only partial parental support exists. In certain jurisdictions, certain types of third-party guarantee are recognised by substituting the obligor's PD with that of the guarantor.

In the second category, LGD estimates are affected by a wider range of collateral, including cash, charges over real estate property, fixed assets, trade goods, receivables and floating charges such as mortgage debentures. Unfunded mitigants, such as third-party guarantees, are also considered in LGD estimates where there is evidence that they reduce loss expectation.

The main types of guarantor are banks, other financial institutions and corporates. The creditworthiness of providers of unfunded credit risk mitigation is taken into consideration as part of the guarantor's risk profile. Internal limits for such contingent exposure are approved in the same way as direct exposures.

EAD and LGD values are calculated using regulatory approved models, where available. For those portfolios where models are not permitted under the Permanent Partial Use rules, or are in the development pipeline, then regulatory values are used. For retail portfolios, credit risk mitigation data is incorporated into the internal risk parameters for exposures and feeds into the calculation of the expected loss ('EL') band value summarising both customer delinquency and product or facility risk. Credit and credit risk mitigation data form inputs submitted by all Group offices to centralised databases. A range of collateral recognition approaches are applied to IRB capital treatments:

- Unfunded protection, which includes credit derivatives and guarantees, is reflected through adjustment or determination of PD or LGD. Under the Advanced IRB approach, recognition may be through PD or LGD.
- Eligible financial collateral under the Advanced IRB approach is recognised in LGD models. Under the Foundation IRB approach, regulatory LGD values are adjusted. The adjustment to LGD is based on the degree to which the exposure value would be adjusted notionally if the financial collateral comprehensive method were applied.
- For all other types of collateral, including real estate, the LGD for exposures under the IRB advanced approach is calculated by models. For Foundation IRB , regulatory LGDs are adjusted depending on the value and type of the asset taken as collateral relative to the exposure. The types of eligible mitigation recognised under the Foundation IRB approach are more limited.

Table 32 sets out the exposure value and the effective value of credit risk mitigation expressed as the exposure value covered by the credit risk mitigant.

Recognition of risk mitigation under the standardised approach

Where credit risk mitigation is available in the form of an eligible guarantee, non-financial collateral or a credit derivative, the exposure is divided into covered and uncovered portions. The covered portion is determined after applying an appropriate 'haircut' for currency and maturity mismatches (and for omission of restructuring clauses in credit derivatives, where appropriate) to the amount of the protection provided and attracts the risk weight of the protection provider. The uncovered portion attracts the risk weight of the obligor.

The value of exposure fully or partially covered by eligible financial collateral is adjusted under the financial collateral comprehensive method using supervisory volatility adjustments (including those for currency mismatch) which are determined by the specific type of collateral (and its credit quality, in the case of eligible debt securities) and its liquidation period. The adjusted exposure value is subject to the risk weight of the obligor.

Table 32: Credit risk mitigation techniques – overview (CR3)

		Total Exposures: secured and unsecured	Exposures unsecured: carrying amount	Exposures secured: carrying amount	*of which: Exposures secured by collateral*	*of which: Exposures secured by financial guarantees*	*of which: Exposures secured by credit derivatives*
		$m	$m	$m	$m	$m	$m
1	**Loans and advances**	**1,658,346**	**761,479**	**896,867**	***801,086***	***95,781***	—
	Central banks	**392,081**	**380,348**	**11,733**	***11,653***	***80***	—
	General governments	**11,390**	**7,725**	**3,665**	***2,864***	***801***	—
	Credit Institutions	**146,621**	**57,268**	**89,353**	***89,237***	***116***	—
	Other financial corporations	**237,942**	**65,486**	**172,456**	***166,691***	***5,765***	—
	Non-financial corporations	**454,216**	**203,332**	**250,884**	***162,828***	***88,056***	—
	Households	**416,096**	**47,320**	**368,776**	***367,813***	***963***	—
2	**Debt securities**	**354,899**	**332,651**	**22,248**	—	***22,248***	—
	Central banks	**26,043**	**26,043**	—	—	—	—
	General governments	**288,223**	**266,780**	**21,443**	—	***21,443***	—
	Credit Institutions	**24,640**	**23,983**	**657**	—	***657***	—
	Other financial corporations	**12,968**	**12,930**	**38**	—	***38***	—
	Non-financial corporations	**3,025**	**2,915**	**110**	—	***110***	—
	Households	—	—	—	—	—	—
3	**Total at 31 Dec 2022**	**2,013,245**	**1,094,130**	**919,115**	***801,086***	***118,029***	—
4	*– of which: non-performing exposures*	***13,255***	***3,963***	***9,292***	**6,094**	**3,198**	—
5	*– of which: defaulted*	***13,255***	***3,963***	***9,292***			
1	Loans and advances	1,818,720	822,210	996,510	*869,027*	*127,483*	—
	Central banks	458,289	438,973	19,316	*19,224*	*92*	—
	General governments	9,329	6,268	3,061	*2,111*	*950*	—
	Credit Institutions	140,201	49,515	90,686	*90,547*	*139*	—
	Other financial corporations	216,683	62,873	153,810	*148,292*	*5,518*	—
	Non-financial corporations	515,741	213,557	302,184	*201,752*	*100,432*	—
	Households	478,477	51,024	427,453	*407,101*	*20,352*	—
2	Debt securities	378,421	347,970	30,451	—	*30,451*	
	Central banks	86,530	86,530	—	—	—	—
	General governments	220,858	214,450	6,408	—	*6,408*	—
	Credit Institutions	32,313	27,021	5,292	—	*5,292*	—
	Other financial corporations	35,917	17,166	18,751	—	*18,751*	—
	Non-financial corporations	2,803	2,803	—	—	—	—
	Households	—	—	—	—	—	—
3	Total at 31 Dec 2021[1]	2,197,141	1,170,180	1,026,961	*869,027*	*157,934*	—
4	*– of which: non-performing exposures*	*12,657*	*4,040*	*8,617*	7,205	1,412	—
5	*– of which: defaulted*	*12,657*	*4,040*	*8,617*			

1 Prior period balances have been restated to include reverse repos and settlement balances to align to recent CRR II changes.

Table 32.i:Analysis of accounting lines comprising total exposures in CR3

	Loans and advances: secured and unsecured $m
Assets as reported in financial statements at 31 Dec 2022	
Cash and balances at central banks[1]	**320,240**
Loans and advances to banks	**104,882**
Loans and advances to customers	**924,854**
Reverse repurchase agreement - non trading	**253,754**
Other financial assets[2]	**54,616**
Carrying amount at 31 Dec 2022 reported in table CR3[3]	**1,658,346**

1 *Mandatory balances held at central banks recognised as loans and advances excludes cash in hand ($6,762m).*
2 *Includes acceptances, settlement balances and items in course of collection; Financial assets measured at FVOCI, FVTPL and Amortised Cost; Deconsolidation of insurance/other entities and consolidation of banking associates.*
3 *Carrying amount reconciles to 'Loans and advances' total exposures: secured and unsecured in table CR3.*

Table 33: Standardised approach – credit conversion factor ('CCF') and credit risk mitigation ('CRM') effects (CR4)

		Exposures before CCF and CRM		Exposures post-CCF and CRM		RWAs and RWA density	
		On-balance sheet amount	Off-balance sheet amount	On-balance sheet amount	Off-balance sheet amount	RWAs	RWA density
		$m	$m	$m	$m	$m	%
	Asset classes[1]						
1	Central governments or central banks	**318,605**	**1,753**	**343,176**	**1,844**	**4,519**	**1.31**
2	Regional governments or local authorities	**9,560**	**292**	**12,133**	**33**	**2,403**	**19.75**
3	Public sector entities	**7,265**	**129**	**553**	**4**	**177**	**31.78**
5	International organisations	**1,186**	**—**	**1,186**	**—**	**—**	**—**
6	Institutions	**787**	**109**	**876**	**48**	**608**	**65.80**
7	Corporates	**65,726**	**84,385**	**59,201**	**8,545**	**63,049**	**93.07**
8	Retail	**23,315**	**48,432**	**22,400**	**247**	**15,739**	**69.50**
9	Secured by mortgages on immovable property	**32,318**	**615**	**32,318**	**192**	**12,615**	**38.80**
10	Exposures in default	**2,699**	**639**	**2,576**	**157**	**3,295**	**120.56**
11	Exposures associated with particularly high risk	**328**	**66**	**255**	**20**	**412**	**149.82**
14	Collective investment undertakings[2]	**3,807**	**886**	**3,807**	**460**	**6,510**	**152.57**
15	Equity	**15,417**	**73**	**15,417**	**73**	**34,737**	**224.25**
16	Other items	**15,055**	**337**	**15,055**	**337**	**9,520**	**61.85**
17	**Total at 31 Dec 2022**	**496,068**	**137,716**	**508,953**	**11,960**	**153,584**	**29.48**
1	Central governments or central banks	337,479	828	356,798	1,414	10,952	3.06
2	Regional governments or local authorities	9,651	269	10,800	57	3,064	28.22
3	Public sector entities	13,656	1,604	13,783	472	56	0.39
5	International organisations	1,005	—	1,005	—	—	—
6	Institutions	902	3	990	21	666	65.93
7	Corporates	66,192	70,566	58,931	8,152	61,662	91.92
8	Retail	19,857	53,362	19,126	401	14,287	73.16
9	Secured by mortgages on immovable property	34,346	844	34,347	238	12,836	37.11
10	Exposures in default	4,006	488	3,913	193	5,110	124.45
11	Exposures associated with particularly high risk	2,493	1,237	2,416	630	4,568	150.00
14	Collective investment undertakings	195	—	195	—	195	100.00
15	Equity	17,309	—	17,309	—	38,879	225.35
16	Other items	12,105	368	12,105	368	8,908	71.42
17	Total at 31 Dec 2021	519,196	129,569	531,718	11,946	161,183	29.65

1 *Securitisation positions are not included in this table.*
2 *These balances include underlying equity exposures within CIUs calculated under the look-through approach using the IRB simple risk-weight method.*

Table 34: IRB – Effect on the RWA of credit derivatives used as CRM techniques (CR7)

		At			
		At 31 Dec 2022		At 31 Dec 2021	
		Pre-credit derivatives RWAs	**Actual RWAs**	Pre-credit derivatives RWAs	Actual RWAs
		$m	**$m**	$m	$m
1	**Exposures under FIRB**	**79,264**	**78,790**	92,056	91,567
2	Central governments and central banks	**167**	**167**	136	136
3	Institutions	**67**	**67**	140	140
4	Corporates	**79,030**	**78,556**	91,780	91,291
4.1	*– of which:* *Corporates – SMEs*	***7,828***	***7,828***	*8,362*	*8,362*
5	**Exposures under AIRB[1]**	**426,728**	**425,919**	403,793	403,056
6	Central governments and central banks	**53,383**	**53,383**	44,693	44,693
7	Institutions	**13,779**	**13,768**	12,607	12,607
8	Corporates	**269,966**	**269,168**	262,014	261,277
8.1	*– of which:* *Corporates – SMEs*	***12,552***	***12,552***	*14,928*	*14,928*
8.2	*Corporates – specialised lending*	***31,050***	***31,050***	*26,100*	*26,100*
9	Retail	**89,600**	**89,600**	84,479	84,479
9.1	*– of which:* *Retail – immovable property SMEs*	***328***	***328***	*480*	*480*
9.2	*Retail – immovable property non-SMEs*	***60,476***	***60,476***	*53,450*	*53,450*
9.3	*Retail – qualifying revolving*	***13,679***	***13,679***	*16,004*	*16,004*
9.4	*Retail – other SMEs*	***2,842***	***2,842***	*3,138*	*3,138*
9.5	*Retail – other non-SMEs*	***12,275***	***12,275***	*11,407*	*11,407*
10	**Total**	**505,992**	**504,709**	495,849	494,623

1 Non-credit obligation assets are not included in this table, prior period has been presented accordingly.

Table 35: IRB approach – Disclosure of the extent of the use of CRM techniques (CR7-A)

			Funded credit Protection (FCP)								
				Part of exposures covered by Other eligible collateral (%)				**Part of exposures covered by Other funded credit protection (%)**			
		Total exposures	**Part of exposures covered by financial collateral**	**Total**	**Part of exposures covered by Immovable property collateral**	**Part of exposures covered by receivables**	**Part of exposures covered by other physical collateral**	**Total**	**Part of exposures covered by cash on deposit**	**Part of exposures covered by life insurance policies**	**Part of exposures covered by instruments held by a third party**
AIRB		**$bn**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
1	Central governments and central banks	**409.7**	**6.48**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
2	Institutions	**77.6**	**4.66**	**1.27**	**0.05**	**0.41**	**0.80**	**—**	**—**	**—**	**—**
3	Corporates	**505.9**	**6.70**	**20.39**	**14.41**	**2.43**	**3.51**	**0.51**	**—**	**0.51**	**—**
3.1	*– of which:* *Corporates – SMEs*	***17.7***	***12.72***	***61.46***	***54.85***	***1.48***	***3.81***	***6.69***	***—***	***6.69***	***—***
3.2	*Corporates – specialised lending*	***49.1***	***0.51***	***—***	***—***	***—***	***—***	***—***	***—***	***—***	***—***
3.3	*Corporates – other*	***439.1***	***7.15***	***21.01***	***14.39***	***2.74***	***3.89***	***0.32***	***—***	***0.32***	***—***
4	Retail	**497.7**	**5.36**	**70.85**	**69.96**	**—**	**0.89**	**0.11**	**—**	**0.11**	**—**
4.1	*– of which:* *Retail – immovable property SMEs*	***0.8***	***1.56***	***91.73***	***91.15***	***0.54***	***0.05***	***—***	***—***	***—***	***—***
4.2	*Retail – immovable property non-SMEs*	***380.9***	***0.09***	***91.21***	***91.21***	***—***	***—***	***—***	***—***	***—***	***—***
4.3	*Retail – qualifying revolving*	***62.8***	***—***	***—***	***—***	***—***	***—***	***—***	***—***	***—***	***—***
4.4	*Retail – other SMEs*	***9.7***	***1.68***	***0.13***	***—***	***0.07***	***0.06***	***—***	***—***	***—***	***—***
4.5	*Retail – other non-SMEs*	***43.5***	***60.08***	***10.18***	***—***	***—***	***10.18***	***1.25***	***—***	***1.25***	***—***
5	**Total at 31 Dec 2022**	**1,490.9**	**6.09**	**30.64**	**28.25**	**0.85**	**1.53**	**0.21**	**—**	**0.21**	**—**
FIRB											
1	Central governments and central banks	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
2	Institutions	**0.2**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
3	Corporates	**154.3**	**15.50**	**16.89**	**11.85**	**3.61**	**1.44**	**—**	**—**	**—**	**—**
3.1	*– of which:* *Corporates – SMEs*	***13.7***	***0.67***	***61.01***	***44.78***	***11.78***	***4.46***	***—***	***—***	***—***	***—***
3.2	*Corporates – specialised lending*	***—***	***—***	***—***	***—***	***—***	***—***	***—***	***—***	***—***	***—***
3.3	*Corporates – other*	***140.6***	***16.95***	***12.59***	***8.64***	***2.81***	***1.14***	***—***	***—***	***—***	***—***
4	**Total at 31 Dec 2022**	**154.5**	**15.49**	**16.88**	**11.84**	**3.61**	**1.44**	**—**	**—**	**—**	**—**

Table 35: IRB approach – Disclosure of the extent of the use of CRM techniques (CR7-A) (continued)

		Unfunded credit Protection		Credit risk mitigation methods in the calculation of RWAs	
		Part of exposures covered by guarantees	Part of exposures covered by credit derivatives	RWA post- all CRM assigned to the obligor exposure class	RWA with substitution effects
AIRB		%	%	$bn	$bn
1	Central governments and central banks	**0.12**	**—**	**53.4**	**53.4**
2	Institutions	**0.16**	**—**	**13.3**	**13.8**
3	Corporates	**1.26**	**—**	**269.6**	**269.1**
3.1	– *of which:* *Corporates – SMEs*	***1.75***	**—**	***12.5***	***12.5***
3.2	*Corporates – specialised lending*	***0.45***	**—**	***31.1***	***31.0***
3.3	*Corporates – other*	***1.33***	**—**	***226.0***	***225.6***
4	Retail	**6.44**	**—**	**89.6**	**89.6**
4.1	– *of which:* *Retail – immovable property SMEs*	***0.11***	**—**	***0.3***	***0.3***
4.2	*Retail – immovable property non-SMEs*	***8.4***	**—**	***60.5***	***60.5***
4.3	*Retail – qualifying revolving*	***0***	**—**	***13.7***	***13.7***
4.4	*Retail – other SMEs*	***0.32***	**—**	***2.8***	***2.8***
4.5	*Retail – other non-SMEs*	***0.05***	**—**	***12.3***	***12.3***
5	**Total at 31 Dec 2022**	**2.62**	**—**	**425.9**	**425.9**
FIRB					
1	Central governments and central banks	**—**	**—**	**—**	**0.20**
2	Institutions	**—**	**—**	**0.1**	**0.1**
3	Corporates	**—**	**—**	**78.7**	**78.5**
3.1	– *of which:* *Corporates – SMEs*	**—**	**—**	***7.8***	***7.8***
3.2	*Corporates – specialised lending*	**—**	**—**	**—**	**—**
3.3	*Corporates – other*	**—**	**—**	***70.9***	***70.7***
4	**Total at 31 Dec 2022**	**—**	**—**	**78.8**	**78.8**

Credit risk approaches

Table 36: Scope of the use of IRB and SA approaches (UK CR6-A)

		Exposure value as defined in Article 166 CRR for exposures subject to IRB approach	Total exposure value for exposures subject to the Standardised approach and to the IRB approach[1]	Percentage of total exposure value subject to the permanent partial use of the SA	Percentage of total exposure value subject to IRB Approach	Percentage of total exposure value subject to a roll-out plan[2]
		$m	$m	%	%	%
1	Central governments or central banks	**409,735**	**747,092**	**43.88**	**54.78**	**1.34**
1.1	*of which: Regional governments or local authorities*		***20,031***	***0.02***	***63.49***	***36.49***
1.2	*of which: Public sector entities*		***12,163***	***56.38***	***21.17***	***22.45***
2	Institutions	**77,751**	**78,487**	**2.34**	**97.66**	**—**
3	Corporates	**660,143**	**699,593**	**10.96**	**87.41**	**1.63**
3.1	*of which: Corporates-Specialised lending,excluding slotting approach*		***9,367***	**—**	***100.00***	**—**
3.2	*of which: Corporates - Specialised lending under slotting approach*		***38,149***	**—**	***100.00***	**—**
4	Retail	**497,707**	**542,906**	**11.21**	**88.73**	**0.06**
4.1	*of which: Retail – Secured by real estate SMEs*		***844***	***1.19***	***98.81***	**—**
4.2	*of which: Retail – Secured by real estate non-SMEs*		***403,440***	***7.75***	***92.25***	**—**
4.3	*of which: Retail – Qualifying revolving*		***56,376***	***6.05***	***93.95***	**—**
4.4	*of which: Retail – Other SMEs*		***12,937***	***27.98***	***71.96***	***0.05***
4.5	*of which: Retail – Other non-SMEs*		***69,309***	***32.49***	***67.03***	***0.47***
5	Equity	**—**	**17,407**	**100.00**	**—**	**—**
6	Other non-credit obligation assets	**67,626**	**83,012**	**18.54**	**81.46**	**—**
7	**Total at 31 Dec 2022**	**1,712,962**	**2,168,497**	**23.05**	**75.94**	**1.01**

1 *The key driver for differences in IRB exposure value is primarily the CCF applied to the off balance sheet exposures.*
2 *Percentage of total exposure value subject to a roll-out plan, includes other STD exposures which are not subject to permanent partial use.*

Standardised approach

Qualitative disclosures on banks' use of external credit ratings under the standardised approach for credit risk

The standardised approach is applied where exposures do not qualify for use of an IRB approach and/or where an exemption from IRB has been granted. The standardised approach requires banks to use risk assessments prepared by external credit assessment institutions ('ECAIs') or ECAs to determine the risk weightings applied to rated counterparties.

ECAI risk assessments are used within the Group as part of the determination of risk weightings for the following classes of exposure:

- central governments and central banks;
- regional governments and local authorities;
- institutions;
- corporates;
- securitisation positions; and
- short-term claims on institutions and corporates.

We have nominated three ECAIs for this purpose – Moody's Investor Service ('Moody's'), Standard and Poor's rating agency ('S&P') and Fitch Ratings ('Fitch'). In addition to this, we use DBRS and ARC ratings specifically for securitisation positions. We have not nominated any ECAs.

Data files of external ratings from the nominated ECAIs are matched with customer records in our centralised credit database.

When calculating the risk-weighted value of an exposure using ECAI risk assessments, risk systems identify the customer in question and look up the available ratings in the central database according to the rating selection rules. The systems then apply the prescribed credit quality step mapping to derive from the rating the relevant risk weight.

All other exposure classes are assigned risk weightings as prescribed in the PRA's Rulebook.

Credit quality step	Moody's assessment	S&P's assessment	Fitch's assessment	DBRS assessment
1	Aaa to Aa3	AAA to AA–	AAA to AA–	AAA to AAL
2	A1 to A3	A+ to A–	A+ to A–	AH to AL
3	Baa1 to Baa3	BBB+ to BBB–	BBB+ to BBB–	BBBH to BBBL
4	Ba1 to Ba3	BB+ to BB–	BB+ to BB–	BBH to BBL
5	B1 to B3	B+ to B–	B+ to B–	BH to BL
6	Caa1 and below	CCC+ and below	CCC+ and below	CCCH and below

Exposures to, or guaranteed by, central governments and central banks of the UK and equivalent countries are risk-weighted at 0% provided that they are denominated and funded in local currency or qualify for that weight by virtue of their external rating.

Table 37 provides further details of the risk weighting of our standardised non-counterparty credit exposures. For information about the risk weighting of our standardised counterparty credit risk exposures, refer to Table 48.

CQS Reference table

			Institutions (includes banks)		
			Sovereign method	Credit assessment method	
	Corporates	Central government or Central Banks	Sovereign method	Maturity > 3 months	Maturity 3 months or less
Credit Quality Step 1	20%	0%	20%	20%	20%
Credit Quality Step 2	50%	20%	50%	50%	20%
Credit Quality Step 3	100%	50%	100%	50%	20%
Credit Quality Step 4	100%	100%	100%	100%	50%
Credit Quality Step 5	150%	100%	100%	100%	50%
Credit Quality Step 6	150%	150%	150%	150%	150%

Table 37:Standardised approach – exposures by asset classes and risk weights (CR5)

	Risk weight ('RW%')	0%	20%	35%	50%	70%	75%	100%	150%	250%	370%	1,250%	Others	Total credit exposure amount (post-CCF and CRM)	*of which: un-rated*
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
	Asset classes[1]														
1	Central governments or central banks	**343.1**	**—**	**—**	**—**	**—**	**—**	**0.1**	**—**	**1.8**	**—**	**—**	**—**	**345.0**	***1.8***
2	Regional governments or local authorities	**4.5**	**6.5**	**—**	**0.3**	**—**	**—**	**0.8**	**—**	**0.1**	**—**	**—**	**—**	**12.2**	***0.1***
3	Public sector entities	**0.1**	**0.4**	**—**	**—**	**—**	**—**	**0.1**	**—**	**—**	**—**	**—**	**—**	**0.6**	***0.1***
4	Multilateral development banks	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	***—***
5	International organisations	**1.2**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**1.2**	***—***
6	Institutions	**—**	**0.1**	**—**	**0.5**	**—**	**—**	**0.3**	**—**	**—**	**—**	**—**	**—**	**0.9**	***0.3***
7	Corporates	**—**	**3.9**	**0.8**	**2.3**	**—**	**—**	**59.3**	**1.4**	**—**	**—**	**—**	**—**	**67.7**	***57.3***
8	Retail	**—**	**1.6**	**—**	**—**	**—**	**21.0**	**—**	**—**	**—**	**—**	**—**	**—**	**22.6**	***22.6***
9	Secured by mortgages on immovable property	**—**	**—**	**30.5**	**—**	**—**	**—**	**2.0**	**—**	**—**	**—**	**—**	**—**	**32.5**	***32.5***
10	Exposures in default	**—**	**—**	**—**	**—**	**—**	**—**	**1.6**	**1.1**	**—**	**—**	**—**	**—**	**2.7**	***2.7***
11	Exposures associated with particularly high risk	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**0.3**	**—**	**—**	**—**	**—**	**0.3**	***0.3***
14	Units or shares in collective investment undertakings[2]	**0.5**	**0.5**	**—**	**0.2**	**—**	**—**	**0.9**	**—**	**—**	**0.2**	**0.1**	**1.9**	**4.3**	***3.0***
15	Equity exposures	**—**	**—**	**—**	**—**	**—**	**—**	**2.7**	**—**	**12.8**	**—**	**—**	**—**	**15.5**	***15.5***
16	Other items	**—**	**7.4**	**—**	**—**	**—**	**—**	**8.0**	**—**	**—**	**—**	**—**	**—**	**15.4**	***15.4***
17	**Total at 31 Dec 2022**	**349.4**	**20.4**	**31.3**	**3.3**	**—**	**21.0**	**75.8**	**2.8**	**14.7**	**0.2**	**0.1**	**1.9**	**520.9**	***151.6***
	Asset classes[1]														
1	Central governments or central banks	353.7	—	—	—	—	—	0.1	—	4.4	—	—	—	358.2	*4.4*
2	Regional governments or local authorities	3.3	6.3	—	0.4	—	—	0.4	—	0.5	—	—	—	10.9	*1.0*
3	Public sector entities	14.1	0.2	—	—	—	—	—	—	—	—	—	—	14.3	*5.1*
5	International organisations	1.0	—	—	—	—	—	—	—	—	—	—	—	1.0	*0.4*
6	Institutions	—	0.1	—	0.5	—	—	0.4	—	—	—	—	—	1.0	*0.3*
7	Corporates	—	4.3	0.4	2.9	0.4	—	57.8	1.3	—	—	—	—	67.1	*56.5*
8	Retail	—	—	—	—	—	19.5	—	—	—	—	—	—	19.5	*19.5*
9	Secured by mortgages on immovable property	—	—	32.4	1.3	—	—	0.9	—	—	—	—	—	34.6	*34.6*
10	Exposures in default	—	—	—	—	—	—	2.1	2.0	—	—	—	—	4.1	*3.0*
11	Exposures associated with particularly high risk	—	—	—	—	—	—	—	3.0	—	—	—	—	3.0	*3.0*
14	Units or shares in collective investment undertakings	—	—	—	—	—	—	0.2	—	—	—	—	—	0.2	*0.2*
15	Equity	—	—	—	—	—	—	2.9	—	14.4	—	—	—	17.3	*17.3*
16	Other items	—	4.4	—	—	—	—	8.1	—	—	—	—	—	12.5	*12.5*
17	Total at 31 Dec 2021	372.1	15.3	32.8	5.1	0.4	19.5	72.9	6.3	19.3	—	—	—	543.7	*157.8*

1 *Securitisation positions are not included in this table.*
2 *These balances include capital requirements for underlying equity exposures within CIUs calculated using the IRB simple risk-weight method with effect from 1 January 2022.*

Application of the IRB approach

Our Group IRB credit risk rating framework incorporates obligor propensity to default expressed in PD, and loss severity in the event of default expressed in EAD and LGD. These measures are used to calculate regulatory EL and capital requirements. They are also used with other inputs to inform rating assessments for the purposes of credit approval and many other purposes, for example:

- credit approval and monitoring: IRB models are used in the assessment of customer and portfolio risk in lending decisions;
- risk appetite: IRB measures are an important element in identifying risk exposure at customer, sector and portfolio level;
- pricing: IRB parameters are used in pricing tools for new transactions and reviews; and
- economic capital and portfolio management: IRB parameters are used in the economic capital model that has been implemented across HSBC.

Roll-out of the IRB approach

With the PRA's permission, we have adopted the advanced IRB approach for the majority of our business. At the end of 2022, portfolios in much of Europe, Asia and North America were on advanced IRB approaches. Others remain on the standardised or foundation approaches pending the development of models for the PRA's approval in line with our IRB roll-out plans where the primary focus is on corporate and retail exposures.

EL and credit risk adjustments

We analyse credit loss experience in order to assess the performance of our risk measurement and control processes, and to inform our understanding of the implications for risk and capital management of dynamic changes occurring in the risk profile of our exposures.

When comparing regulatory EL with measures of ECL under IFRS 9, differences in the definition and scope of each should be considered. These can give rise to material differences in the way economic, business and methodological drivers are reflected quantitatively in the accounting and regulatory measures of loss.

In general, HSBC calculates ECL using three main components namely probability of default, loss given default, and exposure at default.

ECLs include impairment allowances (or provisions, against commitments and guarantees) calculated for a 12-month period ('12-month ECL'), for the remaining life of an exposure ('lifetime ECL'), and on financial assets that are considered to be in default or otherwise credit impaired. ECLs resulting from default events that are possible:

- within the next 12 months are recognised for financial instruments in stage 1; and
- beyond 12 months are recognised for financial instruments in stages 2 and 3.

An assessment of whether credit risk has increased significantly since initial recognition is performed at each reporting period by considering the change in the risk of default occurring over the remaining life of the financial instrument.

Unless identified at an earlier stage, all financial assets are deemed to have suffered a significant increase in credit risk when 30 days past due.

Change in ECL and other credit impairment charges represents the movement in the ECL during the year including write-offs, recoveries and foreign exchange. EL represents the one-year regulatory expected loss accumulated in the book at the balance sheet date.

Credit risk adjustments ('CRAs') encompass the impairment allowances or provisions balances, and changes in ECL and other credit impairment charges.

HSBC leverages the Basel IRB framework where possible, with recalibration to meet the differing IFRS 9 requirements as follows:

Model	Regulatory capital	IFRS 9
PD	• Through the cycle (represents long-run average PD throughout a full economic cycle) • The definition of default includes a backstop of 90+ days past due, although this has been modified to 180+ days past due for some portfolios, particularly UK and US mortgages	• Point in time (based on current conditions, adjusted to take into account estimates of future conditions that will impact PD) • Default backstop of 90+ days past due for all portfolios
EAD	• Cannot be lower than current balance	• Amortisation captured for term products
LGD	• Downturn LGD (consistent with losses we would expect to suffer during a severe but plausible economic downturn) • Regulatory floors may apply to mitigate risk of underestimating downturn LGD due to lack of historical data • Discounted using cost of capital • All collection costs included	• Expected LGD (based on estimate of loss given default including the expected impact of future economic conditions such as changes in value of collateral) • No floors • Discounted using the original effective interest rate of the loan • Only costs associated with obtaining/selling collateral included
Other		• Discounted back from point of default to balance sheet date

Wholesale risk

The wholesale risk rating system

This section describes how we operate our credit risk analytical models and use IRB metrics in the wholesale customer business.

PDs for wholesale customer segments (i.e. central governments and central banks, financial institutions and corporate customers) and for certain individually assessed personal customers are derived from a customer risk rating ('CRR') master scale of 23 grades. Of these, 21 are non-default grades representing varying degrees of strength of financial condition, and two are default grades. Each CRR has a PD range associated with it as well as a mid-point PD.

The score generated by a credit risk rating model for the obligor is mapped to a corresponding PD. Relationship managers may by exception, propose a different CRR from that indicated through an override process which must be approved by the Credit function. Overrides for each model are recorded and monitored as part of the model management process. The CRR is then reviewed by a credit approver who, taking into account information such as the most recent financial events and market data, makes the final decision on the rating. The rating assigned reflects the rating calculated by the model and the approver's overall view of the obligor's credit standing.

The mid-point PD associated with the finally assigned CRR is then used in the regulatory capital calculation.

The CRR is assigned at an obligor level, which means that separate exposures to the same obligor are generally subject to a single, consistent rating. Exceptions may include where an exposure to a corporate or bank is capped to the rating of the Sovereign which may lead to different CRRs for the same obligor. Unfunded credit risk mitigants, such as guarantees, may also influence the final assignment of a CRR to an obligor.

If an obligor is in default on any material credit obligation to the Group, all of the obligor's facilities from the Group are generally considered to be in default.

Under the IRB approach, obligors are grouped into CRR grades that have similar anticipated default frequency and a common mid-point

PD. The anticipated default frequency is calculated using approved PD models that generally follow the Through the Cycle (TTC approach), whereas LGD and EAD models must follow a downturn methodology. That is, while models are calibrated to long-run default rates, obligor ratings are reviewed annually, or more frequently if necessary, to reflect Point in Time (PIT) changes in their circumstances and/or their economic operating environment.

Our policy requires approvers to downgrade ratings on expectations, but to upgrade them only on performance. This leads to expected defaults typically exceeding actual defaults.

For EAD and LGD estimation, operating entities are permitted, subject to overview by Group Risk and approval by the PRA and regulatory floors, to use their own modelling approaches to suit conditions in their jurisdictions. Group Risk provides co-ordination, benchmarks, and promotion of best practice on EAD and LGD estimation.

EAD is estimated to a 12-month forward time horizon and represents the current exposure, plus an estimate for future increases in exposure and the realisation of contingent exposures post-default.

LGD captures the effects of facility and collateral structure on outcomes post-default. This includes such factors as the type of client, the facility seniority, the type and value of collateral, past recovery experience and priority under law. It is expressed as a percentage of EAD.

New IRB Repair guidelines were published by the EBA with effect from 1 January 2022 and were largely adopted into UK retained rules. These guidelines specify detailed new requirements including the Margin of Conservatism classification framework, data representativeness, LGD in default and Estimated Loss Best Estimate (ELBE) and model monitoring.

Legacy models were not designed to comply with these new requirements and a pipeline for model re-development, recalibration or retirement is underway with future planned submissions agreed with the regulator. The impact on RWAs and Expected Loss relating to the non-compliance with the new regulations has been assessed and additional Post Model Adjustments (PMAs) have been implemented. The PMAs have been submitted to the regulator and are subject to regular review to ensure they remain appropriate given changes in economic conditions and the composition of the portfolios.

Wholesale models

To determine credit ratings for the different types of wholesale obligor, multiple models and scorecards are used for PD, LGD, and EAD. These models may be differentiated by region, customer segment and/or customer size. For example, we have separate PD models for all of our key customer segments, including sovereigns, financial institutions, and large, medium and small-sized corporates.

Global PD models have been developed for asset classes, or clearly identifiable segments of asset classes, where the customer relationship is managed globally; for example, sovereigns, financial institutions and the largest corporate clients that typically operate internationally.

Local PD models, specific to a particular country, region, or sector, are developed for other obligors. These include corporate clients when they show distinct characteristics in common in a particular geography.

The two major drivers of model methodology are the nature of the portfolio and the availability of internal or external data on historical defaults and risk factors. For some historically low-default portfolios, e.g. sovereign and financial institutions, a model will rely more heavily on external data and/or the input of an expert panel. Where sufficient data is available, models are built on a statistical basis, although the input of expert judgement may still form an important part of the overall model development methodology.

Most LGD and EAD models are developed according to local circumstances, considering legal and procedural differences in the recovery and workout processes. Our approach to EAD and LGD also encompasses global models for central governments and central banks, and for institutions, as exposures to these customer types are managed centrally by Global Risk. The PRA requires all firms to apply an LGD floor of 45% for senior unsecured exposure to sovereign entities. This floor was applied to reflect the relatively few loss observations across all firms in relation to these obligors. This floor is applied for the purposes of regulatory capital reporting.

The PRA has published guidance on the appropriateness of LGD models for low default portfolios. It states there should be at least 20 defaults per country per collateral type for LGD models to be approved. Where there are insufficient defaults, an LGD floor will be applied. As a result, in 2022, we continued to apply LGD floors for our banks portfolio and some Asian corporate portfolios where there were insufficient loss observations.

The PRA has also indicated that it considers income-producing real estate to be an asset class that would be difficult to model. As a result, RWAs for our UK CRE portfolio and US income-producing CRE portfolio are calculated using the supervisory slotting approach. Under the supervisory slotting approach the bank allocates exposures to one of five categories. Each category then receives a fixed pre-determined RWA and EL percentage.

Local models for the corporate exposure class are developed using various data inputs, including collateral information and geography (for LGD) and product type (for EAD). The most material corporate models are the UK and Asian models, all of which are developed using more than 10 years' data. The LGD models are calibrated to a period of credit stress or downturn in economic conditions.

None of our EAD models is calibrated for a downturn, as analysis shows that utilisation decreases during a downturn because credit stress is accompanied by more intensive limit monitoring and facility reduction.

Table 38 sets out the key characteristics of the significant wholesale credit risk models that drive the capital calculation split by regulatory wholesale asset class, with their associated RWAs, including the number of models for each component, the model method or approach and the number of years of loss data.

Table 38: Wholesale IRB credit risk models

Portfolio	IRB exposure class	RWA $bn	Component model	Number of material component models	Model description and methodology	Number of years loss data	Regulatory Floors
Sovereign	Central government and central banks, Institutions, Corporates – Others	45.6	PD	1	A shadow rating approach that includes macroeconomic and political factors, constrained with expert judgement.	>10	No
			LGD	1	An unsecured model built on assessment of structural factors that influence the country's long-term economic performance. For senior unsecured LGD, a floor of 45% is applied.	>10	Floored at Foundation IRB
			EAD	1	A cross-classification model that uses both internal data and expert judgement, as well as information on similar exposure types from other asset classes.	>10	EAD must be at least equal to the current utilisation of the balance at account level
Banking institutions	Institutions	13.9	PD	1	A statistical model that combines quantitative analysis on financial information with expert inputs and macroeconomic factors.	>10	PD floor of 0.03%
			LGD	1	A quantitative model that produces both downturn and expected LGD. Several securities types are included in the model to recognise collateral in the LGD calculation. For senior unsecured LGD, a floor of 45% is applied.	>10	Floored at Foundation IRB
			EAD	1	A quantitative model that assigns credit conversion factors ('CCF') taking into account product types and committed/uncommitted indicator to calculate EAD using current utilisation and available headroom.	>10	EAD must be at least equal to the current utilisation of the balance at account level
Corporates[1] Large corporates	Corporates – Other, institutions	300.4	PD	1	A statistical model built on 15 years of data. The model uses financial information, macroeconomic information and market-driven data, and is complemented by a qualitative assessment.	15	PD floor of 0.03%
Regional corporates			PD	10	Corporates that fall below the global large corporate threshold are rated through regional/local PD models, which reflect regional/local circumstances. These models use financial information, behavioural data and qualitative information to derive a statistically built PD.	>10	PD floor of 0.03%
Non-banks financial institutions			PD	10	Predominantly statistical models that combine quantitative analysis on financial information with expert inputs.	>10	PD floor of 0.03%
All corporates			LGD	6	Regional/local statistical models covering all corporates, including global large corporates, developed using historical loss/recovery data and various data inputs, including collateral information, customer type and geography.	>7	UK corporate LGD Foundation IRB
			EAD	5	Regional/local statistical models covering all corporates, including global large corporates, developed using historical utilisation information and various data inputs, including product type and geography.	>7	EAD must be at least equal to the current utilisation of the balance at account level

1 *Excludes "Corporate SME" and specialised lending exposures subject to supervisory slotting approach.*

Table 39: IRB models – estimated and actual values (wholesale)[1,2]

	PD[3]		LGD[4]		EAD[5]	
	Estimated %	**Actuals %**	**Estimated %**	**Actuals %**	**Estimated %**	**Actuals %**
2022						
– Sovereigns[6]	**2.12**	**1.44**	**20.46**	**—**	**0.05**	**0.05**
– Banks	**2.70**	**0.37**	**45.00**	**—**	**0.03**	**0.03**
– Corporates[7]	**1.76**	**0.88**	**34.91**	**16.08**	**0.74**	**0.69**
2021						
– Sovereigns[6]	3.63	—	—	—	—	—
– Banks	3.03	—	—	—	—	—
– Corporates[7]	1.76	1.02	37.13	28.83	0.59	0.53
2020						
– Sovereigns[6]	1.99	0.92	45.00	—	0.06	0.06
– Banks	1.30	0.33	82.88	—	—	—
– Corporates[7]	1.49	1.11	26.66	24.49	0.71	0.61

1 *Data represents an annual view as of 30 September.*
2 *This is a pure modelled percentage and does not reflect adjustments for capital requirements.*
3 *Estimated PD for all models in each asset class, calculated on the total number of obligors covered by the models. Actual numbers are the observed default rate in each asset class for the specified period.*
4 *Estimated LGD is for the defaults that were observed and actual LGD is for the defaults that were resolved in the specified period. Average LGD values are EAD-weighted.*
5 *Expressed as a percentage of total EAD, which includes all defaulted and non-defaulted exposures for the relevant population.*
6 *The estimated PD excludes inactive sovereign obligors.*
7 *Covers the combined populations of the global large corporates model, all regional IRB models for large, medium and small corporates, and non-bank financial institutions. The estimated and observed PDs were calculated only for unique obligors.*

Table 40: Wholesale IRB exposure – back-testing of probability of default (PD) per portfolio[1] (CR9)

A-IRB	Number of obligors					
PD range	End of previous year[3]	*of which: number which defaulted in the year*	Observed average default rate %	Exposures weighted average PD (%)	Average PD (%)	Average historic annual default rate (%)[2]
2022						
Sovereigns[4]						
0.00 to <0.15	**59**	—	—	**0.01**	**0.04**	—
– 0.00 to <0.10	**55**	—	—	**0.01**	**0.03**	—
– 0.10 to <0.15	**4**	—	—	—	**0.13**	—
0.15 to <0.25	**7**	***1***	**14.29**	**0.22**	**0.22**	**2.86**
0.25 to <0.50	**10**	—	—	—	**0.37**	—
0.50 to <0.75	**7**	—	—	**0.63**	**0.63**	—
0.75 to <2.50	**22**	—	—	**0.87**	**1.31**	—
– 0.75 to <1.75	**19**	—	—	**0.87**	**1.16**	—
– 1.75 to <2.5	**3**	—	—	—	**2.25**	—
2.5 to <10.00	**27**	***1***	**3.70**	**6.57**	**5.18**	**0.74**
– 2.5 to <5	**15**	—	—	**4.20**	**3.74**	—
– 5 to <10	**12**	***1***	**8.33**	**7.85**	**6.98**	**1.67**
10.00 to <100.00	**7**	—	—	**13.00**	**16.29**	**3.33**
– 10 to <20	**6**	—	—	**13.00**	**13.00**	—
– 20 to <30	—	—	—	—	—	—
– 30.00 to <100.00	**1**	—	—	—	**36.00**	**6.67**
100.00 (Default)	**1**					
Banks						
0.00 to <0.15	**245**	—	—	**0.04**	**0.07**	—
– 0.00 to <0.10	**171**	—	—	**0.03**	**0.05**	—
– 0.10 to <0.15	**74**	—	—	**0.13**	**0.13**	—
0.15 to <0.25	**71**	—	—	**0.22**	**0.22**	—
0.25 to <0.50	**50**	—	—	**0.37**	**0.37**	—
0.50 to <0.75	**47**	***1***	**2.13**	**0.63**	**0.63**	**0.43**
0.75 to <2.50	**81**	***1***	**1.23**	**1.29**	**1.23**	**0.25**
– 0.75 to <1.75	**74**	***1***	**1.35**	**1.27**	**1.13**	**0.27**
– 1.75 to <2.5	**7**	—	—	**2.25**	**2.25**	—
2.5 to <10.00	**23**	—	—	**4.27**	**4.70**	—
– 2.5 to <5	**17**	—	—	**4.20**	**4.20**	—
– 5 to <10	**6**	—	—	**6.21**	**6.10**	—
10.00 to <100.00	**17**	—	—	**13.04**	**67.71**	**1.91**
– 10 to <20	**2**	—	—	**13.00**	**13.00**	**0.91**
– 20 to <30	—	—	—	—	—	—
– 30.00 to <100.00	**15**	—	—	**75.00**	**75.00**	**1.18**
100.00 (Default)	**17**					
Corporates[5]						
0.00 to <0.15	**5,686**	***1***	**0.02**	**0.09**	**0.10**	**0.03**
– 0.00 to <0.10	**2,700**	—	—	**0.06**	**0.06**	**0.02**
– 0.10 to <0.15	**2,986**	***1***	**0.03**	**0.13**	**0.13**	**0.05**
0.15 to <0.25	**4,493**	***11***	**0.24**	**0.22**	**0.22**	**0.14**
0.25 to <0.50	**4,651**	***7***	**0.15**	**0.37**	**0.37**	**0.12**
0.50 to <0.75	**5,668**	***9***	**0.16**	**0.63**	**0.63**	**0.14**
0.75 to <2.50	**16,660**	***51***	**0.31**	**1.35**	**1.45**	**0.46**
– 0.75 to <1.75	**12,672**	***34***	**0.27**	**1.16**	**1.20**	**0.41**
– 1.75 to <2.5	**3,988**	***17***	**0.43**	**2.25**	**2.25**	**0.63**
2.5 to <10.00	**6,366**	***84***	**1.32**	**4.22**	**4.39**	**1.67**
– 2.5 to <5	**4,402**	***40***	**0.91**	**3.56**	**3.51**	**1.23**
– 5 to <10	**1,964**	***44***	**2.24**	**6.46**	**6.36**	**2.73**
10.00 to <100.00	**906**	***74***	**8.17**	**17.60**	**18.10**	**9.40**
– 10 to <20	**748**	***51***	**6.82**	**15.07**	**13.12**	**7.84**
– 20 to <30	—	—	—	—	—	—
– 30.00 to <100.00	**158**	***23***	**14.56**	**49.35**	**41.68**	**16.40**
100.00 (Default)	**495**					

Table 40: Wholesale IRB exposure – back-testing of probability of default (PD) per portfolio[1] (CR9) (continued)

F-IRB	Number of obligors					
PD range	End of previous year[3]	*of which: number which defaulted in the year*	Observed average default rate %	Exposures weighted average PD (%)	Average PD (%)	Average historic annual default rate (%)[2]
2022						
Corporates[5]						
0.00 to <0.15	**7,668**	—	—	**0.09**	**0.11**	**0.08**
– 0.00 to <0.10	**2,185**	—	—	**0.05**	**0.05**	**0.03**
– 0.10 to <0.15	**5,483**	—	—	**0.13**	**0.13**	**0.10**
0.15 to <0.25	**7,443**	***5***	**0.07**	**0.22**	**0.22**	**0.09**
0.25 to <0.50	**7,060**	***5***	**0.07**	**0.37**	**0.37**	**0.23**
0.50 to <0.75	**5,974**	***47***	**0.79**	**0.63**	**0.63**	**0.75**
0.75 to <2.50	**18,485**	***174***	**0.94**	**1.39**	**1.45**	**0.93**
– 0.75 to <1.75	**14,341**	***94***	**0.66**	**1.17**	**1.21**	**0.85**
– 1.75 to <2.5	**4,144**	***80***	**1.93**	**2.25**	**2.25**	**1.21**
2.5 to <10.00	**9,552**	***260***	**2.72**	**4.34**	**4.46**	**3.87**
– 2.5 to <5	**6,797**	***107***	**1.57**	**3.54**	**3.63**	**2.38**
– 5 to <10	**2,755**	***153***	**5.55**	**6.82**	**6.52**	**8.13**
10.00 to <100.00	**1,448**	***169***	**11.67**	**16.52**	**18.20**	**15.48**
– 10 to <20	**1,266**	***123***	**9.72**	**13.46**	**12.90**	**13.64**
– 20 to <30	—	—	—	—	—	—
– 30.00 to <100.00	**182**	***46***	**25.27**	**50.26**	**55.07**	**28.17**
100.00 (Default)	**2,493**					
2021						
Sovereigns[4]						
0.00 to <0.10	59	—	—	0.01	0.04	—
0.15 to <0.25	9	—	—	0.22	0.22	—
0.25 to <0.50	9	—	—	—	0.37	—
0.50 to <0.75	6	—	—	—	0.63	—
0.75 to <2.50	18	—	—	0.93	1.26	—
2.5 to <10.00	24	—	—	7.80	4.98	—
10.00 to <100.00	7	—	—	75.00	46.57	2.86
Banks						
0.00 to <0.15	227	—	—	0.05	0.08	—
0.15 to <0.25	52	—	—	0.22	0.22	—
0.25 to <0.50	37	—	—	0.37	0.37	—
0.50 to <0.75	37	—	—	0.63	0.63	—
0.75 to <2.50	62	—	—	1.08	1.21	—
2.5 to <10.00	9	—	—	5.9	6.45	0.74
10.00 to <100.00	16	—	—	68.48	70.94	—
Corporates[5]						
0.00 to <0.15	5,626	*2*	0.04	0.09	0.10	0.04
0.15 to <0.25	4,706	*8*	0.17	0.22	0.22	0.10
0.25 to <0.50	4,923	*4*	0.08	0.37	0.37	0.10
0.50 to <0.75	6,350	*8*	0.13	0.63	0.63	0.14
0.75 to <2.50	17,867	*88*	0.49	1.36	1.46	0.48
2.5 to <10.00	6,427	*100*	1.56	4.56	4.41	1.89
10.00 to <100.00	915	*74*	8.09	18.43	17.59	9.49
Corporates F-IRB[5]						
0.00 to <0.15	7,551	*3*	0.04	0.09	0.11	0.09
0.15 to <0.25	7,388	*3*	0.04	0.22	0.22	0.09
0.25 to <0.50	6,551	*17*	0.26	0.37	0.37	0.25
0.50 to <0.75	6,072	*108*	1.78	0.63	0.63	0.65
0.75 to <2.50	18,844	*135*	0.72	1.46	1.44	0.93
2.5 to <10.00	9,554	*312*	3.27	4.57	4.44	4.00
10.00 to <100.00	1,550	*205*	13.23	18.93	17.78	16.47

1 *Data represents an annual view as of 30 September.*
2 *Default data used to calculate the Average historical annual default rate has been updated to account for the revised Definition of Default.*
3 *Back-testing is conducted on the basis of the opening count of obligors not in default in each year. Obligors who default during the year are excluded from the opening count for the following year.*
4 *The CRR to external ratings mapping has been updated for Sovereign portfolios to reflect the current CRR master scale.*
5 *Our Corporate model segments do not align to regulatory exposure class definitions so the information presented above includes exposures in both the Corporate –Other and Corporate-SME exposure classes*

Retail risk

Retail risk rating systems

Due to the different country-level portfolio performance characteristics and loss history, there are no global models for our retail portfolios. Across the Group, over 100 models are used with the PRA's approval under our IRB permission.

Table 41 sets out the key characteristics of significant retail credit risk models that drive the capital calculation, consistent with those shown in the previous year (this includes the newly implemented HBAP Credit cards model). The table presents regulatory retail asset class, the associated RWAs, the number of models for each component, the model method or approach and the number of years of loss data used. The RWAs of $60.4 bn represent 67% of the total retail IRB RWAs.

PD models are developed using statistical estimation based on a minimum of five years of historical data. The modelling approach is typically inherently TTC. Where models are developed based on a PIT approach (as in the UK), the model outputs become effectively TTC through the application of buffer or model adjustments as agreed with the PRA.

EAD models are also developed using at least five years of historical observations and typically adopt one of two approaches:

- For closed-end products without the option for additional drawdowns, EAD is estimated as the outstanding balance of accounts at the time of observation.
- For products with the option for additional drawdowns, EAD is estimated as the outstanding balance of accounts at the time of observation plus a credit conversion factor applied to the undrawn portion of the facility.

LGD estimates have more variation, particularly in respect of the time period that is used to quantify economic downturn assumptions.

As part of the IRB repair programme and to meet PRA requirements for mortgage Hybrid PD models, many Retail models are being redeveloped. We hold capital buffers to mitigate any RWA shortfall until the new models are implemented which include consideration of any additional/new capital floor thresholds.

Table 41: Retail IRB risk rating systems

Portfolio	Exposure class	RWA $bn	Component model	Number of material component models	Model description and methodology	Number of years loss data[1]	Applicable Pillar 1 regulatory thresholds and overlays
UK HSBC residential mortgages	Retail – secured by mortgages on immovable property non-SME	15.00	PD	1	Statistical model built on internal behavioural data and bureau information. Underlying PIT model is calibrated to the latest observed PD. An adjustment is then applied to generate the long-run PD based on a combination of historical misalignment of the underlying model and expert judgement.	7–10	PD floor of 0.03%
			LGD	1	Component based model incorporating, 'possession given default', 'predicted shortfall' and 'time to possession'. A downturn adjustment is applied to each component including a 30% reduction from peak house valuation and a 10% adjustment to forced sale haircut.	>10	LGD floor of 10% at portfolio level
			EAD	1	EAD is equal to the sum of balance at observation plus further unpaid interest that could accrue before default.	7–10	EAD must at least be equal to current balance
UK First Direct residential mortgages	Retail – secured by mortgages on immovable property non-SME	0.97	PD	1	Underlying PIT PD model is a segmented scorecard. An adjustment is then applied based on observed misalignment in the underlying model (with some additional conservatism applied).	7–10	PD floor of 0.03%
			LGD	1	Component based model incorporating, 'possession given default', 'predicted shortfall' and 'time to possession'. A downturn adjustment is applied to each component including a 30% reduction from peak house valuation and a 10% adjustment to forced sale haircut.	>10	LGD floor of 10% at portfolio level
			EAD	1	There are two separate model components – one for standard capital repayment mortgages and one for offset mortgages which offer a revolving loan facility.	7–10	EAD must at least be equal to current balance
UK HSBC credit cards	Retail – qualifying revolving	3.27	PD	1	Statistical model built on internal behavioural data and bureau information. Underlying PIT model is calibrated to the latest observed PD. An adjustment is then applied to generate the long-run PD based on historical observed misalignment of the underlying model.	7–10	PD floor of 0.03%
			LGD	1	Statistical model based on forecasting the amount of expected future recoveries, segmented by default status.	7–10	
			EAD	1	Statistical model that directly estimates EAD for different segments of the portfolio using either balance or limit as the key input.	7–10	EAD must at least be equal to current balance
UK HSBC personal loans	Retail – other non-SME	3.80	PD	1	Statistical model built on internal behavioural data and bureau information. Underlying PIT model is calibrated to the latest observed PD. An adjustment is then applied to generate the long-run PD based on historical observed misalignment of the underlying model.	7–10	PD floor of 0.03%
			LGD	1	Statistical model based on forecasting the amount of expected future recoveries, segmented by default status.	7–10	
			EAD	1	EAD is equal to current balance as this provides a conservative estimate.	7–10	EAD must at least be equal to current balance
UK business banking	Retail – other SME	2.09	PD	1	Statistical model built on internal behavioural data and bureau information. Underlying PIT model is calibrated to the latest observed PD. An adjustment is then applied to generate the long run PD based on historical observed misalignment of the underlying model.	7–10	PD floor of 0.03%
			LGD	2	Two sets of models – one for secured exposures and another for unsecured exposures. The secured model uses the value to loan as a key component for estimation and the unsecured model estimates the amount of future recoveries and undrawn portion.	7–10	
			EAD	1	Statistical model using segmentation according to limit and utilisation and estimation of the undrawn exposure.	7–10	EAD must at least be equal to current balance

Table 41: Retail IRB risk rating systems (continued)

Portfolio	Exposure class	RWA $bn	Component model	Number of material component models	Model description and methodology	Number of years loss data[1]	Applicable Pillar 1 regulatory thresholds and overlays
Hong Kong HSBC residential mortgages[2]	Retail – secured by mortgages on immovable property non-SME	15.76	PD	2	Statistical model built on internal behavioural data and bureau information, and calibrated to a long-run default rate.	>10	PD floor of 0.03%
			LGD	2	Statistical model based on estimate of loss incurred over a recovery period derived from historical data with downturn LGD based on the worst observed default rate.	>10	LGD floor of 10% at portfolio level
			EAD	2	Rule-based calculation based on current balance, which provides a conservative estimate of EAD.	>10	EAD must at least be equal to current balance
Hong Kong Hang Seng residential mortgages	Retail – secured by mortgages on immovable property non-SME	9.98	PD	2	Statistical model built on internal behavioural data, and calibrated to a long-run default rate.	>10	PD floor of 0.03%
			LGD	2	Two statistical models and one historical average model based on estimates of loss incurred over a recovery period derived from historical data with a downturn adjustment.	>10	LGD floor of 10% at portfolio level
			EAD	2	Rule-based calculation based on current balance, which provides a conservative estimate of EAD.	>10	EAD must at least be equal to current balance
Hong Kong HSBC credit cards	Retail – qualifying revolving	3.24	PD	1	Statistical model built on internal behavioural data and calibrated to a long-run default rate by segment.	>10	PD floor of 0.03%
			LGD	1	Statistical model based on forecasting the amount of expected future losses with downturn adjustment.	>10	
			EAD	1	EAD derived by different segments. Statistical models which derive credit conversion factors to determine the undrawn portion of the facility to be added to the outstanding balance of accounts at the time of observation.	>10	EAD must at least be equal to current balance
Hong Kong HSBC personal instalment loans	Retail – other non-SME	1.90	PD	1	Statistical model built on internal behavioural data and bureau information, and calibrated to a long-run default rate.	>10	PD floor of 0.03%
			LGD	1	Statistical model based on forecasting the amount of expected future losses. Downturn LGD derived using data from the period with the highest default rate.	>10	
			EAD	1	Statistical model that derives a credit conversion factor to determine the proportion of undrawn limit to be added to the balance at observation.	>10	EAD must at least be equal to current balance
US HSBC personal first lien residential mortgages[3]	Retail – secured by mortgages on immovable property non-SME	4.39	PD	1	Statistical model built on internal behavioural data and bureau information, and calibrated to a long-run default rate.	>10	PD floor of 0.03%
			LGD	1	Statistical model based on identifying the main risk drivers of loss and recovery and grouping them into homogeneous pools. Downturn LGD is derived based on the peak default rate observed. Additional assumptions and estimations are made on incomplete workouts.	>10	LGD floor of 10% at portfolio level
			EAD	1	Rule-based calculation based on current balance which provides a conservative estimate of EAD.	>10	EAD must at least be equal to current balance

1 Defined as the number of years of historical data used in model development and estimation.

2 The Hong Kong Monetary Authority ('HKMA') applies a risk weight floor of 25% to all residential mortgages booked after 19 May 2017 (previously 15%).

3 In US mortgage business, first lien is a primary claim on a property that takes precedence over all subsequent claims and will be paid first from the proceeds in case of the property's foreclosure sale.

Retail credit models

Given the large number of retail IRB models globally, we disclose information on our significant local models. The actual and estimated values are derived from local model monitoring and calibration processes. Within the discipline of our global modelling policies, our analytics teams adopt back-testing criteria specific to local conditions in order to assess the accuracy of their models.

Table 42 presents estimated and actual values from the back-testing of significant IRB models covering portfolios in the UK, Hong Kong, and the residential mortgage portfolio in the US. The most recent three years have been included for comparative purposes. In the table:

- PD is expressed on an obligor count basis consisting of non-defaulted obligors at the time of observation; and
- LGD and EAD refer to observations for the defaulted population.

The LGD values represent the amount of loss as a percentage of EAD, and are calculated based on defaulted accounts that were fully resolved or have completed the modelled recovery outcome period at the reporting date. The EAD values of the defaulted exposures are presented as a percentage of the total EAD, which includes all defaulted and non-defaulted exposures for the relevant population.

The regulatory PD and LGD floors (0.03% and 10% respectively) are only applied during final capital calculation and are not reflected in the estimates below.

For our UK residential mortgage portfolios, the estimates include required regulatory downturn adjustments.

In conducting the back-testing, our UK residential mortgage LGD models consider repossession rates over a 36-month period starting at the date of default. In 2022 for both our HSBC and First Direct branded residential mortgages, estimates and actual values for PD remained low and stable. For both portfolios the LGD estimates have increased, as the defaulted accounts population had higher LTVs in this period than compared to the previous year. Actuals have decreased as a result of lower repossessions, due to a suspension on repossessions (resulting from Covid-19) and the actual losses have been reduced due to increased house prices.

HSBC Personal loans decrease in estimated LGD and is in line with the expectations. The LGD actuals have increased due to a remaining proportion of accounts which are eligible for charge off but, due to the temporary pause in issuance of default notices for retail accounts (which recommenced during 2021) have not yet been resolved.

The Hong Kong estimated LGD values in table 42 include required stressed factors to reflect downturn conditions. The LGD models for our HSBC personal residential mortgage and Hang Seng personal residential mortgage portfolios use a recovery outcome period of 24 months starting at the date of default. For HSBC personal residential mortgages Hong Kong, LGD estimates have increased since last year due to changes in the underlying risk factors for a number of defaulted accounts. For Hang Seng personal residential mortgage portfolio, LGD estimates remain higher than the calculated actual values. The regulatory floor applicable to both the HSBC Hong Kong residential mortgage and Hang Seng personal residential mortgage portfolios is 10%.

The US estimates in table 42 include downturn adjustments and model overlays agreed with the PRA. The LGD models use a recovery outcome period of 36 months, reflecting the recovery process due to foreclosure moratoria. LGD estimates and actual values remained stable in 2022, in line with portfolio expectations.

Table 42:IRB models – estimated and actual values (retail)[1,2]

	PD		LGD		EAD	
	Estimated	Actuals	Estimated	Actuals	Estimated	Actuals
2022	%	%	%	%	%	%
UK						
– HSBC residential mortgage	**0.28**	**0.19**	**8.75**	**0.01**	**0.18**	**0.17**
– FD residential mortgages	**0.35**	**0.26**	**6.38**	**0.78**	**0.41**	**0.33**
– HSBC credit card[3]	**0.77**	**0.82**	**91.30**	**88.71**	**1.10**	**1.03**
– HSBC personal loans	**2.72**	**1.86**	**84.74**	**78.76**	**2.00**	**1.86**
– Business Banking (Retail SME)	**4.27**	**3.84**	**81.59**	**67.61**	**2.11**	**1.79**
Hong Kong						
– HSBC residential mortgage	**0.58**	**0.04**	**2.51**	**1.56**	**0.04**	**0.04**
– Hang Seng residential mortgage	**0.35**	**0.12**	**4.36**	**0.73**	**0.14**	**0.14**
– HSBC credit card	**0.34**	**0.25**	**85.08**	**77.45**	**0.48**	**0.43**
– HSBC personal instalment loans	**1.79**	**1.22**	**88.67**	**84.16**	**0.94**	**0.79**
US						
– HSBC personal first lien residential mortgage	**0.95**	**0.44**	**50.49**	**15.04**	**0.36**	**0.36**
2021						
UK						
– HSBC residential mortgage	0.32	0.19	7.25	0.15	0.16	0.15
– FD residential mortgages	0.38	0.32	5.27	1.13	0.87	0.71
– HSBC credit card[3]	0.92	0.95	91.30	88.71	1.40	1.32
– HSBC personal loans	3.27	2.32	85.61	70.30	2.63	2.51
– Business Banking (Retail SME)	2.67	3.11	78.59	56.09	2.01	1.62
Hong Kong						
– HSBC residential mortgage	0.59	0.04	0.08	1.60	0.03	0.03
– Hang Seng residential mortgage	0.37	0.13	2.67	0.83	0.14	0.14
– HSBC credit card[4]	0.48	0.22	86.90	77.38	0.40	0.43
– HSBC personal instalment loans	2.08	1.78	88.84	83.92	1.61	1.34
US						
– HSBC personal first lien residential mortgage	1.25	0.60	51.94	19.89	0.53	0.53
2020						
UK						
– HSBC residential mortgage	0.32	0.31	7.94	0.32	0.25	0.24
– FD residential mortgages	0.39	0.29	5.94	1.74	0.83	0.64
– HSBC credit card[3]	1.08	1.25	91.30	88.71	1.77	1.69
– HSBC personal loans	2.99	2.67	84.31	71.14	2.89	2.70
– Business Banking (Retail SME)	2.86	2.45	78.06	58.03	2.26	1.93
Hong Kong						
– HSBC residential mortgage	0.59	0.04	2.89	1.32	0.05	0.05
– Hang Seng residential mortgage	0.38	0.12	1.98	0.73	0.12	0.12
– HSBC credit card[4]	0.51	0.24	87.05	75.52	0.45	0.48
– HSBC personal instalment loans	2.07	1.59	88.77	81.97	1.37	1.15
US						
– HSBC personal first lien residential mortgage	1.27	0.46	49.62	21.62	0.38	0.37

1 Data represents an annual view, analysed at 30 September.
2 This is a pure modelled percentage and does not reflect adjustments for capital requirements.
3 For UK, the HSBC credit card LGD is at 2020.
4 In Hong Kong, a new HSBC credit card model was implemented during 2022. The comparative periods 2021 and 2020 have not been restated.

Table 43: Retail IRB exposure – back-testing of probability of default (PD) per portfolio[1] (CR9)

PD range	Number of obligors		Observed average default rate %	Exposures weighted average PD (%)	Average PD (%)	Average historic annual default rate (%)
	End of previous year	*of which: number which defaulted in the year*				
2022						
Retail – Secured by real estate non-SME						
0.00 to <0.15	**774,402**	***279***	**0.04**	**0.05**	**0.06**	**0.03**
– 0.00 to <0.10	**661,796**	***207***	**0.03**	**0.05**	**0.05**	**0.03**
– 0.10 to <0.15	**112,606**	***72***	**0.06**	**0.07**	**0.08**	**0.05**
0.15 to <0.25	**98,974**	***80***	**0.08**	**0.11**	**0.13**	**0.07**
0.25 to <0.50	**86,695**	***125***	**0.14**	**0.12**	**0.17**	**0.12**
0.50 to <0.75	**27,909**	***49***	**0.18**	**0.17**	**0.24**	**0.12**
0.75 to <2.50	**53,974**	***175***	**0.32**	**0.69**	**0.78**	**0.20**
– 0.75 to <1.75	**42,362**	***126***	**0.30**	**0.46**	**0.44**	**0.16**
– 1.75 to <2.5	**11,612**	***49***	**0.42**	**2.02**	**2.02**	**0.47**
2.50 to <10.00	**13,380**	***191***	**1.43**	**0.93**	**1.66**	**0.67**
– 2.5 to <5	**11,808**	***116***	**0.98**	**0.59**	**1.01**	**0.37**
– 5 to <10	**1,572**	***75***	**4.77**	**6.74**	**6.52**	**5.61**
10.00 to <100.00	**5,161**	***946***	**18.33**	**19.93**	**23.60**	**14.51**
– 10 to <20	**2,439**	***213***	**8.73**	**10.48**	**11.62**	**7.48**
– 20 to <30	**1,172**	***162***	**13.82**	**9.40**	**17.18**	**6.53**
– 30.00 to <100.00	**1,550**	***571***	**36.84**	**47.52**	**47.31**	**37.44**
100.00 (Default)	**12,311**					
Retail – qualifying						
0.00 to <0.15	**4,356,285**	***2,539***	**0.06**	**0.02**	**0.02**	**0.02**
– 0.00 to <0.10	**3,846,117**	***1,803***	**0.05**	**0.01**	**0.02**	**0.01**
– 0.10 to <0.15	**510,168**	***736***	**0.14**	**0.04**	**0.06**	**0.03**
0.15 to <0.25	**352,448**	***685***	**0.19**	**0.14**	**0.17**	**0.12**
0.25 to <0.50	**396,990**	***1,417***	**0.36**	**0.16**	**0.21**	**0.16**
0.50 to <0.75	**133,601**	***835***	**0.62**	**0.44**	**0.57**	**0.42**
0.75 to <2.50	**428,983**	***5,107***	**1.19**	**0.45**	**0.63**	**0.55**
– 0.75 to <1.75	**385,105**	***3,912***	**1.02**	**0.36**	**0.50**	**0.42**
– 1.75 to <2.5	**43,878**	***1,195***	**2.72**	**1.40**	**1.82**	**1.79**
2.50 to <10.00	**125,682**	***5,269***	**4.19**	**1.03**	**2.13**	**1.28**
– 2.5 to <5	**107,574**	***3,684***	**3.42**	**0.72**	**1.53**	**0.85**
– 5 to <10	**18,108**	***1,585***	**8.75**	**4.23**	**5.67**	**5.53**
10.00 to <100.00	**50,400**	***13,189***	**26.17**	**9.84**	**20.23**	**8.80**
– 10 to <20	**28,277**	***3,246***	**11.48**	**1.38**	**4.12**	**1.63**
– 20 to <30	**10,814**	***2,251***	**20.82**	**6.94**	**7.32**	**7.15**
– 30.00 to <100.00	**11,309**	***7,692***	**68.02**	**72.78**	**72.84**	**65.56**
100.00 (Default)	**16,159**					
Retail – other non-SME						
0.00 to <0.15	**23,848**	***30***	**0.13**	**—**	**0.12**	**0.01**
– 0.00 to <0.10	**4,689**	***6***	**0.13**	**—**	**0.06**	**—**
– 0.10 to <0.15	**19,159**	***24***	**0.13**	**0.03**	**0.13**	**0.02**
0.15 to <0.25	**113,618**	***178***	**0.16**	**0.18**	**0.19**	**0.15**
0.25 to <0.50	**5,939**	***10***	**0.17**	**0.03**	**0.14**	**0.02**
0.50 to <0.75	**63,201**	***212***	**0.34**	**0.46**	**0.58**	**0.39**
0.75 to <2.50	**190,804**	***1,416***	**0.74**	**0.90**	**1.32**	**0.70**
– 0.75 to <1.75	**148,339**	***837***	**0.56**	**0.76**	**1.14**	**0.55**
– 1.75 to <2.5	**42,465**	***579***	**1.36**	**1.49**	**1.98**	**1.21**
2.50 to <10.00	**67,011**	***2,272***	**3.39**	**3.41**	**4.70**	**3.00**
– 2.5 to <5	**42,830**	***1,059***	**2.47**	**2.32**	**3.44**	**2.14**
– 5 to <10	**24,181**	***1,213***	**5.02**	**6.30**	**6.93**	**5.14**
10.00 to <100.00	**16,764**	***4,683***	**27.93**	**27.68**	**38.96**	**21.23**
– 10 to <20	**7,428**	***797***	**10.73**	**7.77**	**13.81**	**6.70**
– 20 to <30	**2,136**	***299***	**14.00**	**21.64**	**24.48**	**17.31**
– 30.00 to <100.00	**7,200**	***3,587***	**49.82**	**70.14**	**69.20**	**51.65**
100.00 (Default)	**9,275**					

Table 43: Retail IRB exposure – back-testing of probability of default (PD) per portfolio[1] (CR9) (continued)

	Number of obligors					
PD range	End of previous year	*of which: number which defaulted in the year*	Observed average default rate %	Exposures weighted average PD (%)	Average PD (%)	Average historic annual default rate (%)
Retail – other SME						
0.00 to <0.15	**19,679**	***29***	**0.15**	**0.11**	**0.11**	**0.07**
– 0.00 to <0.10	**5,056**	***5***	**0.10**	**0.08**	**0.08**	**0.05**
– 0.10 to <0.15	**14,623**	***24***	**0.16**	**0.12**	**0.12**	**0.08**
0.15 to <0.25	**35,172**	***62***	**0.18**	**0.20**	**0.20**	**0.15**
0.25 to <0.50	**57,617**	***166***	**0.29**	**0.38**	**0.36**	**0.40**
0.50 to <0.75	**66,203**	***335***	**0.51**	**0.62**	**0.61**	**0.67**
0.75 to <2.50	**290,838**	***3,657***	**1.26**	**1.74**	**1.47**	**1.36**
– 0.75 to <1.75	**209,249**	***2,163***	**1.03**	**1.39**	**1.21**	**1.14**
– 1.75 to <2.5	**81,589**	***1,494***	**1.83**	**2.11**	**2.14**	**2.01**
2.50 to <10.00	**179,681**	***9,194***	**5.12**	**5.19**	**5.11**	**4.30**
– 2.5 to <5	**96,017**	***2,978***	**3.10**	**3.56**	**3.53**	**3.34**
– 5 to <10	**83,664**	***6,216***	**7.43**	**6.82**	**6.94**	**5.98**
10.00 to <100.00	**76,127**	***18,300***	**24.04**	**26.06**	**24.33**	**15.88**
– 10 to <20	**41,569**	***5,492***	**13.21**	**13.95**	**14.01**	**8.34**
– 20 to <30	**15,921**	***3,910***	**24.56**	**24.46**	**24.31**	**14.99**
– 30.00 to <100.00	**18,637**	***8,898***	**47.74**	**48.32**	**47.37**	**34.44**
100.00 (Default)	**26,142**					
2021[2]						
Retail – Secured by real estate non-SME						
0.00 to <0.15	770,247	*334*	0.04	0.06	0.06	0.04
– 0.00 to <0.10	653,908	*259*	0.04	0.05	0.05	0.04
– 0.10 to <0.15	116,339	*75*	0.06	0.12	0.12	0.06
0.15 to <0.25	91,246	*59*	0.06	0.19	0.19	0.08
0.25 to <0.50	84,525	*122*	0.14	0.34	0.34	0.14
0.50 to <0.75	27,324	*76*	0.28	0.59	0.59	0.17
0.75 to <2.50	55,175	*218*	0.40	1.34	1.36	0.29
– 0.75 to <1.75	43,045	*138*	0.32	1.18	1.16	0.25
– 1.75 to <2.5	12,130	*80*	0.66	2.05	2.05	0.6
2.50 to <10.00	15,017	*288*	1.92	4.42	4.35	1.25
– 2.5 to <5	12,911	*157*	1.22	4.23	3.98	0.81
– 5 to <10	2,106	*131*	6.22	6.57	6.62	5.23
10.00 to <100.00	6,378	*910*	14.27	26.56	25.51	18.81
– 10 to <20	3,329	*223*	6.70	14.20	13.93	8.32
– 20 to <30	1,352	*153*	11.32	23.20	23.67	12.70
– 30.00 to <100.00	1,697	*534*	31.47	48.99	49.67	36.67
100.00 (Default)	13,737					
Retail – qualifying revolving						
0.00 to <0.15	3,473,874	*1,900*	0.05	0.06	0.06	0.04
– 0.00 to <0.10	2,757,549	*1,305*	0.05	0.05	0.05	0.04
– 0.10 to <0.15	716,325	*595*	0.08	0.12	0.12	0.06
0.15 to <0.25	855,523	*958*	0.11	0.19	0.19	0.09
0.25 to <0.50	724,123	*1,442*	0.20	0.36	0.36	0.17
0.50 to <0.75	320,490	*1,330*	0.41	0.61	0.61	0.32
0.75 to <2.50	710,420	*6,215*	0.87	1.33	1.30	0.76
– 0.75 to <1.75	609,491	*4,244*	0.7	1.18	1.16	0.62
– 1.75 to <2.5	100,929	*1,971*	1.95	2.16	2.14	1.51
2.50 to <10.00	167,785	*6,520*	3.89	4.64	4.57	3.06
– 2.5 to <5	117,122	*3,614*	3.09	3.48	3.44	2.50
– 5 to <10	50,663	*2,906*	5.74	7.09	7.14	4.38
10.00 to <100.00	45,242	*15516*	34.30	33.06	37.73	24.45
– 10 to <20	19,787	*2,304*	11.64	14.49	14.05	9.28
– 20 to <30	5,986	*1,474*	24.62	22.05	23.40	13.11
– 30.00 to <100.00	19,469	*11,738*	60.29	59.01	65.04	49.22
100.00 (Default)	29,410					

Table 43: Retail IRB exposure – back-testing of probability of default (PD) per portfolio[1] (CR9) (continued)

	Number of obligors					
PD range	End of previous year	*of which: number which defaulted in the year*	Observed average default rate %	Exposures weighted average PD (%)	Average PD (%)	Average historic annual default rate (%)
Retail – other non-SME						
0.00 to <0.15	1,034	*0*	0	0.07	0.07	0.11
– 0.00 to <0.10	683	*0*	0	0.04	0.05	0.1
– 0.10 to <0.15	351	*0*	0	0.13	0.12	0.32
0.15 to <0.25	126,624	*212*	0.17	0.24	0.24	0.16
0.25 to <0.50	10,967	*19*	0.17	0.42	0.43	0.23
0.50 to <0.75	80,274	*313*	0.39	0.58	0.58	0.55
0.75 to <2.50	228,276	*1,998*	0.88	1.36	1.36	1.12
– 0.75 to <1.75	177,770	*1,276*	0.72	1.16	1.15	0.91
– 1.75 to <2.5	50,506	*722*	1.43	2.11	2.1	1.91
2.50 to <10.00	89,974	*3,204*	3.56	4.78	4.8	4.19
– 2.5 to <5	56,112	*1,512*	2.69	3.47	3.44	3.36
– 5 to <10	33,862	*1,692*	5	7.02	7.04	5.64
10.00 to <100.00	26,489	*7,043*	26.59	36.76	37.25	29.92
– 10 to <20	12,741	*1,438*	11.29	13.68	13.66	12.15
– 20 to <30	3,047	*595*	19.53	24.44	24.55	20.49
– 30.00 to <100.00	10,701	*5,010*	46.82	69.75	68.95	52.28
100.00 (Default)	47,475					
Retail – other SME						
0.00 to <0.15	63,303	*54*	0.09	0.11	0.1	0.05
– 0.00 to <0.10	36,034	*22*	0.06	0.07	0.07	0.03
– 0.10 to <0.15	27,269	*32*	0.12	0.13	0.13	0.07
0.15 to <0.25	39,750	*110*	0.28	0.21	0.2	0.13
0.25 to <0.50	111,853	*749*	0.67	0.37	0.37	0.37
0.50 to <0.75	95,116	*1,098*	1.15	0.61	0.61	0.61
0.75 to <2.50	261,510	*4,923*	1.88	1.52	1.4	1.33
– 0.75 to <1.75	198,668	*3,277*	1.65	1.31	1.18	1.1
– 1.75 to <2.5	62,842	*1,646*	2.62	2.08	2.1	2.01
2.50 to <10.00	143,297	*8,196*	5.72	5.12	4.83	4.16
– 2.5 to <5	89,259	*4,519*	5.06	3.62	3.58	3.26
– 5 to <10	54,038	*3,677*	6.8	7.03	6.88	5.89
10.00 to <100.00	45,668	*8,732*	19.12	19.66	21.1	14.97
– 10 to <20	27,685	*3,571*	12.9	14.15	14.04	9.79
– 20 to <30	11,038	*1,972*	17.87	24.98	23.83	17.12
– 30.00 to <100.00	6,945	*3,189*	45.92	44.07	44.88	32.98
100.00 (Default)	18,337					

1 Data represents an annual view, analysed at 30 September.
2 In Hong Kong, a new HSBC credit card model was implemented during 2022. The comparative period 2021 has not been restated.

Model performance

Model validation is subject to global internal standards designed to support a comprehensive quantitative and qualitative process within a cycle of model monitoring and validation that includes:

- investigation of model stability;
- measuring model performance by comparing the model's outputs against actual outcomes; and
- reviewing model use within the business, e.g. user input data quality, override activity and the assessment of results from key controls around the usage of the rating system as a whole within the overall credit process.

Models are monitored using a series of metrics and triggers approved by relevant parties. Model performance metrics, and material remedial actions in the event of a trigger breach, are reported at the Wholesale and WPB Global Model Oversight Forums.

We also disclose model performance reports for our IRB models to our lead regulator, the PRA, quarterly.

Further information is available on page 232 of the Annual Report and Accounts 2022.

A large number of models are used within the Group, and data at individual model level is, in most cases, immaterial in the context of the overall Group. We therefore disclose data covering most wholesale models, including corporate models on an aggregated basis, and on the significant retail models.

Tables 40 and 43 above validate the reliability of PD calculations by comparing the PD used in IRB calculations with actual default experience. In Table 43, a customer's PD is observed at a PIT and their default or non-default status in the following one-year period is recorded against that PD grade.

Credit risk

Table 44:Specialised lending and equity exposures under the simple risk-weight approach[1] (CR10)

Specialised lending: Project finance (Slotting approach)		On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount	RWAs	Expected loss
Regulatory categories	Remaining maturity	$m	$m	%	$m	$m	$m
Category 1	Less than 2.5 years	—	—	50	—	—	—
	Equal to or more than 2.5 years	—	—	70	—	—	—
Category 2	Less than 2.5 years	—	10	70	—	—	—
	Equal to or more than 2.5 years	169	25	90	181	154	2
Category 3	Less than 2.5 years	—	—	115	—	—	—
	Equal to or more than 2.5 years	—	—	115	—	—	—
Category 4	Less than 2.5 years	2	—	250	2	5	—
	Equal to or more than 2.5 years	1	—	250	1	2	—
Category 5	Less than 2.5 years	3	6	0	4	—	2
	Equal to or more than 2.5 years	—	1	0	—	—	—
Total at 31 Dec 2022	Less than 2.5 years	5	16		6	5	2
	Equal to or more than 2.5 years	170	26		182	156	2

Specialised lending: Income-producing real estate and high volatility commercial real estate (Slotting approach)		On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount	RWAs	Expected loss
Regulatory categories	Remaining maturity	$m	$m	%	$m	$m	$m
Category 1	Less than 2.5 years	13,533	2,404	50	14,678	7,287	—
	Equal to or more than 2.5 years	7,875	847	70	8,380	5,815	33
Category 2	Less than 2.5 years	6,093	970	70	6,501	4,504	26
	Equal to or more than 2.5 years	3,183	501	90	3,449	3,041	27
Category 3	Less than 2.5 years	2,038	51	115	2,058	2,342	58
	Equal to or more than 2.5 years	346	6	115	345	384	10
Category 4	Less than 2.5 years	855	112	250	905	2,232	72
	Equal to or more than 2.5 years	187	46	250	196	485	16
Category 5	Less than 2.5 years	447	—	—	447	—	222
	Equal to or more than 2.5 years	235	11	—	237	—	119
Total at 31 Dec 2022	Less than 2.5 years	22,966	3,537		24,589	16,365	378
	Equal to or more than 2.5 years	11,826	1,411		12,607	9,725	205

Specialised lending: Object finance (Slotting approach)		On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount	RWAs	Expected loss
Regulatory categories	Remaining maturity	$m	$m	%	$m	$m	$m
Category 1	Less than 2.5 years	587	35	50	613	306	—
	Equal to or more than 2.5 years	542	28	70	563	393	2
Category 2	Less than 2.5 years	58	2	70	59	42	—
	Equal to or more than 2.5 years	38	—	90	38	34	—
Category 3	Less than 2.5 years	4	—	115	5	5	—
	Equal to or more than 2.5 years	—	—	115	—	—	—
Category 4	Less than 2.5 years	—	—	250	—	—	—
	Equal to or more than 2.5 years	—	—	250	—	—	—
Category 5	Less than 2.5 years	3	—	—	3	—	1
	Equal to or more than 2.5 years	—	—	—	—	—	—
Total at 31 Dec 2022	Less than 2.5 years	652	37		680	353	1
	Equal to or more than 2.5 years	580	28		601	427	2

1 *Capital requirements for equity exposures within collective investment undertaking ('CIUs') calculated using the IRB simple risk-weight approach are included within the credit risk-standardised approach.*

Table 45: IRB – Credit risk exposures by portfolio and PD range[1] (CR6)

PD scale	On-balance sheet exposures	Off-balance sheet exposures pre-CCF	Exposure weighted average CCF	Exposure post-CCF and post-CRM	Exposure weighted average PD	Number of obligors[4]	Exposure weighted average LGD	Exposure weighted average maturity (years)	Risk weighted exposure amount after supporting factors[3]	Density of risk weighted exposure amount	Expected loss amount	Value adjustments and provisions[3]
	$bn	$bn	%	$bn	%		%	years	$bn	%	$bn	$bn
AIRB – Central government and central banks												
0.00 to <0.15	387.3	2.4	43.4	389.2	0.02	390	42.8	1.8	27.3	7	—	
– 0.00 to <0.10	379.4	2.4	43.6	381.2	0.01	262	42.7	1.8	24.3	6	—	
– 0.10 to <0.15	7.9	—	39.1	8.0	0.13	128	45.3	2.3	3.0	38	—	
0.15 to <0.25	0.9	—	50.0	0.5	0.22	13	43.9	1.6	0.2	42	—	
0.25 to <0.50	1.4	—	41.0	1.4	0.37	12	45.0	1.0	0.7	49	—	
0.50 to <0.75	5.2	0.3	82.9	5.5	0.63	30	40.0	1.2	3.3	60	—	
0.75 to <2.50	6.2	0.1	57.0	6.1	1.92	79	44.8	1.1	6.4	104	0.1	
– 0.75 to <1.75	1.6	0.1	57.0	1.6	0.99	66	45.0	1.2	1.4	89	—	
– 1.75 to <2.5	4.6	—	75.0	4.5	2.25	13	44.7	1.0	5.0	110	0.1	
2.50 to <10.00	0.6	—	—	0.3	6.26	9	38.4	1.3	0.4	136	—	
– 2.5 to <5	0.3	—	—	0.1	4.20	5	45.0	1.0	0.2	138	—	
– 5 to <10	0.3	—	—	0.2	7.85	4	33.3	1.5	0.2	135	—	
10.00 to <100.00	3.2	—	—	3.2	14.97	7	45.0	1.2	6.9	212	0.3	
– 10 to <20	2.6	—	—	2.6	10.48	5	45.0	1.2	5.4	202	0.2	
– 20 to <30	—	—	—	—	—	—	—	—	—	—	—	
– 30.00 to <100.00	0.6	—	—	0.6	36.00	2	45.0	1.0	1.5	261	0.1	
100.00 (Default)	0.3	—	57.0	0.2	100.00	3	20.1	3.5	0.2	102	—	
Sub-total	405.1	2.8	47.5	406.4	0.23	543	42.8	1.8	45.4	11	0.4	0.1
AIRB – Institutions												
0.00 to <0.15	68.8	12.0	28.9	72.6	0.05	3,056	38.5	1.4	10.3	14	—	
– 0.00 to <0.10	59.5	8.0	28.3	61.7	0.04	1,967	37.8	1.4	6.7	11	—	
– 0.10 to <0.15	9.3	4.0	30.1	10.9	0.13	1,089	42.3	1.3	3.6	33	—	
0.15 to <0.25	2.1	1.8	24.9	2.6	0.22	220	44.5	1.4	1.1	42	—	
0.25 to <0.50	0.8	0.5	39.1	1.0	0.37	118	41.6	1.2	0.5	55	—	
0.50 to <0.75	1.4	0.1	25.2	1.4	0.63	115	44.7	1.1	1.1	74	—	
0.75 to <2.50	0.4	0.6	32.6	0.4	1.72	140	48.5	1.7	0.5	112	—	
– 0.75 to <1.75	0.2	0.1	28.8	0.2	1.36	76	50.6	1.4	0.3	98	—	
– 1.75 to <2.5	0.2	0.5	33.5	0.2	2.25	64	45.5	2.1	0.2	132	—	
2.50 to <10.00	0.1	0.1	22.7	0.1	4.60	41	48.3	1.2	0.1	154	—	
– 2.5 to <5	0.1	0.1	19.9	0.1	3.79	35	53.6	1.4	0.1	167	—	
– 5 to <10	—	—	31.9	—	5.79	6	40.5	1.0	—	134	—	
10.00 to <100.00	—	—	90.0	—	10.00	2	60.5	0.5	—	244	—	
– 10 to <20	—	—	90.0	—	10.00	2	60.5	0.5	—	244	—	
– 20 to <30	—	—	—	—	—	—	—	—	—	—	—	
– 30.00 to <100.00	—	—	—	—	—	—	—	—	—	—	—	
100.00 (Default)	—	—	—	—	100.00	3	21.9	2.2	0.2	914	—	
Sub-total	73.6	15.1	28.8	78.1	0.11	3,695	38.9	1.4	13.8	18	—	—
AIRB – Corporate – specialised lending (excluding slotting)[2]												
0.00 to <0.15	3.0	0.3	62.0	2.8	0.09	39	20.2	3.9	0.5	16	—	
– 0.00 to <0.10	1.8	0.1	85.4	1.8	0.07	12	16.8	4.4	0.2	12	—	
– 0.10 to <0.15	1.2	0.2	50.5	1.0	0.13	27	26.0	3.1	0.3	22	—	
0.15 to <0.25	0.9	0.9	40.9	1.1	0.22	41	27.9	3.4	0.3	29	—	
0.25 to <0.50	0.7	0.3	48.7	0.8	0.37	27	31.6	4.1	0.4	51	—	
0.50 to <0.75	0.9	1.0	45.2	1.4	0.63	32	29.6	3.3	0.8	55	—	
0.75 to <2.50	2.4	1.0	39.4	2.2	1.12	50	28.5	3.8	1.4	63	—	
– 0.75 to <1.75	2.3	1.0	39.4	2.1	1.08	47	28.9	3.8	1.4	64	—	
– 1.75 to <2.5	0.1	—	—	0.1	2.25	3	13.9	4.4	—	46	—	
2.50 to <10.00	0.4	0.1	57.2	0.3	5.23	9	22.0	4.0	0.2	75	—	
– 2.5 to <5	0.1	—	—	0.1	3.05	4	20.0	3.3	—	67	—	
– 5 to <10	0.3	0.1	57.2	0.2	5.75	5	22.5	4.1	0.2	77	—	
10.00 to <100.00	0.2	0.3	56.3	0.4	38.46	6	19.8	3.0	0.5	114	—	
– 10 to <20	—	—	—	—	—	—	—	—	—	—	—	
– 20 to <30	—	—	—	—	—	—	—	—	—	—	—	
– 30.00 to <100.00	0.2	0.3	56.3	0.4	38.46	6	19.8	3.0	0.5	114	—	
100.00 (Default)	0.1	—	100.0	0.1	100.00	4	25.2	3.5	—	28	0.1	
Sub-total	8.6	3.9	45.8	9.1	3.64	208	25.6	3.7	4.1	44	0.1	0.1

Table 45: IRB – Credit risk exposures by portfolio and PD range[1] (CR6) (continued)

PD scale	On-balance sheet expo-sures	Off-balance sheet expo-sures pre-CCF	Expo-sure weigh-ted average CCF	Expo-sure post-CCF and post-CRM	Expo-sure weigh-ted average PD	Num-ber of obli-gors[4]	Expo-sure weigh-ted average LGD	Expo-sure weigh-ted average maturity (years)	Risk weighted exposure amount after supporting factors[3]	Density of risk weigh-ted expo-sure amount	Expec-ted loss amount	Value adjust-ments and provi-sions[3]
	$bn	$bn	%	$bn	%		%	years	$bn	%	$bn	$bn
AIRB – Corporate – SME												
0.00 to <0.15	0.2	0.6	29.4	0.6	0.12	315	41.6	1.7	0.2	23	—	
– 0.00 to <0.10	—	0.1	26.4	0.1	0.06	70	35.7	1.4	—	11	—	
– 0.10 to <0.15	0.2	0.5	30.0	0.5	0.13	245	42.7	1.7	0.2	26	—	
0.15 to <0.25	0.5	1.1	23.4	1.0	0.22	612	44.6	1.5	0.3	33	—	
0.25 to <0.50	1.0	1.6	24.7	1.5	0.37	879	33.9	2.0	0.6	38	—	
0.50 to <0.75	1.7	1.6	24.8	2.1	0.63	945	37.0	2.0	1.1	54	—	
0.75 to <2.50	7.3	4.8	25.9	8.3	1.50	3,453	31.4	1.9	5.1	62	0.1	
– 0.75 to <1.75	5.2	3.6	25.7	6.2	1.25	2,459	31.7	1.9	3.7	60	0.1	
– 1.75 to <2.5	2.1	1.2	26.5	2.1	2.25	994	30.8	1.7	1.4	68	—	
2.50 to <10.00	2.4	1.4	25.2	2.5	4.09	1,092	34.1	1.7	2.3	91	—	
– 2.5 to <5	1.9	1.2	24.3	2.1	3.59	874	34.3	1.7	1.8	88	—	
– 5 to <10	0.5	0.2	30.8	0.4	6.51	218	33.4	1.7	0.5	105	—	
10.00 to <100.00	0.2	0.1	32.6	0.2	23.79	127	51.4	1.3	0.4	221	—	
– 10 to <20	0.1	0.1	32.9	0.1	13.07	69	46.5	1.4	0.2	173	—	
– 20 to <30	—	—	—	—	—	—	—	—	—	—	—	
– 30.00 to <100.00	0.1	—	32.3	0.1	36.00	58	57.0	1.1	0.2	277	—	
100.00 (Default)	1.4	0.2	41.8	1.4	100.00	270	34.6	1.7	2.6	180	0.3	
Sub-total	14.7	11.4	25.8	17.6	9.87	7,693	34.2	1.8	12.6	71	0.4	0.3
AIRB – Corporate – Other												
0.00 to <0.15	94.1	166.6	32.0	179.2	0.08	8,780	42.6	1.9	38.2	21	0.1	
– 0.00 to <0.10	64.0	106.9	33.7	121.5	0.05	4,808	41.4	2.0	20.5	17	—	
– 0.10 to <0.15	30.1	59.7	28.9	57.7	0.13	3,972	45.2	1.7	17.7	31	0.1	
0.15 to <0.25	31.7	53.7	30.2	54.2	0.22	5,838	42.6	1.8	22.4	41	0.1	
0.25 to <0.50	26.4	36.9	28.7	42.2	0.37	4,880	40.2	1.7	21.3	51	0.1	
0.50 to <0.75	34.2	36.7	27.1	42.1	0.63	5,651	39.1	1.7	27.2	65	0.1	
0.75 to <2.50	87.2	87.3	28.6	79.7	1.36	20,154	38.2	1.7	69.0	87	0.4	
– 0.75 to <1.75	57.0	55.4	28.8	66.2	1.19	14,415	38.4	1.8	55.7	84	0.3	
– 1.75 to <2.5	30.2	31.9	27.8	13.5	2.24	5,739	37.1	1.6	13.3	98	0.1	
2.50 to <10.00	27.1	19.9	26.5	22.1	4.45	6,665	38.3	1.7	27.8	126	0.4	
– 2.5 to <5	16.9	14.4	25.3	15.0	3.59	4,675	38.5	1.6	17.8	119	0.2	
– 5 to <10	10.2	5.5	30.2	7.1	6.28	1,990	37.8	1.9	10.0	141	0.2	
10.00 to <100.00	7.6	3.8	26.4	6.2	21.83	1,342	44.4	1.7	14.3	231	0.6	
– 10 to <20	6.2	3.2	26.6	4.7	14.72	1,014	43.9	1.7	10.6	228	0.3	
– 20 to <30	—	—	—	—	23.69	1	93.6	1.0	—	509	—	
– 30.00 to <100.00	1.4	0.6	25.7	1.5	43.42	327	46.0	1.9	3.7	240	0.3	
100.00 (Default)	7.6	0.8	40.0	7.0	100.00	1,029	42.0	1.5	5.4	77	3.3	
Sub-total	315.9	405.7	30.2	432.7	2.57	54,339	41.0	1.8	225.6	52	5.1	5.0
Wholesale AIRB – Total at 31 Dec 2022	817.9	438.9	30.3	943.9	1.50	66,478	41.3	1.80	301.5	32	6.0	5.5

Table 45: IRB – Credit risk exposures by portfolio and PD range[1] (CR6) (continued)

PD scale	On-balance sheet expo-sures	Off-balance sheet expo-sures pre-CCF	Expo-sure weigh-ted average CCF	Expo-sure post CCF and post CRM	Expo-sure weigh-ted average PD	Number of obli-gors[4]	Expo-sure weigh-ted average LGD	Expo-sure weigh-ted average maturity	Risk weighted exposure amount after supporting factors[3]	Density of risk weigh ted expo-sure amount	Expec-ted loss amount	Value adjust-ments and provi-sions[3]
	$bn	$bn	%	$bn	%		%	years	$bn	%	$bn	$bn
AIRB – Secured by mortgages on immovable property SME												
0.00 to <0.15	—	—	—	—	0.07	14	18.6	—	—	3	—	
– 0.00 to <0.10	—	—	—	—	0.07	14	18.6	—	—	3	—	
– 0.10 to <0.15	—	—	—	—	—	—	—	—	—	—	—	
0.15 to <0.25	—	—	—	—	0.22	6	25.2	—	—	9	—	
0.25 to <0.50	0.4	—	—	0.4	0.38	1,327	18.3	—	—	10	—	
0.50 to <0.75	—	—	116.5	0.1	0.65	351	33.9	—	—	30	—	
0.75 to <2.50	0.1	—	135.2	0.1	1.72	664	37.7	—	0.1	60	—	
– 0.75 to <1.75	—	—	77.7	—	1.15	287	26.2	—	—	35	—	
– 1.75 to <2.5	0.1	—	150.6	0.1	2.22	377	47.9	—	0.1	82	—	
2.50 to <10.00	0.2	—	81.2	0.2	4.46	1,213	24.8	—	0.2	68	—	
– 2.5 to <5	0.2	—	51.3	0.2	3.77	935	24.3	—	0.1	61	—	
– 5 to <10	—	—	91.7	—	6.79	278	26.6	—	0.1	90	—	
10.00 to <100.00	—	—	31.6	—	19.23	151	26.0	—	—	119	—	
– 10 to <20	—	—	23.6	—	12.14	81	29.5	—	—	124	—	
– 20 to <30	—	—	58.6	—	25.44	70	23.0	—	—	115	—	
– 30.00 to <100.00	—	—	—	—	—	—	—	—	—	—	—	
100.00 (Default)	0.1	—	95.6	0.1	100.00	244	29.5	—	—	83	—	
Sub-total	0.8	—	114.1	0.9	5.75	3,970	24.1	—	0.3	38	—	—
AIRB – Secured by mortgages on immovable property non-SME												
0.00 to <0.15	218.2	17.0	83.5	234.8	0.07	1,137,440	14.4	—	24.3	10	0.1	
– 0.00 to <0.10	176.1	13.1	78.9	188.6	0.06	942,653	14.5	—	16.4	9	0.1	
– 0.10 to <0.15	42.1	3.9	99.0	46.2	0.12	199,433	13.9	—	7.9	17	—	
0.15 to <0.25	47.9	2.9	93.2	50.6	0.20	228,267	15.7	—	8.3	16	—	
0.25 to <0.50	39.2	3.7	43.8	40.8	0.36	196,491	15.2	—	8.0	20	—	
0.50 to <0.75	15.6	1.0	52.6	16.1	0.59	64,122	13.6	—	3.9	24	—	
0.75 to <2.50	25.4	1.7	47.5	26.2	1.29	116,080	12.6	—	7.8	30	0.1	
– 0.75 to <1.75	21.9	1.5	48.9	22.6	1.17	104,293	12.8	—	6.7	30	0.1	
– 1.75 to <2.5	3.5	0.2	36.5	3.6	2.03	12,483	11.6	—	1.1	30	—	
2.50 to <10.00	7.5	0.2	73.0	7.7	4.30	32,756	11.4	—	3.4	44	—	
– 2.5 to <5	6.6	0.1	76.4	6.8	3.96	27,316	11.1	—	2.8	41	—	
– 5 to <10	0.9	0.1	64.8	0.9	6.80	5,612	13.7	—	0.6	69	—	
10.00 to <100.00	1.7	0.1	80.3	1.9	21.35	17,412	17.9	—	2.7	143	0.1	
– 10 to <20	0.9	0.1	100.0	1.0	13.88	13,257	12.9	—	1.1	105	—	
– 20 to <30	0.6	—	47.9	0.6	23.82	2,189	30.1	—	1.3	224	0.1	
– 30.00 to <100.00	0.2	—	25.3	0.3	46.31	2,130	10.1	—	0.3	111	—	
100.00 (Default)	1.7	—	19.0	1.7	100.00	14,634	19.3	—	2.1	126	0.3	
Sub-total	357.2	26.6	75.5	379.8	0.86	1,807,202	14.5	—	60.5	16	0.6	0.6
AIRB – Qualifying revolving retail exposures												
0.00 to <0.15	6.4	77.7	44.7	41.0	0.06	17,770,403	90.0	—	1.8	4	—	
– 0.00 to <0.10	4.9	67.1	44.6	34.8	0.04	15,413,204	89.5	—	1.2	3	—	
– 0.10 to <0.15	1.5	10.6	44.7	6.2	0.13	2,358,283	92.8	—	0.6	9	—	
0.15 to <0.25	1.0	6.8	53.7	4.6	0.21	2,214,698	90.9	—	0.7	16	—	
0.25 to <0.50	1.7	6.4	48.1	4.8	0.38	2,103,146	90.7	—	1.0	22	0.1	
0.50 to <0.75	1.3	1.9	58.7	2.5	0.59	740,517	90.8	—	0.9	35	—	
0.75 to <2.50	3.5	4.5	56.2	5.9	1.37	1,764,020	91.1	—	3.6	60	0.1	
– 0.75 to <1.75	3.0	4.1	54.0	5.1	1.23	1,416,077	91.7	—	2.9	56	0.1	
– 1.75 to <2.5	0.5	0.4	78.5	0.8	2.22	348,030	87.6	—	0.7	84	—	
2.50 to <10.00	1.9	0.9	85.2	2.6	4.55	842,575	86.4	—	3.3	125	0.1	
– 2.5 to <5	1.3	0.7	77.5	1.8	3.67	576,290	86.3	—	2.0	110	0.1	
– 5 to <10	0.6	0.2	116.6	0.8	6.64	266,299	86.7	—	1.3	160	—	
10.00 to <100.00	0.7	0.2	90.4	0.8	23.18	238,340	85.1	—	2.0	243	0.2	
– 10 to <20	0.5	0.1	128.0	0.6	14.21	157,412	84.3	—	1.4	230	0.1	
– 20 to <30	0.1	0.1	36.3	0.1	25.95	44,627	90.7	—	0.3	333	—	
– 30.00 to <100.00	0.1	—	50.3	0.1	68.70	36,311	85.1	—	0.3	245	0.1	
100.00 (Default)	0.2	—	51.6	0.2	100.00	226,907	67.9	—	0.4	238	0.1	
Sub-total	16.7	98.4	46.7	62.4	1.02	25,900,606	90.0	—	13.7	22	0.6	0.6

Table 45: IRB – Credit risk exposures by portfolio and PD range[1] (CR6) (continued)

PD scale	On-balance sheet exposures $bn	Off-balance sheet exposures pre-CCF $bn	Exposure weighted average CCF %	Exposure post CCF and post CRM $bn	Exposure weighted average PD %	Number of obligors[4]	Exposure weighted average LGD %	Exposure weighted average maturity years	Risk weighted exposure amount after supporting factors[3] $bn	Density of risk weighted exposure amount %	Expected loss amount $bn	Value adjustments and provisions[3] $bn
AIRB – Other SME												
0.00 to <0.15	—	—	100.2	—	0.11	31,363	89.5	—	—	20	—	
– 0.00 to <0.10	—	—	100.0	—	0.07	6,564	79.1	—	—	13	—	
– 0.10 to <0.15	—	—	100.2	—	0.13	24,799	93.3	—	—	23	—	
0.15 to <0.25	—	—	73.5	—	0.21	29,212	92.5	—	—	31	—	
0.25 to <0.50	—	0.1	62.1	0.1	0.41	83,283	78.2	—	0.1	41	—	
0.50 to <0.75	0.2	0.2	81.0	0.3	0.61	76,334	61.4	—	0.1	40	—	
0.75 to <2.50	2.9	1.2	57.0	1.5	1.61	543,172	75.0	—	1.1	77	—	
– 0.75 to <1.75	2.0	0.9	56.0	1.1	1.45	399,430	76.2	—	0.8	75	—	
– 1.75 to <2.5	0.9	0.3	60.3	0.4	2.15	143,742	71.0	—	0.3	82	—	
2.50 to <10.00	2.4	0.8	36.0	1.0	5.06	333,499	65.5	—	0.9	90	—	
– 2.5 to <5	1.2	0.6	29.1	0.6	3.67	186,820	63.1	—	0.5	87	—	
– 5 to <10	1.2	0.2	59.4	0.4	6.89	146,679	68.5	—	0.4	94	—	
10.00 to <100.00	1.7	0.1	60.4	0.3	22.05	215,793	78.7	—	0.4	142	0.1	
– 10 to <20	1.1	0.1	50.1	0.2	13.75	135,916	80.9	—	0.2	130	—	
– 20 to <30	0.3	—	83.7	0.1	24.19	36,354	68.4	—	0.1	139	—	
– 30.00 to <100.00	0.3	—	70.9	—	44.93	43,523	87.5	—	0.1	183	0.1	
100.00 (Default)	1.5	0.2	5.5	0.2	100.00	58,538	46.8	—	0.2	104	0.1	
Sub-total	8.7	2.6	49.3	3.4	10.15	1,371,194	69.9	—	2.8	83	0.2	0.4
AIRB – Other non-SME												
0.00 to <0.15	10.1	44.5	9.8	14.7	0.07	612,413	28.8	—	0.8	6	—	
– 0.00 to <0.10	7.1	38.9	7.3	10.0	0.04	417,003	31.4	—	0.4	4	—	
– 0.10 to <0.15	3.0	5.6	27.1	4.7	0.12	195,957	23.3	—	0.4	8	—	
0.15 to <0.25	2.3	3.6	20.8	3.4	0.21	317,038	40.3	—	0.6	19	—	
0.25 to <0.50	7.0	5.3	13.5	7.9	0.37	354,354	38.3	—	2.1	26	—	
0.50 to <0.75	3.0	3.5	9.9	3.4	0.63	98,836	27.7	—	0.8	25	—	
0.75 to <2.50	11.1	4.1	8.2	11.7	1.32	473,196	32.9	—	4.8	41	—	
– 0.75 to <1.75	9.5	3.6	7.3	10.0	1.17	381,069	30.6	—	3.7	37	—	
– 1.75 to <2.5	1.6	0.5	14.4	1.7	2.13	99,885	45.7	—	1.1	66	—	
2.50 to <10.00	2.2	0.7	35.3	2.5	4.42	252,503	51.6	—	2.1	81	0.1	
– 2.5 to <5	1.5	0.5	47.0	1.8	3.39	152,003	48.6	—	1.4	74	0.1	
– 5 to <10	0.7	0.2	5.3	0.7	7.06	101,211	59.0	—	0.7	99	—	
10.00 to <100.00	0.5	0.2	11.4	0.6	33.81	90,328	52.9	—	0.7	106	0.1	
– 10 to <20	0.2	0.1	16.7	0.3	14.17	44,922	65.2	—	0.4	136	—	
– 20 to <30	0.1	—	9.2	0.1	26.71	27,259	57.3	—	0.1	150	—	
– 30.00 to <100.00	0.2	0.1	9.5	0.2	59.78	18,474	36.6	—	0.2	55	0.1	
100.00 (Default)	0.2	—	19.7	0.2	100.00	21,327	71.8	—	0.4	267	0.1	
Sub-total	36.4	61.9	10.9	44.4	1.59	2,219,995	34.1	—	12.3	28	0.3	0.3
Retail AIRB – Total at 31 Dec 2022	419.8	189.5	39.1	490.9	1.02	31,302,967	26.2	—	89.6	18	1.7	1.9
FIRB – Central government and central banks												
0.00 to <0.15	—	—	75.0	0.7	0.04	—	45.0	3.6	0.2	24	—	
– 0.00 to <0.10	—	—	75.0	0.7	0.04	—	45.0	3.6	0.2	24	—	
– 0.10 to <0.15	—	—	—	—	—	—	—	—	—	—	—	
0.15 to <0.25	—	—	—	—	—	—	—	—	—	—	—	
0.25 to <0.50	—	—	—	—	—	—	—	—	—	—	—	
0.50 to <0.75	—	—	—	—	—	—	—	—	—	—	—	
0.75 to <2.50	—	—	—	—	—	—	—	—	—	—	—	
– 0.75 to <1.75	—	—	—	—	—	—	—	—	—	—	—	
– 1.75 to <2.5	—	—	—	—	—	—	—	—	—	—	—	
2.50 to <10.00	—	—	—	—	—	—	—	—	—	—	—	
– 2.5 to <5	—	—	—	—	—	—	—	—	—	—	—	
– 5 to <10	—	—	—	—	—	—	—	—	—	—	—	
10.00 to <100.00	—	—	—	—	—	—	—	—	—	—	—	
– 10 to <20	—	—	—	—	—	—	—	—	—	—	—	
– 20 to <30	—	—	—	—	—	—	—	—	—	—	—	
– 30.00 to <100.00	—	—	—	—	—	—	—	—	—	—	—	
100.00 (Default)	—	—	—	—	—	—	—	—	—	—	—	
Sub-total	—	—	75.0	0.7	0.04	—	45.0	3.6	0.2	24	—	—

Table 45: IRB – Credit risk exposures by portfolio and PD range[1] (CR6) (continued)

PD scale	On-balance sheet expo-sures	Off-balance sheet expo-sures pre-CCF	Expo-sure weigh-ted average CCF	Expo-sure post-CCF and post-CRM	Expo-sure weigh-ted average PD	Num-ber of obli-gors[4]	Expo-sure weigh-ted average LGD	Expo-sure weigh-ted average maturity (years)	Risk weigh-ted exposure amount after suppor-ting factors[3]	Density of risk weigh-ted expo-sure amount	Expec-ted loss amount	Value adjust-ments and provi-sions[3]
	$bn	$bn	%	$bn	%		%	years	$bn	%	$bn	$bn
FIRB – Institutions												
0.00 to <0.15	—	—	14.6	0.1	0.05	1	45.0	2.3	—	19	—	
– 0.00 to <0.10	—	—	18.0	0.1	0.05	1	45.0	2.3	—	19	—	
– 0.10 to <0.15	—	—	6.3	—	0.13	—	45.0	0.2	—	17	—	
0.15 to <0.25	—	—	20.1	—	0.22	—	45.0	2.5	—	49	—	
0.25 to <0.50	0.1	—	—	0.1	0.37	1	45.0	1.6	0.1	53	—	
0.50 to <0.75	—	—	—	—	—	—	—	—	—	—	—	
0.75 to <2.50	—	—	—	—	—	—	—	—	—	—	—	
– 0.75 to <1.75	—	—	—	—	—	—	—	—	—	—	—	
– 1.75 to <2.5	—	—	—	—	—	—	—	—	—	—	—	
2.50 to <10.00	—	—	—	—	—	—	—	—	—	—	—	
2.5 to <5	—	—	—	—	—	—	—	—	—	—	—	
5 to <10	—	—	—	—	—	—	—	—	—	—	—	
10.00 to <100.00	—	—	—	—	—	—	—	—	—	—	—	
– 10 to <20	—	—	—	—	—	—	—	—	—	—	—	
– 20 to <30	—	—	—	—	—	—	—	—	—	—	—	
– 30.00 to <100.00	—	—	—	—	—	—	—	—	—	—	—	
100.00 (Default)	—	—	—	—	—	—	—	—	—	—	—	
Sub-total	0.1	—	15.9	0.2	0.25	2	45.0	1.9	0.1	41	—	—
FIRB – Corporate – SME												
0.00 to <0.15	0.8	0.3	18.9	0.8	0.13	1,425	40.8	2.7	0.2	31	—	
– 0.00 to <0.10	—	—	—	—	0.07	2	45.0	1.5	—	17	—	
– 0.10 to <0.15	0.8	0.3	18.9	0.8	0.13	1,423	40.8	2.7	0.2	31	—	
0.15 to <0.25	1.9	0.7	16.3	2.0	0.22	2,647	38.9	2.3	0.7	35	—	
0.25 to <0.50	2.3	0.7	10.8	2.3	0.37	2,734	38.1	2.7	1.1	48	—	
0.50 to <0.75	2.0	0.5	18.9	2.0	0.63	1,962	38.2	2.6	1.2	60	—	
0.75 to <2.50	3.9	0.9	20.7	3.8	1.33	4,346	38.3	2.4	2.9	75	0.1	
– 0.75 to <1.75	3.3	0.8	21.5	3.3	1.18	3,708	38.3	2.4	2.4	73	0.1	
– 1.75 to <2.5	0.6	0.1	15.1	0.5	2.25	638	38.3	2.3	0.5	88	—	
2.50 to <10.00	1.2	0.3	21.7	1.1	4.79	1,449	37.5	2.4	1.2	107	—	
– 2.5 to <5	0.7	0.2	27.4	0.7	3.59	852	37.0	2.5	0.6	97	—	
– 5 to <10	0.5	0.1	11.4	0.4	6.55	597	38.1	2.1	0.6	122	—	
10.00 to <100.00	0.4	—	17.7	0.3	14.60	412	38.4	1.9	0.5	157	—	
– 10 to <20	0.4	—	18.1	0.3	12.71	359	38.3	1.9	0.5	154	—	
– 20 to <30	—	—	—	—	—	—	—	—	—	—	—	
– 30.00 to <100.00	—	—	11.2	—	38.02	53	39.7	2.1	—	190	—	
100.00 (Default)	0.6	—	15.0	0.6	100.00	348	38.7	2.2	—	—	0.2	
Sub-total	13.1	3.4	17.4	12.9	5.79	15,323	38.5	2.4	7.8	61	0.3	0.2
FIRB – Corporate – Other												
0.00 to <0.15	26.0	44.3	44.4	53.0	0.08	7,716	33.4	2.0	9.9	19	—	
– 0.00 to <0.10	16.3	29.0	48.2	34.1	0.05	2,835	34.5	2.0	5.4	16	—	
– 0.10 to <0.15	9.7	15.3	37.4	18.9	0.13	4,881	31.6	1.9	4.5	24	—	
0.15 to <0.25	10.9	13.7	35.7	17.7	0.22	5,058	34.7	1.9	6.6	37	—	
0.25 to <0.50	9.8	9.8	34.1	12.8	0.37	4,397	36.5	1.8	6.3	49	—	
0.50 to <0.75	8.2	6.4	32.5	10.6	0.63	3,620	30.9	1.6	5.6	53	—	
0.75 to <2.50	29.7	23.5	35.2	27.2	1.45	37,293	40.0	2.0	26.8	98	0.2	
– 0.75 to <1.75	17.4	15.6	34.4	21.7	1.25	34,021	40.2	2.0	20.6	95	0.1	
– 1.75 to <2.5	12.3	7.9	39.6	5.5	2.25	3,272	39.5	2.1	6.2	114	0.1	
2.50 to <10.00	8.8	6.3	38.5	9.2	4.31	4,810	39.5	2.1	12.4	135	0.2	
– 2.5 to <5	6.3	4.3	42.4	6.8	3.60	3,750	38.9	2.3	8.7	129	0.1	
– 5 to <10	2.5	2.0	28.1	2.4	6.26	1,060	41.0	1.6	3.7	153	0.1	
10.00 to <100.00	2.2	0.7	47.7	1.7	12.90	740	35.3	1.7	3.1	179	0.1	
– 10 to <20	2.1	0.7	48.8	1.7	12.05	651	35.3	1.7	3.0	180	0.1	
– 20 to <30	—	—	—	—	—	—	—	—	—	—	—	
– 30.00 to <100.00	0.1	—	11.2	—	58.60	89	36.4	1.2	0.1	151	—	
100.00 (Default)	3.4	0.7	49.1	3.5	100.00	1,664	44.8	2.2	—	—	1.6	
Sub-total	99.0	105.4	39.6	135.7	3.43	65,298	35.7	1.9	70.7	52	2.1	1.7
FIRB – Total at 31 Dec 2022	112.2	108.8	38.9	149.5	3.61	80,623	36.0	2.0	78.8	53	2.4	1.9

Table 45: IRB – Credit risk exposures by portfolio and PD range[1] (CR6) (continued)

PD scale	On-balance sheet expo-sures $bn	Off-balance-sheet expo-sures pre-CCF $bn	Expo-sure weigh-ted average CCF %	Expo-sure post-CCF and post-CRM $bn	Expo-sure weigh-ted average PD %	Number of obligors	Expo-sure weigh-ted average LGD %	Expo-sure weigh-ted average maturity (years) years	Risk weigh-ted expo-sure amount after support-ing factors $bn	Density of risk weigh-ted expo-sure amount %	Expec-ted loss amount $bn	Value adjust-ments and provi-sions $bn
AIRB – Central government and central banks												
0.00 to <0.15	417.2	2.4	38.8	418.7	0.02	414	43.0	1.70	27.9	7	—	
0.15 to <0.25	3.2	—	37.7	3.1	0.22	22	44.7	1.50	1.2	39	—	
0.25 to <0.50	1.1	—	48.6	1.1	0.37	6	45.0	1.10	0.5	47	—	
0.50 to <0.75	4.9	0.2	64.0	5.1	0.63	73	44.5	1.20	3.2	63	—	
0.75 to <2.50	8.5	—	50.3	8.4	1.29	41	42.0	1.20	7.0	82	0.1	
2.50 to <10.00	2.8	0.2	12.2	2.4	6.36	19	43.9	1.10	3.6	150	0.1	
10.00 to <100.00	0.8	—	30.0	0.7	12.41	3.0	38.4	1.70	1.3	177	—	
Sub-total	438.5	2.8	40.5	439.5	0.11	578	43.0	1.70	44.7	10	0.2	—
AIRB – Institutions												
0.00 to <0.15	65.9	13.6	31.4	69.6	0.05	3,247	39.3	1.30	9.5	14	—	
0.15 to <0.25	2.5	1.6	36.7	3.1	0.22	312	45.4	1.20	1.3	40	—	
0.25 to <0.50	0.5	0.3	26.6	0.6	0.37	102	39.7	0.90	0.3	45	—	
0.50 to <0.75	1.1	0.2	47.9	1.2	0.63	120	40.7	1.20	0.8	67	—	
0.75 to <2.50	0.5	0.5	41.3	0.6	1.24	143	40.5	1.80	0.6	90	—	
2.50 to <10.00	0.1	0.2	35.3	0.1	4.99	55	27.3	1.80	0.1	86	—	
10.00 to <100.00	—	—	57.1	—	15.66	3	55.3	3.80	—	281	—	
100.00 (Default)	—	—	25.4	—	100.00	3	48.8	3.10	—	35	—	
Sub-total	70.6	16.4	32.4	75.2	0.12	3,985	39.6	1.30	12.6	17	—	—
AIRB – Corporate – specialised lending (excluding slotting)[2]												
0.00 to <0.15	2.5	0.5	61.5	2.7	0.09	42	20.4	3.80	0.4	15	—	
0.15 to <0.25	1.1	1.0	44.8	1.5	0.22	43	24.2	3.60	0.4	27	—	
0.25 to <0.50	1.5	1.3	41.4	2.0	0.37	42	24.4	3.50	0.8	39	—	
0.50 to <0.75	0.8	1.0	41.6	1.2	0.63	27	28.8	3.70	0.7	59	—	
0.75 to <2.50	1.5	0.8	36.7	1.5	1.32	43	19.2	4.30	0.7	52	—	
2.50 to <10.00	0.3	—	—	0.2	4.25	17	27.1	3.20	0.2	91	—	
10.00 to <100.00	—	—	99.4	—	30.50	4	33.2	4.40	0.1	145	—	
100.00 (Default)	0.2	—	96.9	0.2	100.00	9	22.5	4.00	—	6	0.1	
Sub-total	7.9	4.6	44.2	9.3	3.33	227	23.0	3.80	3.3	35	0.1	0.1
AIRB – Corporate – SME												
0.00 to <0.15	0.9	0.8	29.5	1.8	0.10	390	39.2	2.00	0.3	19	—	
0.15 to <0.25	1.4	1.8	30.3	2.3	0.22	1,130	38.0	1.80	0.6	26	—	
0.25 to <0.50	2.1	1.9	27.3	3.6	0.37	1,305	29.5	1.90	1.0	27	—	
0.50 to <0.75	4.2	1.9	29.5	4.7	0.63	1,438	29.2	2.00	1.7	35	—	
0.75 to <2.50	16.7	6.8	28.7	17.1	1.43	5,011	29.2	1.80	8.0	47	0.1	
2.50 to <10.00	4.0	1.7	25.9	4.0	4.06	1,521	33.0	1.50	3.0	74	0.1	
10.00 to <100.00	0.3	0.2	30.1	0.3	19.19	153	33.8	1.30	0.3	113	—	
100.00 (Default)	—	—	—	—	—	—	—	—	—	—	—	
Sub-total	29.6	15.1	28.6	33.8	1.50	10,948	30.9	1.80	14.9	44	0.2	0.1
AIRB – Corporate – Other												
0.00 to <0.15	85.0	152.0	37.3	181.2	0.08	7,264	39.3	1.90	36.1	20	0.1	
0.15 to <0.25	31.5	59.8	30.3	54.1	0.22	4,864	42.8	1.60	20.8	39	0.1	
0.25 to <0.50	25.7	41.1	26.9	40.1	0.37	4,327	42.3	1.70	20.4	51	0.1	
0.50 to <0.75	39.1	38.7	29.4	48.3	0.63	5,317	38.7	1.70	29.2	60	0.1	
0.75 to <2.50	100.1	84.9	28.9	90.6	1.33	41,482	37.9	1.80	73.9	82	0.5	
2.50 to <10.00	27.6	26.4	28.5	25.3	4.23	7,501	36.7	1.90	28.6	113	0.4	
10.00 to <100.00	6.4	4.0	30.9	5.9	29.88	1,382	27.5	2.20	7.2	122	0.5	
100.00 (Default)	5.4	0.5	29.8	5.5	100.00	1,245	41.4	1.40	4.0	72	3.0	
Sub-total	320.8	407.4	32.5	451.0	2.27	73,382	39.4	1.80	220.2	49	4.8	4.2
Wholesale AIRB – Total at 31 Dec 2021	867.4	446.3	32.6	1,008.8	1.15	89,120	40.5	1.70	295.7	29	5.3	4.4

Table 45: IRB – Credit risk exposures by portfolio and PD range[1] (CR6) (continued)

PD scale	On-balance sheet expo-sures	Off-balance-sheet expo-sures pre-CCF	Expo-sure weigh-ted average CCF	Expo-sure post-CCF and post-CRM	Expo-sure weigh-ted average PD	Number of obligors	Expo-sure weigh-ted average LGD	Expo-sure weigh-ted average maturity (years)	Risk weigh-ted expo-sure amount after support-ing factors	Density of risk weigh-ted expo-sure amount	Expec-ted loss amount	Value adjust-ments and provi-sions
	$bn	$bn	%	$bn	%		%	years	$bn	%	$bn	$bn
AIRB – Secured by mortgages on immovable property SME												
0.00 to <0.15	0.4	—	100.0	0.4	0.05	2,064	10.9	—	—	4	—	
0.15 to <0.25	—	—	100.0	—	0.19	111	18.0	—	—	8	—	
0.25 to <0.50	0.4	—	—	0.4	0.38	1,253	17.3	—	—	9	—	
0.50 to <0.75	0.1	—	116.5	0.1	0.62	667	25.9	—	—	21	—	
0.75 to <2.50	0.2	—	146.9	0.2	1.56	1,222	23.0	—	0.1	37	—	
2.50 to <10.00	0.3	—	89.9	0.3	4.65	1,780	24.5	—	0.3	64	—	
10.00 to <100.00	—	—	13.8	—	18.04	259	31.5	—	—	136	—	
100.00 (Default)	0.1	—	211.4	0.1	100.00	476	37.0	—	0.1	142	—	
Sub-total	1.5	—	113.5	1.5	5.44	7,832	19.7	—	0.5	32	—	
AIRB – Secured by mortgages on immovable property non-SME												
0.00 to <0.15	226.8	11.0	84.5	240.2	0.07	760,950	15.3	—	19.8	8	—	
0.15 to <0.25	47.9	2.3	94.8	50.4	0.20	273,831	15.6	—	7.4	15	—	
0.25 to <0.50	40.4	3.7	45.9	42.2	0.35	256,644	16.8	—	8.1	19	—	
0.50 to <0.75	15.4	0.6	60.8	15.8	0.58	107,540	11.6	—	3.3	21	—	
0.75 to <2.50	24.8	1.3	69.6	25.8	1.31	198,075	12.9	—	7.5	29	0.1	
2.50 to <10.00	7.0	0.3	81.3	7.2	4.35	52,632	10.8	—	2.6	36	—	
10.00 to <100.00	2.1	—	100.8	2.2	20.78	19,213	16.6	—	2.6	117	0.1	
100.00 (Default)	2.5	0.1	76.6	2.6	100.00	23,365	23.4	—	2.2	88	0.6	
Sub-total	366.9	19.3	76.6	386.4	1.08	1,692,250	15.2	—	53.5	14	0.8	0.4
AIRB – Qualifying revolving retail exposures												
0.00 to <0.15	6.2	76.8	50.1	44.6	0.06	14,828,217	88.8	—	1.9	4	—	
0.15 to <0.25	1.4	15.4	49.9	8.9	0.20	3,944,228	93.3	—	1.3	14	—	
0.25 to <0.50	2.2	14.0	43.5	8.2	0.36	3,011,770	91.0	—	1.6	20	—	
0.50 to <0.75	2.3	4.8	51.1	4.8	0.59	1,165,392	87.5	—	1.3	27	—	
0.75 to <2.50	4.4	7.9	47.3	8.1	1.40	2,618,959	86.7	—	4.1	49	0.1	
2.50 to <10.00	2.3	1.6	68.2	3.4	4.73	978,321	83.8	—	3.7	111	0.2	
10.00 to <100.00	0.6	0.3	65.2	0.8	29.14	309,714	83.2	—	1.6	207	0.2	
100.00 (Default)	0.2	—	58.0	0.2	100.00	99,874	82.0	—	0.5	234	0.2	
Sub-total	19.6	120.8	49.4	79.0	1.06	26,956,475	89.0	—	16.0	20	0.7	0.9
AIRB – Other SME												
0.00 to <0.15	0.1	0.1	68.2	0.1	0.09	48,114	51.7	—	—	11	—	
0.15 to <0.25	—	0.1	49.1	0.1	0.21	31,033	94.9	—	—	32	—	
0.25 to <0.50	0.1	0.3	63.0	0.3	0.37	86,299	80.3	—	0.1	41	—	
0.50 to <0.75	0.2	0.3	81.9	0.4	0.61	66,714	64.2	—	0.2	42	—	
0.75 to <2.50	4.6	1.6	49.6	1.7	1.56	281,045	69.3	—	1.2	74	—	
2.50 to <10.00	3.2	0.7	66.8	1.4	5.04	175,899	49.5	—	1.1	79	0.1	
10.00 to <100.00	2.4	0.2	51.0	0.3	19.92	90,415	57.7	—	0.4	112	—	
100.00 (Default)	0.6	—	25.4	0.2	100.00	30,580	45.5	—	0.1	40	0.2	
Sub-total	11.2	3.3	57.7	4.5	9.18	810,099	61.1	—	3.1	69	0.3	0.3
AIRB – Other non-SME												
0.00 to <0.15	10.2	19.5	10.2	12.9	0.07	662,125	9.1	—	0.4	3	—	
0.15 to <0.25	4.5	2.7	32.4	5.7	0.21	563,877	35.8	—	1.0	18	—	
0.25 to <0.50	7.2	5.1	19.2	8.3	0.37	377,649	15.7	—	0.9	11	—	
0.50 to <0.75	5.7	2.1	15.1	6.1	0.61	249,265	34.2	—	1.8	30	—	
0.75 to <2.50	11.6	3.3	3.7	11.8	1.35	374,692	27.9	—	4.2	36	—	
2.50 to <10.00	2.3	0.6	29.2	2.5	4.13	241,490	50.0	—	2.1	82	0.1	
10.00 to <100.00	0.4	0.1	16.1	0.4	27.59	100,212	58.9	—	0.6	134	0.1	
100.00 (Default)	0.3	—	47.5	0.3	100.00	43,129	66.1	—	0.4	153	0.2	
Sub-total	42.2	33.4	13.4	48.0	1.52	2,612,439	24.1	—	11.4	24	0.4	0.4
Retail AIRB - Total at 31 Dec 2021	441.4	176.8	45.7	519.4	1.20	32,079,095	27.6	—	84.5	16	2.2	2.0

Table 45: IRB – Credit risk exposures by portfolio and PD range[1] (CR6) (continued)

PD scale	On-balance sheet expo-sures	Off-balance-sheet expo-sures pre-CCF	Expo-sure weigh-ted average CCF	Expo-sure post-CCF and post-CRM	Expo-sure weigh-ted average PD	Number of obligors	Expo-sure weigh-ted average LGD	Expo-sure weigh-ted average maturity (years)	Risk weighted exposure amount after suppor-ting factors	Density of risk weigh-ted expo-sure amount	Expec-ted loss amount	Value adjust-ments and provi-sions
	$bn	$bn	%	$bn	%		%	years	$bn	%	$bn	$bn
FIRB – Central government and central banks												
0.00 to <0.15	—	—	75.0	0.5	0.04	1	45.0	4.10	0.1	26	—	
Sub-total	—	—	75.0	0.5	0.04	1	45.0	4.10	0.1	26	—	—
FIRB – Institutions												
0.00 to <0.15	0.1	—	16.5	0.2	0.05	2	45.0	1.10	—	12	—	
0.15 to <0.25	—	—	20.0	—	0.22	1	45.0	1.00	—	34	—	
0.25 to <0.50	0.3	—	—	0.2	0.37	1	45.0	2.70	0.1	66	—	
0.75 to <2.50	—	—	0.2	—	1.27	3	45.0	0.60	—	79	—	
Sub-total	0.4	—	16.8	0.4	0.23	7	45.0	1.80	0.1	40	—	—
FIRB – Corporate – SME												
0.00 to <0.15	0.8	0.3	25.1	0.8	0.13	1,189	40.0	2.70	0.2	27	—	
0.15 to <0.25	2.1	0.8	17.4	2.1	0.22	2,454	39.0	2.40	0.7	32	—	
0.25 to <0.50	2.4	0.8	20.4	2.4	0.37	2,699	38.4	2.50	1.0	41	—	
0.50 to <0.75	2.1	0.6	21.3	2.1	0.63	2,129	38.1	2.80	1.2	56	—	
0.75 to <2.50	4.7	1.2	27.4	4.3	1.36	5,381	38.4	2.50	3.1	72	—	
2.50 to <10.00	1.6	0.4	29.0	1.4	4.71	2,144	37.6	2.40	1.4	102	—	
10.00 to <100.00	0.5	0.1	48.5	0.5	17.86	690	38.5	2.30	0.8	164	0.1	
Sub-total	14.2	4.2	23.9	13.6	1.72	16,686	38.5	2.50	8.4	61	0.1	0.1
FIRB – Corporate – Other												
0.00 to <0.15	23.1	43.1	48.0	47.2	0.08	6,432	35.1	2.00	9.1	19	—	
0.15 to <0.25	11.7	16.4	38.6	18.1	0.22	4,651	36.9	1.90	6.9	38	—	
0.25 to <0.50	9.8	12.0	33.2	13.8	0.37	4,136	33.7	1.90	6.5	47	—	
0.50 to <0.75	8.6	9.1	38.4	11.6	0.63	4,110	36.0	1.80	7.4	63	—	
0.75 to <2.50	26.3	26.6	38.3	33.1	1.46	42,713	37.8	2.10	30.5	93	0.2	
2.50 to <10.00	12.8	9.1	46.4	14.2	4.75	5,918	35.3	1.90	18.7	131	0.3	
10.00 to <100.00	2.2	1.3	36.1	1.8	17.24	1,060	38.6	2.10	3.8	209	0.1	
100.00 (Default)	4.7	0.8	41.1	4.6	100.00	2,001	43.5	2.00	—	—	2.1	
Sub-total	99.2	118.4	42.1	144.4	4.38	71,021	36.2	2.00	82.9	57	2.7	2.0
FIRB – Total at 31 Dec 2021	113.8	122.6	41.5	158.9	4.12	87,715	36.5	2.00	91.5	58	2.8	2.1

1 *Securitisation positions and NCOAs are not included in this table.*
2 *Slotting exposures are disclosed in Table 44: Specialised lending and equity exposures under the simple risk-weight approach (CR10).*
3 *Figures have been prepared on an IFRS 9 transitional basis.*
4 *For current period, single obligor with multiple ratings/PD are counted separately for every PD band. We count the number of obligors on the basis of our exposure to the original counterparty (reported in the first two columns of this table). Where exposure is subject to risk-transfer to another party, to avoid duplication, we do not count the exposure again after risk transfer.*

Counterparty credit risk

Counterparty credit risk management

Counterparty credit risk ('CCR') arises for derivatives, long settlement transactions and Securities Financing Transactions ('SFTs'). It is calculated in both the trading and non-trading books, and is the risk that a counterparty may default before final settlement, for cases where there is a bilateral risk of loss. CCR in HSBC arises primarily from wholesale global businesses.

Banks are permitted to apply the following methods to determine exposure values for CCR:

- the Internal Model Method ('IMM');
- the Standardised Approach (SA-CCR) – for derivatives and long settlement transactions;
- the simple/comprehensive approach to recognition of collateral with SFTs; and
- the Value at Risk models approach, again applicable for SFTs.

Exposure values calculated under these approaches are used to determine RWAs.

Under the SA-CCR approach, the EAD is calculated as the sum of Replacement Cost ('RC') and Potential Future Exposures ('PFE') multiplied by an alpha factor of 1.4. We use this approach for all derivative and long settlement transactions not covered by our IMM permission. Under the IMM approach, EAD is calculated by multiplying the Effective Expected Positive Exposure ('EEPE') with a multiplier 'alpha'. The two alpha factors for standardised and internal model method are distinct.

Alpha, for IMM, is currently set at 1.45 and accounts for several portfolio features that increase Expected Loss ('EL') above that indicated by EEPE in the event of default, such as:

- co-variance of exposures;
- correlation between exposures and default;
- level of volatility/correlation that might coincide with a downturn;
- concentration risk; and
- model risk.

The EEPE is derived from simulation, pricing and aggregation of internal model calculations, which have been approved by regulators. The IMM model is subject to ongoing model validation including monthly model performance monitoring.

From a risk management perspective, products not covered by IMM are subject to regulatory asset class add-ons, in addition to daily monitoring of credit limit utilisation.

Limits for CCR exposures, including to central counterparties (CCPs), are assigned within the overall credit risk management process. The credit risk function assigns a limit against each counterparty to cover exposure which may arise as a result of a counterparty default. The magnitude of this limit will depend on the overall risk appetite, type of derivatives and type of SFT trading undertaken with a counterparty.

Models and methodologies used in the calculation of CCR are overseen and monitored by the Traded Risk Model Oversight Forum. Models are subject to ongoing monitoring and validation. Additionally, they are subject to independent review at inception and on an ongoing basis.

During 2022, HSBC implemented a new counterparty risk framework to provide enhanced oversight of its financing activities across derivative financing and securities financing transactions. The new risk measure, Cat F, is an ancillary measure to the existing Cat B counterparty credit risk measure and improves the control of both the quality and quantum of financing at a counterparty level.

Table 46: Analysis of counterparty credit risk exposure by approach (excluding centrally cleared exposures)[1] (CCR1)

		Replace-ment cost	Potential future exposure	Effective expected positive exposure	Alpha used for computing regulatory exposure value	EAD pre-CRM	EAD post-CRM	Exposure Value	RWAs
		$m	$m	$m		$m	$m	$m	$m
UK-1	Original exposure method (for derivatives)	—	—	—	—	—	—	—	—
UK-2	Simplified SA-CCR (for derivatives)	—	—	—	—	—	—	—	—
1	SA-CCR (for derivatives)	**6,718**	**9,675**	**—**	**1.40**	**22,950**	**22,950**	**22,950**	**9,451**
2	IMM (for derivatives and SFTs)	**—**	**—**	**26,664**	**1.45**	**38,663**	**38,663**	**38,663**	**11,759**
2a	– *of which:* *securities financing transactions netting sets*	—	—	—	—	—	—	—	—
2b	*derivatives and long settlement transactions netting sets*	—	—	***26,664***	***1.45***	***38,663***	***38,663***	***38,663***	***11,759***
2c	*from contractual cross-product netting sets*	—	—	—	—	—	—	—	—
3	Financial collateral simple method (for SFTs)	—	—	—	—	—	—	—	—
4	Financial collateral comprehensive method (for SFTs)	—	—	—	—	**56,378**	**56,524**	**56,524**	**7,795**
5	VaR for SFTs	—	—	—	—	—	—	—	—
6	**Total at 31 Dec 2022**	**6,718**	**9,675**	**26,664**		**117,991**	**118,137**	**118,137**	**29,005**
1	Mark-to-market	6,473	19,740	—	—	N/A	26,212	N/A	10,141
2	Original exposure	—	—	—	—	N/A	—	N/A	—
3	SA-CCR	—	—	—	—	N/A	—	N/A	—
4	Internal model method	—	—	27,873	1.40	N/A	39,023	N/A	12,626
5	– *of which:* *securities financing transactions netting sets*	—	—	—	—	*N/A*	—	*N/A*	—
6	*derivatives and long settlement transactions*[2]	—	—	*27,873*	*1.40*	*N/A*	*39,023*	*N/A*	*12,626*
7	*contractual cross-product netting*	—	—	—	—	*N/A*	—	*N/A*	—
8	Financial collateral simple method (for SFTs)	—	—	—	—	N/A	—	N/A	—
9	Financial collateral comprehensive method (for SFTs)	—	—	—	—	N/A	63,336	N/A	9,466
10	VaR for SFTs	—	—	—	—	N/A	—	N/A	—
11	Total at 31 Dec 2021	6,473	19,740	27,873		N/A	128,571	N/A	32,233

1 Prior to the implementation of SA-CCR, the exposures reported here are under the mark-to-market method.

Credit valuation adjustment

Credit valuation adjustments ('CVA') represent the risk of mark-to-market losses on the expected counterparty risk to over-the-counter (OTC) derivatives and SFTs which are subject to fair-value accounting. Certain qualifying central counterparties are exempt from CVA.

Table 47: Credit valuation adjustment capital charge (CCR2)

		At			
		At 31 Dec 2022		At 31 Dec 2021	
		Exposure value	**RWAs**	Exposure value	RWAs
		$m	**$m**	$m	$m
1	Total transactions subject to the Advanced method	**21,969**	**1,313**	20,587	1,590
2	– VaR component (including the 3 × multiplier)		**246**		198
3	– stressed VaR component (including the 3 × multiplier)		**1,067**		1,392
4	Transactions subject to the Standardised method	**12,291**	**1,971**	11,490	839
UK-4	Transactions subject to the Alternative approach (Based on the original exposure method)				
5	**Total transactions subject to own funds requirements for CVA risk**	**34,260**	**3,284**	32,077	2,429

The following table presents information on the risk-weighting of CCR exposures under the standardised approach by regulatory portfolio. Further detail on the standardised approach is provided on page 44. Information on exposures under the IRB approach can be found in Table 52.

Table 48: Standardised approach – CCR exposures by regulatory exposure class and risk weights (CCR3)

	Risk weight	0% $m	2% $m	4% $m	10% $m	20% $m	50% $m	70% $m	75% $m	100% $m	150% $m	Others $m	Total exposure value $m
1	Central governments and central banks	**7,640**	**—**	**—**	**—**	**35**	**7**	**—**	**—**	**45**	**—**	**—**	**7,727**
2	Regional government or local authorities	**151**	**—**	**—**	**—**	**2**	**—**	**—**	**—**	**14**	**—**	**—**	**167**
6	Institutions	**—**	**—**	**—**	**—**	**54**	**5**	**—**	**—**	**403**	**—**	**—**	**462**
7	Corporates	**—**	**—**	**—**	**—**	**12**	**37**	**—**	**—**	**1,578**	**418**	**—**	**2,045**
	Total at 31 Dec 2022	**7,791**	**—**	**—**	**—**	**103**	**49**	**—**	**—**	**2,040**	**418**	**—**	**10,401**
1	Central governments and central banks	8,108	—	—	—	65	—	—	—	—	—	—	8,173
2	Regional government or local authorities	1,875	—	—	—	—	—	—	—	—	—	—	1,875
6	Institutions	—	—	—	—	—	—	—	—	115	—	—	115
7	Corporates	—	—	—	—	—	—	—	—	1,007	—	12	1,019
	Total at 31 Dec 2021	9,983				65	—		—	1,122	—	12	11,182

Collateral arrangements

Our policy is to revalue all traded transactions and associated collateral positions on a daily basis. An independent collateral management function manages the collateral process, including pledging collateral, receiving collateral, investigating disputes and following up non-receipts.

Collateral types are controlled under a policy to ensure price transparency, price stability, liquidity, enforceability, independence, reusability and eligibility for regulatory purposes.

A valuation 'haircut' policy reflects the fact that collateral may fall in value between the date the collateral was called and the date of liquidation or enforcement. A very high proportion of collateral held as variation margin under credit support annex ('CSA') agreements is composed of either cash or liquid government securities.

Further information on gross fair value exposure and the offset due to legally enforceable netting and collateral is set out on page 401 of the Annual Report and Accounts 2022.

Table 49: Composition of collateral for CCR exposure (CCR5)

		Collateral used in derivative transactions				Collateral used in SFTs	
		Fair value of collateral received		Fair value of posted collateral		Fair value of collateral received	Fair value of posted collateral
		Segregated $m	Unsegregated $m	Segregated $m	Unsegregated $m	$m	$m
1	Cash	**152**	**177,183**	**248**	**122,264**	**—**	**466**
2	Debt	**10,204**	**20,969**	**16,038**	**23,899**	**450,480**	**288,372**
3	Equity	**—**	**—**	**—**	**—**	**48,339**	**36,566**
4	Other	**—**	**—**	**—**	**—**	**1,316**	**1,480**
5	**Total at 31 Dec 2022**	**10,356**	**198,152**	**16,286**	**146,163**	**500,135**	**326,884**
1	Cash	—	78,882	—	69,716	326,133	463,646
2	Debt	—	19,818	2,173	19,872	465,901	340,620
3	Equity	—	589	—	—	40,560	47,705
4	Other	—	666	2,548	1,242	1,491	35
5	Total at 31 Dec 2021	—	99,955	4,721	90,830	834,085	852,006

Table 50 shows the credit derivative exposures that HSBC holds for client intermediation and those amounts booked as part of HSBC's own credit portfolio. Where the credit derivative is used to hedge our own portfolio, no counterparty credit risk capital requirement arises.

For a discussion on hedging risk and monitoring the continuing effectiveness of hedges, refer to Note1.2(h) of the Annual Report and Accounts 2022.

Table 50: Credit derivatives exposures (CCR6)

		At 31 Dec 2022		At 31 Dec 2021	
		Protection bought $m	**Protection sold $m**	Protection bought $m	Protection sold $m
Notionals					
1	Single-name credit default swaps[1]	**60,822**	**52598**	68,225	55,126
2	Index credit default swaps	**30,108**	**28,584**	29,844	28,246
3	Total return swaps	**1,015**	**10,745**	3,599	5,684
6	**Total notionals[2]**	**91,945**	**91,927**	101,668	89,056
Fair values					
7	Positive fair value (asset)	**594**	**496**	942	1,234
8	Negative fair value (liability)	**(774)**	**(490)**	(1,835)	(1,317)

1 *This table has adopted the PRA format that came into force on 1 January 2022. Comparatives have been restated to align with this new presentation.*
2 *For these products we act as intermediary for our clients, enabling them to take positions in the underlying securities. There is no risk transferred to HSBC.*

Central counterparties

While exchange traded derivatives have been cleared through central counterparties ('CCPs') for many years, recent regulatory initiatives designed to reduce systemic risk in the banking system are directing increasing volumes of OTC derivatives to also be cleared through CCPs.

To manage the significant concentration of risk in CCPs that results from this, we have developed a risk appetite framework to manage risk accordingly, at the level of individual CCPs and globally. A dedicated CCP risk team has been established to manage the interface with CCPs and undertake in-depth due diligence of the unique risks associated with these organisations.

Table 51: Exposures to central counterparties (CCR8)

		At 31 Dec 2022		At 31 Dec 2021	
		Exposure value $m	RWAs $m	Exposure value $m	RWAs $m
1	**Exposures to qualifying central counterparties ('QCCPs') (total)**		1,258		1,206
2	Exposures for trades at QCCPs (excluding initial margin and default fund contributions)	13,654	273	13,508	271
3	– OTC derivatives	4,676	94	2,824	56
4	– exchange-traded derivatives	3,760	75	7,442	150
5	– securities financing transactions	5,218	104	3,242	65
7	Segregated initial margin	7,452		4,721	
8	Non-segregated initial margin	17,510	350	6,052	121
9	Pre-funded default fund contributions	—	635	—	814
10	Unfunded default fund contributions	—	—	—	—
11	**Exposures to non-QCCPs (total)**		1,082		—
12	Exposures for trades at non-QCCPs (excluding initial margin and default fund contributions)	644	840	—	—
13	– OTC derivatives	5	7	—	—
15	– SFT's	639	833	—	—
18	Non-segregated initial margin	38	38	3	—
19	Pre-funded default fund contributions	—	204	—	—

Wrong-way risk

Wrong-way risk occurs when a counterparty's exposures are adversely correlated with its credit quality.

There are two types of wrong-way risk:

- General wrong-way risk occurs when the probability of counterparty default is positively correlated with general risk factors, for example, where a counterparty is resident and/or incorporated in a higher-risk country and seeks to sell a non-domestic currency in exchange for its home currency; and
- Specific wrong-way risk occurs in self-referencing transactions. These are transactions in which exposure is driven by capital or financing instruments issued by the counterparty and occurs where exposure from HSBC's perspective materially increases as the value of the counterparty's capital or financing instruments referenced in the contract decreases. It is HSBC policy that specific wrong-way transactions are approved on a case-by-case basis.

We use a range of tools to monitor and control wrong-way risk, including requiring the business to obtain prior approval before undertaking wrong-way risk transactions outside pre-agreed guidelines.

The regional Traded Risk functions are responsible for the control and monitoring process within an overarching Group framework and limit framework.

Credit rating downgrade

A credit rating downgrade clause in a Master Agreement or a credit rating downgrade threshold clause in a credit support annex ('CSA') is designed to trigger an action if the credit rating of the affected party falls below a specified level. These actions may include the requirement to pay or increase collateral, the termination of transactions by the non-affected party or the assignment of transactions by the affected party.

At 31 December 2022, the value of the additional collateral pertaining to International Swaps and Derivatives Association CSA downgrade thresholds that we would potentially need to post with counterparties in the event of a one-notch downgrade of our rating was $0.04bn (2021: $0.1bn) and for a two-notch downgrade was $0.1bn (2021: $0.3bn).

Table 52: IRB – CCR exposures by portfolio and PD scale (CCR4)

PD scale	Exposure value $m	Exposure weighted average PD %	Number of obligors	Exposure weighted average LGD %	Exposure weighted average maturity years	RWAs $m	Density of risk weighted exposure amounts %
AIRB – Central government and central banks							
0.00 to <0.15	11,835	0.03	99	45.0	0.58	732	6
0.15 to <0.25	231	0.22	10	45.0	0.28	65	28
0.25 to <0.50	—	—	—	—	—	—	—
0.50 to <0.75	1	0.63	3	45.0	1.45	1	76
0.75 to <2.50	204	2.22	7	45.0	0.91	224	110
2.50 to <10.00	—	—	—	—	—	—	—
10.00 to <100.00	20	10.00	2	45.0	1.00	39	197
100.00 (Default)	—	—	—	—	—	—	—
Sub-total	12,291	0.09	121	45.0	0.58	1,061	9
AIRB – Institutions							
0.00 to <0.15	48,882	0.07	5,561	45.0	0.81	7,842	16
0.15 to <0.25	2,237	0.22	490	46.0	0.90	941	42
0.25 to <0.50	595	0.37	104	45.4	0.76	312	52
0.50 to <0.75	692	0.63	101	45.1	0.77	500	72
0.75 to <2.50	342	1.53	129	45.3	0.54	551	161
2.50 to <10.00	36	3.32	20	45.8	0.97	45	126
10.00 to <100.00	—	20.39	4	45.0	0.46	1	218
100.00 (Default)	—	—	—	—	—	—	—
Sub-total	52,784	0.10	6,409	45.0	0.81	10,192	19
AIRB – Corporates							
0.00 to <0.15	13,936	0.07	3,365	45.8	1.34	2,816	20
0.15 to <0.25	3,258	0.22	1,178	47.2	0.97	1,301	40
0.25 to <0.50	1,993	0.37	616	47.8	2.04	1,188	60
0.50 to <0.75	1,044	0.63	501	45.7	1.00	743	71
0.75 to <2.50	2,658	1.39	1,937	45.7	1.24	2,603	98
2.50 to <10.00	342	4.69	253	46.4	2.76	575	168
10.00 to <100.00	32	32.65	38	44.2	1.72	67	211
100.00 (Default)	78	100.00	9	47.9	0.03	—	—
Sub-total	23,341	0.74	7,897	46.1	1.34	9,293	40
AIRB – Total at 31 Dec 2022	88,416	0.27	14,427	45.3	0.92	20,546	23
FIRB – Corporates							
0.00 to <0.15	20,421	0.07	4,362	45.0	1.25	3,697	18
0.15 to <0.25	3,270	0.22	1,058	45.0	0.91	1,231	38
0.25 to <0.50	1,084	0.37	526	45.0	1.45	626	58
0.50 to <0.75	1,281	0.63	544	45.0	0.21	910	71
0.75 to <2.50	1,854	1.43	1,552	45.0	1.80	1,861	100
2.50 to <10.00	295	4.16	295	45.0	1.13	410	139
10.00 to <100.00	31	19.51	51	45.0	1.18	70	225
100.00 (Default)	15	100.00	38	45.0	0.97	—	—
FIRB – Total at 31 Dec 2022	28,251	0.33	8,426	45.0	1.21	8,805	31
Total (all portfolios) at 31 Dec 2022	116,667	0.28	22,853	45.2	0.99	29,351	25

Table 52: IRB – CCR exposures by portfolio and PD scale (CCR4) (continued)

PD scale	EAD post-CRM $m	Average PD %	Number of obligors	Average LGD %	Average maturity years	RWAs $m	RWA density %
AIRB – Central government and central banks							
0.00 to <0.15	17,683	0.06	94	44.2	0.31	1,420	8
0.15 to <0.25	856	0.22	11	43.9	0.16	211	25
0.25 to <0.50	48	0.37	6	45.0	2.42	36	75
0.50 to <0.75							
0.75 to <2.50	322	1.61	8	45.0	1.49	324	101
2.50 to <10.00	813	—	—	—	—	1,361	—
10.00 to <100.00							
100.00 (Default)							
Sub-total	19,722	0.42	122	44.2	0.36	3,352	17
AIRB – Institutions							
0.00 to <0.15	44,161	0.07	5,115	44.5	0.81	7,392	17
0.15 to <0.25	2,506	0.22	426	45.0	1.25	1,139	45
0.25 to <0.50	479	0.37	84	45.0	1.24	288	60
0.50 to <0.75	378	0.63	99	44.9	0.91	276	73
0.75 to <2.50	397	1.41	116	45.1	1.34	412	104
2.50 to <10.00	74	3.45	26	44.9	3.50	115	156
10.00 to <100.00	1	10.00	1	45.0	1.00	2	186
100.00 (Default)							
Sub-total	47,995	0.10	5,867	44.5	0.84	9,624	20
AIRB – Corporates							
0.00 to <0.15	12,528	0.07	3,686	45.8	1.35	2,444	20
0.15 to <0.25	3,517	0.22	1,242	46.6	1.04	1,336	38
0.25 to <0.50	1,484	0.37	651	46.1	1.15	851	57
0.50 to <0.75	897	0.63	637	47.5	1.15	665	74
0.75 to <2.50	2,075	1.31	1,728	42.8	1.35	1,851	89
2.50 to <10.00	450	3.61	301	46.5	1.87	631	140
10.00 to <100.00	19	18.50	37	54.2	1.60	53	280
100.00 (Default)	37	100.00	16	46.3	0.29	—	—
Sub-total	21,005	0.53	8,298	45.7	1.28	7,830	37
AIRB – Total at 31 Dec 2021	88,723	0.27	14,286	44.7	0.84	20,806	23
FIRB – Corporates							
0.00 to <0.15	18,568	0.07	3,365	44.0	1.47	3,493	19
0.15 to <0.25	4,375	0.22	885	44.9	1.09	1,634	37
0.25 to <0.50	1,444	0.37	544	44.6	1.14	690	48
0.50 to <0.75	995	0.63	522	45.0	1.14	729	73
0.75 to <2.50	2,678	1.37	1,527	45.0	1.69	2,732	102
2.50 to <10.00	428	4.23	379	45.0	1.46	600	140
10.00 to <100.00	42	11.06	37	45.0	1.10	80	192
100.00 (Default)	25	100.00	24	45.0	1.00	—	—
FIRB – Total at 31 Dec 2021	28,555	0.42	7,283	44.3	1.40	9,958	35
Total (all portfolios) at 31 Dec 2021	117,276	0.31	21,570	44.6	0.98	30,764	26

Securitisation

Securitisation strategy

HSBC acts as originator, sponsor, and investor to securitisation positions. Our strategy is to use securitisation to meet our needs for aggregate funding or capital management (to the extent that market conditions, regulatory treatments and other conditions are suitable) and for customer facilitation.

Securitisations follow a detailed due diligence framework in accordance with the securitisation framework. Wholesale Credit Risk conducts the credit approval process for securitisations in the banking book. Traded Risk set and monitor detailed risk limits and criteria for securitisations in the trading book. HSBC does not provide support to its originated or sponsored securitisation transactions as a policy, other than through any interest it has retained in the securitised exposures.

Securitisation activity

Our roles in the securitisation process are as follows:

- originator: where we originate the assets being securitised, either directly or indirectly;
- sponsor: where we establish and manage a securitisation programme that purchases exposures from third parties; and
- investor: where we invest in a securitisation transaction directly or provide derivatives or liquidity facilities to a securitisation.

Region	SPE	Underlying assets	Start date	Maturity date	EAD ($m)	Capital requirement before securitisation ($m)	Capital requirement after securitisation ($m)
HNAH	NA[1]	Corporate loans	Dec-21	Dec-28	2,187	174	26
HBEU	Metrix Portfolio Distribution Plc	Corporate loans	Dec-19	Dec-26	2,005	92	41
HBUK	Neon Portfolio Distribution DAC	Corporate loans	Dec-19	Dec-26	2,742	182	49
HBCE	NA[1]	Corporate loans	Dec-22	Dec-29	3,483	188	46

1 *SPE not used. Transfer of risk executed via issue of Credit Link Notes (CLN) by HSBC.*

HSBC as originator

We are originator in four synthetic securitisation programmes outstanding as at 31 December 2022, details of which are given in the table above.

We use SPEs or credit linked notes to securitise customer loans and advances and other debt that we have originated in order to diversify our sources of funding for asset origination and for capital efficiency purposes.

Typically we follow an approach commonly known as synthetic securitisation, using credit derivatives and financial guarantees to transfer the credit risk associated with such customer loans and advances.

In order to recognise capital benefit under synthetic securitisation, we satisfy the regulatory requirements for significant risk transfer ("SRT") and monitor our compliance periodically.

HSBC maintains an unhedged holding of at least 5% in each reference obligation. None of these transactions are categorised as simple transparent and standardised ('STS').

Securitisation entity	Description and nature of exposure	Accounting consolidation	Regulatory consolidation	Regulatory treatment
Solitaire	Asset-backed commercial paper ('ABCP') conduit to which a first-loss letter of credit and transaction-specific liquidity facilities are provided. These are all non-STS positions.	✓	✓	Consolidated for regulatory capital purposes
Regency	Multi-seller conduit to which senior liquidity facilities and programme-wide credit enhancement are provided. Includes both STS & Non-STS positions	✓	×	Exposures (including derivatives and liquidity facilities) are risk-weighted as securitisation positions

HSBC as sponsor

We are sponsor to two securitisation entities which manage a securitisation programme that purchases exposures from third parties, details of which can be found in the table above.

We hold all of the commercial paper issued by Solitaire Funding Limited which is HSBC's sponsored securitisation entity. This is considered legacy businesses, and exposures are being repaid as the securities they hold amortise or are sold.

Further details are available in Note 20 of the Financial Statements in the Annual Report and Accounts 2022.

HSBC as investor

We have exposure to third-party securitisations across a wide range of sectors in the form of investments, liquidity facilities and as a derivative counterparty.

Monitoring of securitisation positions

Securitisation positions are managed by a dedicated team that uses a combination of market standard systems and third-party data providers to monitor performance data and manage market and credit risks.

In the case of legacy re-securitisation positions, similar processes are conducted in respect of the underlying securitisations.

The liquidity risk of securitised assets is consistently managed as part of the Group's liquidity and funding risk management framework.

Securitisation accounting treatment

For accounting purposes, we consolidate structured entities (including SPEs) when the substance of the relationship indicates that we control them, that is, we are exposed, or have rights, to variable returns from our involvement with the structured entity and have the ability to affect those returns through our power over the entity.

We reassess the need to consolidate whenever there is a change in the substance of the relationship between HSBC and a structured entity.

Full details of these assessments and our accounting policy on structured entities may be found in Note 1.2(a) and Note 20 on the Financial Statements respectively of the Annual Report and Accounts 2022.

HSBC enters into transactions in the normal course of business by which it transfers financial assets to structured entities. Depending on the circumstances, these transfers may either result in these financial assets being fully or partly derecognised, or continuing to be recognised in their entirety.

Full derecognition occurs when we transfer our contractual right to receive cash flows from the financial assets, or assume an obligation to pass on the cash flows from the assets, and transfer substantially all the risks and rewards of ownership. Only in the event that derecognition is achieved are sales and any resultant gains recognised in the financial statements.

Partial derecognition occurs when we sell or otherwise transfer financial assets in such a way that some but not substantially all of the risks and rewards of ownership are transferred and control is retained. These financial assets are recognised on the balance sheet to the extent of our continuing involvement and an associated liability is also recognised. The net carrying amount of the financial asset and associated liability will be based on either the amortised cost or the fair value of the rights and obligations retained by the entity, depending upon the measurement basis of the financial asset.

Further disclosure of such transfers may be found in Note17 on the Financial Statements of the Annual Report and Accounts 2022.

Valuation of securitisation positions

Valuation of our investments in securitisation exposures primarily focuses on quotations from third parties, observed trade levels and calibrated valuations from market standard models.

Our hedging and credit risk mitigation strategy, with regards to retained securitisation and re-securitisation exposures, is to continually review our positions.

Securitisation regulatory treatment

Any reduction in RWAs as a result of our own originated securitisations must receive the PRA's permission and be justified by a commensurate transfer of credit risk to third parties. If these conditions are met, the underlying assets are de-recognised for regulatory purposes and any retained exposures to the securitisation, including derivatives or liquidity facilities, are risk weighted as securitisation positions.

For both non-trading book and trading book securitisation positions we follow the hierarchy of RWA calculation approaches described in the securitisation framework. Differentiated capital treatments are applied for qualifying STS securitisations in accordance with Article 243 of the CRR.

Our originated positions are all reported under the internal ratings-based approach ('SEC-IRBA').

Our positions in the sponsored Solitaire programme and our investment in third-party positions follow the standardised approach ('SEC-SA') and the external ratings-based approach ('SEC-ERBA').

For our sponsored positions in Regency we use the internal assessment approach ('IAA'). An eligible rating agency methodology, which includes stress factors, is applied to each asset class in order to derive the equivalent rating level for each transaction. This methodology is verified by the Credit Risk function as part of the approval process for each new transaction. The performance of each underlying asset portfolio is monitored to confirm that the applicable equivalent rating level still applies and is independently verified. Our IAA approach is audited annually by Internal Model Review and is subject to review by the PRA.

Further details of our securitisation regulatory treatment may be found on page 19 of this document.

Analysis of securitisation exposures

Our involvement in securitisation activities reflected the following:

- $10.4bn of exposure value held as synthetic transactions (2021: $7.5bn);
- no assets awaiting securitisation and no material realised losses on securitisation asset disposals during the year;
- unrealised losses on asset-backed securities ('ABS') in the year amounted to $0.1bn (2021: $0.1bn), which relates to assets within SPEs that are consolidated for regulatory purposes; and
- total exposures include off-balance sheet exposure of $14.bn (2021: $12.6bn), mainly related to contingent liquidity lines provided to securitisation vehicles where we act as sponsor or investor, with a small amount from derivative exposures where we are an investor. The off-balance sheet exposures are held in the non-trading book and the exposure types are spread across multiple products and securitisations.

Further details of our securitisation exposures may be found on page 384 of the Annual Report and Accounts 2022.

Table 53: Securitisation exposures in the non-trading book (SEC1)

		Bank acts as originator							Bank acts as sponsor				Bank acts as investor			
		Traditional				Synthetic			Traditional				Traditional			
		STS		Non-STS												
		Total	*of which: SRT*	Total	*of which: SRT*	Total	*of which: SRT*	Sub-total	STS	Non-STS	Synthetic	Sub-total	STS	Non-STS	Synthetic	Sub-total
		$m	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
2	Retail (total)	**—**	**—**	**41**	***41***	**—**	**—**	**41**	**1,127**	**4,812**	**—**	**5,939**	**1,206**	**7,632**	**—**	**8,838**
3	– residential mortgage	**—**	**—**	**41**	***41***	**—**	**—**	**41**	**50**	**1,736**	**—**	**1,786**	**267**	**1,355**	**—**	**1,622**
4	– credit card	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**1,276**	**—**	**1,276**
5	– other retail exposures	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**1,077**	**3,076**	**—**	**4,153**	**939**	**5,001**	**—**	**5,940**
6	– re-securitisation	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
7	Wholesale (total)	**—**	**—**	**—**	**—**	**10,418**	***10,418***	**10,418**	**884**	**572**	**—**	**1,456**	**213**	**6,524**	**—**	**6,737**
8	– loans to corporates	**—**	**—**	**—**	**—**	**10,418**	***10,418***	**10,418**	**—**	**67**	**—**	**67**	**—**	**2,622**	**—**	**2,622**
9	– commercial mortgage	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**65**	**—**	**65**	**—**	**3,397**	**—**	**3,397**
10	– lease and receivables	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**884**	**342**	**—**	**1,226**	**213**	**339**	**—**	**552**
11	– other wholesale	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**98**	**—**	**98**	**—**	**166**	**—**	**166**
12	– re-securitisation	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
1	**Total at 31 Dec 2022**	**—**	**—**	**41**	***41***	**10,418**	***10,418***	**10,459**	**2,011**	**5,384**	**—**	**7,395**	**1,419**	**14,156**	**—**	**15,575**
2	Retail (total)	—	—	—	—	—	—	—	940	5,605	—	6,545	643	10,215	—	10,858
3	– residential mortgage	—	—	—	—	—	—	—	50	2,204	—	2,254	284	2,511	—	2,795
4	– credit card	—	—	—	—	—	—	—	—	—	—	—	—	1,920	—	1,920
5	– other retail exposures	—	—	—	—	—	—	—	890	3,401	—	4,291	359	5,784	—	6,143
6	– re-securitisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7	Wholesale (total)	—	—	—	—	7,524	*7,524*	7,524	986	674	—	1,660	227	6,811	—	7,038
8	– loans to corporates	—	—	—	—	7,524	*7,524*	7,524	—	80	—	80	—	3,411	—	3,411
9	– commercial mortgage	—	—	—	—	—	—	—	—	72	—	72	—	3,230	—	3,230
10	– lease and receivables	—	—	—	—	—	—	—	986	404	—	1,390	227	—	—	227
11	– other wholesale	—	—	—	—	—	—	—	—	118	—	118	—	169	—	169
12	– re-securitisation	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1
1	Total at 31 Dec 2021	—	—	—	—	7,524	*7,524*	7,524	1,926	6,279	—	8,205	870	17,026	—	17,896

Table 54: Securitisation exposures in the trading book (SEC2)

		At							
		At 31 Dec 2022				At 31 Dec 2021			
		Bank acts as investor[1]				Bank acts as investor[1]			
		Traditional				Traditional			
		STS	**Non-STS**	**Synthetic**	**Sub-total**	STS	Non-STS	Synthetic	Sub-total
		$m	**$m**	**$m**	**$m**	$m	$m	$m	$m
1	**Total exposures**	**552.0**	**3,110.0**	**—**	**3,662.0**	538	3,046	—	3,584
2	**Retail (total)**	**512.0**	**1,914.0**	**—**	**2,426.0**	341	1,851	—	2,192
3	– residential mortgage	**129.0**	**1,458.0**	**—**	**1,587.0**	141	1,246	—	1,387
4	– credit card	**9.0**	**4.0**	**—**	**13.0**	—	24	—	25
5	– other retail exposures	**374.0**	**452.0**	**—**	**826.0**	200	581	—	780
6	– re-securitisation	**—**	**—**	**—**	**—**	—	—	—	—
7	**Wholesale (total)**	**40.0**	**1,196.0**	**—**	**1,236.0**	197	1,195	—	1,392
8	– loans to corporates	**—**	**1.0**	**—**	**1.0**	—	11	—	11
9	– commercial mortgage	**—**	**807.0**	**—**	**807.0**	—	868	—	868
10	– lease and receivables	**3.0**	**—**	**—**	**3.0**	—	—	—	—
11	– other wholesale	**37.0**	**388.0**	**—**	**425.0**	197	315	—	512
12	– re-securitisation	**—**	**—**	**—**	**—**	—	1	—	1

1 *HSBC does not act as originator or sponsor for securitisation exposures in the trading book.*

Table 55 presents the Group's exposure in the non-trading book and associated regulatory capital requirements where the Group acts as originator or as sponsor.

Table 55: Securitisation exposures in the non-trading book and associated regulatory capital requirements – bank acting as originator or as sponsor (SEC3)

		Exposure values (by risk weight bands/deductions)					Exposure values (by regulatory approach)			
		≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to 1250% RW	1250% RW deductions	SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250%/ deductions
		$m	$m	$m	$m	$m	$m	$m	$m	$m
1	**Total at 31 Dec 2022**	**14,894**	**2,574**	**202**	**159**	**25**	**10,434**	**7,136**	**259**	**25**
2	Traditional transactions	**4,520**	**2,574**	**202**	**140**	**—**	**41**	**7,136**	**259**	**—**
3	Securitisation	**4,520**	**2,574**	**202**	**140**	**—**	**41**	**7,136**	**259**	**—**
4	– retail underlying	**3,280**	**2,425**	**202**	**73**	**—**	**41**	**5,843**	**96**	**—**
5	– *of which: STS*	***1,127***	**—**	**—**	**—**	**—**	**—**	***1,127***	**—**	**—**
6	– wholesale	**1,240**	**149**	**—**	**67**	**—**	**—**	**1,293**	**163**	**—**
7	– *of which: STS*	***884***	**—**	**—**	**—**	**—**	**—**	***884***	**—**	**—**
8	Re-securitisation	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
9	Synthetic transactions	**10,374**	**—**	**—**	**19**	**25**	**10,393**	**—**	**—**	**25**
10	Securitisation	**10,374**	**—**	**—**	**19**	**25**	**10,393**	**—**	**—**	**25**
11	– retail underlying	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
12	– wholesale	**10,374**	**—**	**—**	**19**	**25**	**10,393**	**—**	**—**	**25**
13	Re-securitisation	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
1	Total at 31 Dec 2021	9,378	5,813	374	136	28	7,496	7,875	330	28
2	Traditional securitisation	4,962	2,751	374	118	—	—	7,875	330	—
3	Securitisation	4,962	2751	374	118	—	—	7,875	330	—
4	– retail underlying	3,555	2578	374	38	—	—	6,405	140	—
5	– *of which: STS*	*940*	—	—	—	—	—	*940*	—	—
6	– wholesale	1,407	173	—	80	—	—	1,470	190	—
7	– *of which: STS*	*986*	—	—	—	—	—	*986*	—	—
8	Re-securitisation	—	—	—	—	—	—	—	—	—
9	Synthetic securitisation	4,416	3,062	—	18	28	7,496	—	—	28
10	Securitisation	4,416	3,062	—	18	28	7,496	—	—	28
11	– retail underlying	—	—	—	—	—	—	—	—	—
12	– wholesale	4,416	3,062	—	18	28	7,496	—	—	28
13	Re-securitisation	—	—	—	—	—	—	—	—	—

Table 55: Securitisation exposures in the non-trading book and associated regulatory capital requirements – bank acting as originator or as sponsor (SEC3) (continued)

		RWAs (by regulatory approach)				Capital charge after cap			
		SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250%/ deductions	SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250%/ deductions
		$m	$m	$m	$m	$m	$m	$m	$m
1	**Total at 31 Dec 2022**	**1,729**	**1,681**	**130**	**306**	**138**	**134**	**10**	**24**
2	Traditional transactions	**2**	**1,681**	**130**	**—**	**—**	**134**	**10**	**—**
3	Securitisation	**2**	**1,681**	**130**	**—**	**—**	**134**	**10**	**—**
4	– retail underlying	**2**	**1,327**	**106**	**—**	**—**	**106**	**8**	**—**
5	– *of which: STS*	**—**	***143***	**—**	**—**	**—**	***11***	**—**	**—**
6	– wholesale	**—**	**354**	**24**	**—**	**—**	**28**	**2**	**—**
7	– *of which: STS*	**—**	***95***	**—**	**—**	**—**	***8***	**—**	**—**
8	Re-securitisation	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
9	Synthetic transactions	**1,727**	**—**	**—**	**306**	**138**	**—**	**—**	**24**
10	Securitisation	**1,727**	**—**	**—**	**306**	**138**	**—**	**—**	**24**
11	– retail underlying	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
12	– wholesale	**1,727**	**—**	**—**	**306**	**138**	**—**	**—**	**24**
13	Re-securitisation	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
1	Total at 31 Dec 2021	1498	1962	100	344	120	157	8	28
2	Traditional securitisation	—	1,962	100	—	—	157	8	—
3	Securitisation	—	1,962	100	—	—	157	8	—
4	– retail underlying	—	1,552	71	—	—	125	6	—
5	– *of which: STS*	—	*114*	—	—		*9*	—	—
6	– wholesale	—	410	29	—	—	32	2	—
7	– *of which: STS*	—	*105*	—	—	—	*8*	—	—
8	Re-securitisation	—	—	—	—	—	—	—	—
9	Synthetic securitisation	1,498	—	—	344	120	—	—	28
10	Securitisation	1,498	—	—	344	120	—	—	28
11	– retail underlying	—	—	—	—	—	—	—	—
12	– wholesale	1,498	—	—	344	120	—	—	28
13	Re-securitisation	—	—	—	—	—	—	—	—

Table 56.i presents the Group's exposure in the non-trading book and associated regulatory capital requirements where the Group acts as an investor.

Table 56.i: Securitisation exposures in the non-trading book and associated capital requirements – bank acting as investor (SEC4)

		Exposure values (by risk weight bands)					Exposure values (by regulatory approach)			
		≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to 1250% RW	1250%/ deductions	SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250%/ deductions
		$m	$m	$m	$m	$m	$m	$m	$m	$m
1	**Total at 31 Dec 2022**	**12,592**	**2,033**	**899**	**50**	**1**	**235**	**1,434**	**13,905**	**1**
2	Traditional securitisation	**12,592**	**2,033**	**899**	**50**	**1**	**235**	**1,434**	**13,905**	**1**
3	Securitisation	**12,592**	**2,033**	**899**	**50**	**1**	**235**	**1,434**	**13,905**	**1**
4	– retail underlying	**7,960**	**634**	**196**	**48**	**—**	**—**	**835**	**8,003**	**—**
5	– *of which: STS*	***1,206***	**—**	**—**	**—**	**—**	**—**	**—**	***1,206***	**—**
6	– wholesale	**4,632**	**1,399**	**703**	**2**	**1**	**235**	**599**	**5,902**	**1**
7	– *of which: STS*	***213***	**—**	**—**	**—**	**—**	**—**	**—**	***213***	**—**
8	**Re-securitisation**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
1	Total at 31 Dec 2021	12,623	2,696	2,470	105	2	319	2,396	15,179	2
2	Traditional securitisation	12,623	2,696	2,470	105	2	319	2,396	15,179	2
3	Securitisation	12,623	2,696	2,470	105	2	319	2,396	15,179	2
4	– retail underlying	9,056	1,236	466	99	1	—	430	10,427	1
5	– *of which: STS*	*643*	—	—	—	—	—	—	*643*	—
6	– wholesale	3,567	1,460	2,004	6	1	319	1,966	4,752	1
7	– *of which: STS*	*227*	—	—	—	—	—	—	*227*	—
8	Re-securitisation	—	—	—	—	—	—	—	—	—

Table 56.i: Securitisation exposures in the non-trading book and associated capital requirements – bank acting as investor (SEC4) (continued)

		RWAs (by regulatory approach)				Capital charge after cap			
		SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250%/ deductions	SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250%/ deductions
		$m	$m	$m	$m	$m	$m	$m	$m
1	**Total at 31 Dec 2022**	**35**	**743**	**2,453**	**8**	**3**	**60**	**197**	**1**
2	Traditional securitisation	**35**	**743**	**2,453**	**8**	**3**	**60**	**197**	**1**
3	Securitisation	**35**	**743**	**2,453**	**8**	**3**	**60**	**197**	**1**
4	– retail underlying	**—**	**203**	**1,355**	**6**	**—**	**16**	**108**	**1**
5	– *of which: STS*	**—**	**—**	***141***	**—**	**—**	**—**	***11***	**—**
6	– wholesale	**35**	**540**	**1,098**	**2**	**3**	**44**	**89**	**—**
7	– *of which: STS*	**—**	**—**	***21***	**—**	**—**	**—**	***2***	**—**
8	**Re-securitisation**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
1	Total at 31 Dec 2021	48	1,954	2,852	17	4	156	228	2
2	Traditional securitisation	48	1,954	2,852	17	4	156	228	2
3	Securitisation	48	1,954	2,852	17	4	156	228	2
4	– retail underlying	—	181	2,001	7	—	14	160	1
5	– *of which: STS*	—	—	*75*	—	—	—	6	—
6	– wholesale	48	1,773	851	10	4	142	68	1
7	– *of which: STS*	—	—	*23*	—	—	—	*2*	—
8	Re-securitisation	—	—	—	—	—	—	—	—

Table 56.ii: Securitisation exposures in the trading book and associated capital requirements – bank acting as investor (SEC4)

		Exposure values (by risk weight bands)					Exposure values (by regulatory approach)			
		≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to 1250% RW	1250%/ deductions	SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250%/ deductions
		$m	$m	$m	$m	$m	$m	$m	$m	$m
1	**Total exposures**	**3,185**	**196**	**143**	**135**	**3**	**—**	**1,382**	**2,277**	**3**
2	Traditional securitisation	**3,185**	**196**	**143**	**135**	**3**	**—**	**1,382**	**2,277**	**3**
3	Securitisation	**3,185**	**196**	**143**	**135**	**3**	**—**	**1,382**	**2,277**	**3**
4	– retail underlying	**2,134**	**167**	**83**	**42**	**—**	**—**	**1,115**	**1,311**	**—**
5	– *of which: STS*	***449***	***36***	***12***	***15***	**—**	**—**	***353***	***159***	**—**
6	– wholesale	**1,051**	**29**	**60**	**93**	**3**	**—**	**267**	**966**	**3**
7	– *of which: STS*	***37***	***3***	**—**	**—**	**—**	**—**	***3***	***37***	**—**
8	**Re-securitisation**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**

Table 56.ii: Securitisation exposures in the trading book and associated capital requirements – bank acting as investor (SEC4) (continued)

		RWAs (by regulatory approach)				Capital charge after cap			
		SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250%/ deduct-ions	SEC-IRBA	SEC-ERBA (including IAA)	SEC-SA	1250%/ deductions
		$m	$m	$m	$m	$m	$m	$m	$m
1	**Total exposures**	**—**	**588**	**356**	**42**	**—**	**47**	**28**	**3**
2	Traditional securitisation	—	588	356	42	—	47	28	3
3	Securitisation	—	588	356	42	—	47	28	3
4	– retail underlying	—	293	211	4	—	23	17	—
5	– *of which: STS*	—	*78*	*18*	—	—	*6*	*1*	—
6	– wholesale	—	295	145	38	—	24	11	3
7	– *of which: STS*	—	*1*	*4*	—	—	—	—	—
8	**Re-securitisation**	—	—	—	—	—	—	—	—

Table 57: Exposures securitised by the institution – Institution acts as originator or as sponsor (SEC5)

		Total outstanding nominal amount		Total amount of specific credit risk adjustments made during the period
			of which: exposures in default	
		$m	*$m*	$m
1	**Total at 31 Dec 2022**	**18,910**	***85***	**23**
2	Retail (total)	5,980	*81*	—
3	– residential mortgage	1,827	*35*	—
4	– credit card	—	—	—
5	– other retail exposures	4,153	*46*	—
6	– re-securitisation	—	—	—
7	Wholesale (total)	12,930	*4*	23
8	– loans to corporates	11,540	—	23
9	– commercial mortgage	65	—	—
10	– lease and receivables	1,226	*4*	—
11	– other wholesale	99	—	—
12	– re-securitisation	—	—	—

Market risk

Overview of market risk in global businesses

Market risk is the risk that movements in market factors, such as foreign exchange rates, interest rates, credit spreads, equity prices and commodity prices, will reduce our income or the value of our portfolios.

Exposure to market risk

Exposure to market risk is separated into two portfolio types:

- Trading portfolios: these comprise positions held for client servicing and market-making, with the intention of short-term resale and/or to hedge risks resulting from such positions.
- Non-trading portfolios: these comprise positions that primarily arise from the interest rate risk management of our retail and commercial banking assets and liabilities, financial investments measured at fair value through other comprehensive income, debt instruments measured at amortised cost, and exposures arising from our insurance operations. These portfolios also include non-trading book foreign exchange ('NTBFX') exposures, where risk may arise from the FX revaluation of assets and liabilities, denominated in currencies other than the Group's presentation currency, held outside of the trading book. NTBFX exposures originate primarily from structural foreign exchange exposures, transactional foreign exchange exposures and limited residual foreign exchange exposures arising from timing differences or for other reasons.

Where appropriate, we apply similar risk management policies and measurement techniques to both trading and non-trading portfolios. Our objective is to manage and control market risk exposures to optimise return on risk while maintaining a market risk profile consistent with our established risk appetite.

For further details on hedging risk and monitoring the continuing effectiveness of hedges, refer to page 218 of the Annual Report and Accounts 2022.

The tables below reflect the components of capital requirement under the standardised approach, Table 58, and the internal model approach, Table 59, for market risk.

Table 58: Market risk under standardised approach (MR1)

		At	
		31 Dec 2022	31 Dec 2021
		RWAs	RWAs
		$m	$m
	Outright products		
1	Interest rate risk (general and specific)	**1,684**	1,407
2	Equity risk (general and specific)	**64**	52
3	Foreign exchange risk	**10,391**	10,767
4	Commodity risk	**570**	46
	Options		
7	Scenario approach	**10**	10
8	**Securitisation (specific risk)**	**986**	999
9	**Total**	**13,705**	13,281

The $0.4bn uplift in market risk RWAs under the standardised approach reflected higher commodities risk and interest rate risk. This more than offset decreases in foreign exchange risk.

Table 59: Market risk under IMA (MR2-A)

		At 31 Dec 2022		At 31 Dec 2021	
		RWAs	**Capital requirements**	RWAs	Capital requirements
		$m	**$m**	$m	$m
1	**VaR (higher of values a and b)**[1]	**7,630**	**611**	5,202	416
(a)	Previous day's VaR ('VaRt-1')		**154**		89
(b)	Multiplication factor (mc) x average of previous 60 working days ('VaRavg')		**611**		416
2	**Stressed VaR (higher of values a and b)**[1]	**11,091**	**887**	9,585	767
(a)	Latest available stressed VaR ('SVaRt-1')		**153**		148
(b)	Multiplication factor (ms) x average of previous 60 working days ('sVaRavg')		**887**		767
3	**IRC (higher of values a and b)**[1]	**3,429**	**274**	3,207	257
(a)	Most recent IRC measure		**274**		141
(b)	12 weeks average IRC measure		**274**		257
5	**Other**	**1,775**	**142**	1,595	127
6	**Total**	**23,925**	**1,914**	19,589	1,567

1 *VaR average values are calculated on a 60 business days basis. Stressed VaR and IRC average values are calculated on a 12-week basis.*

Under the Internal Model Approach, value at risk and stressed value at risk increased due to heightened volatility; coupled with increased exposures at risk in Incremental Risk Charge.

Market risk governance

The majority of the trading Value at risk ('VaR'), stressed VaR ('SVaR') and incremental risk charge ('IRC') of HSBC reside in GBM. GBM manages market risk, within overall risk limits set by the Group CRCO and limits approved by the GBM CRO.

For further details on market risk governance refer to page 218 of the Annual Report and Accounts 2022.

Market risk measures

Monitoring and limiting market risk exposures

We use a range of tools to monitor and limit market risk exposures including sensitivity analysis, VaR and stress testing.

Sensitivity analysis

We use sensitivity measures to monitor the market risk positions within each asset class and risk type. Granular sensitivity limits are set for each trading desk taking into consideration market liquidity, customer demand and capital constraints, amongst other factors.

Value at risk

Value at risk ('VaR') is a technique that estimates the potential mark-to-market losses on derivative, security and money market positions in the trading and non-trading portfolios as a result of movements in market rates and prices over a specified time horizon and to a given level of confidence. The use of VaR is an integral part of our market risk management framework and is calculated for a scope of trading and non-trading positions which is wider than the set of trading positions which are capitalised under a VaR treatment.

Our models are predominantly based on historical simulation. VaR is calculated at a 99% confidence level for a one-day holding period.

Our VaR model uses historical series of market rates and prices, implicitly taking into account inter-relationships between different markets and rates such as interest rates and foreign exchange rates.

The primary categories of risk factors driving market risk are summarised below:

Risk factor	Description
Foreign exchange	Risk arising from changes in foreign exchange rates and volatilities.
Interest rate	Risk arising from changes in the level of interest rates that may impact prices of interest rate sensitive assets such as interest rate swaps.
Equity	Risk arising from changes in equity prices, volatilities and dividend yields.
Commodity	Risk arising from changes in commodity prices.
Credit	Risk arising from changes in the level of credit spreads that may impact prices of credit spread sensitive assets.

Our models use a mixed approach when applying changes in market rates and prices:

- For equity, credit and foreign exchange risk factors, VaR scenarios are calculated on a relative return basis.
- For interest rates, a mixed approach is used. The scenarios applied to volatilities are on a relative return basis, whereas the scenarios applied to interest rate curves are calculated using a hybrid of absolute and relative returns. This approach enables the VaR to smoothly adapt to either low or high interest rate environments and to support negative rates.

Our models aggregate general and specific risk and allow for diversification across them. We use the past two years as the historical data set in our VaR model and the scenarios are updated at least on a weekly basis. These scenarios are then applied to the market baselines and positions on a daily basis. The models incorporate the effect of option features on the underlying exposures.The valuation approach used in our models varies:

- Desks trading non-linear instruments use a full revaluation approach; and
- Desks trading only linear instruments, such as bonds and swaps, use a sensitivity-based approach.

The nature of the VaR model means that an increase in observed market volatility will lead to an increase in VaR even without any changes in the underlying positions.

VaR model limitations

Although a valuable guide to risk, VaR is used with awareness of its limitations, for example:

- The use of historical data as a proxy for estimating future events may not encompass all potential events, particularly those which are extreme in nature. As the model is calibrated on the last 500 business days, it does not adjust instantaneously to a change in the market regime.
- The use of a 1-day holding period for risk management purposes of trading and non-trading books assumes that this short period is sufficient to hedge or liquidate all positions.
- The use of a 99% confidence level by definition does not take into account losses that might occur beyond this level of confidence.
- VaR is calculated on the basis of exposures outstanding at close of business and therefore does not necessarily reflect intra-day exposures.

Risk not in VaR framework

The risks not in VaR ('RNIV') framework captures risks from exposures in the HSBC trading book that are not captured well by the VaR model. Our VaR model is designed to capture significant basis risk such as CDS versus bond, asset swap spreads and cross-currency basis. Other basis risks that are not completely covered in VaR, such as CCP swap basis risks, are complemented by our RNIV calculations and are integrated into our capital framework.

Risk factors are reviewed on a regular basis and are either incorporated directly in the VaR model, where possible, or quantified through the VaR-based RNIV approach or a stress test approach within the RNIV framework. While VaR-based RNIVs are calculated by using historical scenarios, stress-type RNIVs are estimated on the basis of stress scenarios whose severity is calibrated to be in line with the capital adequacy requirements. The outcome of the VaR-based RNIV approach is included in the overall VaR calculation for risk management purposes but excluded from the VaR measures used for regulatory back-testing. In addition, stressed VaR also captures risk factors considered in the VaR-based RNIV approach through a corresponding stressed VaR RNIV.

Stress-type RNIVs include a deal contingent derivatives capital charge to capture risk for these transactions and a cheapest-to-deliver bond measure to capture the risk from using this proxy instrument.

Back-testing

We validate daily the accuracy of our VaR model by back-testing the model against both actual and hypothetical profit and loss. Hypothetical profit and loss excludes non-modelled items such as fees, commissions and revenues of intra-day transactions.

The number of hypothetical loss back-testing exceptions, together with a number of other indicators, is used to assess model performance and to consider whether enhanced internal monitoring of a VaR model is required.

We back-test our VaR at various levels of our Group entity hierarchy. Our back-testing covers those entities within the Group which have approval to use VaR in the calculation of market risk regulatory capital requirements. HSBC submits separate back-testing results to regulators, including the PRA and the European Central Bank, based on applicable frequencies ranging from two business days after an exception occurs, to quarterly submissions. VaR back-testing loss, and not profit, exceptions count towards the multiplier determined by the PRA for the purposes of the capital requirement calculation for market risk. The multiplier is increased if there are five or more loss exceptions in a 250-day period.

During 2022, the Group experienced 10 loss back-testing exceptions against hypothetical profit and losses, of which 7 exceptions occurred in the second half of the year. The high number of hypothetical back-testing exceptions was primarily driven by the volatile market environment and a rapid shift in the global interest rate regime in 2022.

The hypothetical profit and loss reflects the profit and loss that would be realised if positions were held constant from the end of one trading day to the end of the next. This measure of profit and loss does not align with how risk is dynamically hedged, and is not therefore indicative of the actual performance of the business. Accordingly, of the 10 loss back-testing exceptions against hypothetical profit and loss, only one corresponded to an actual profit and loss exception.

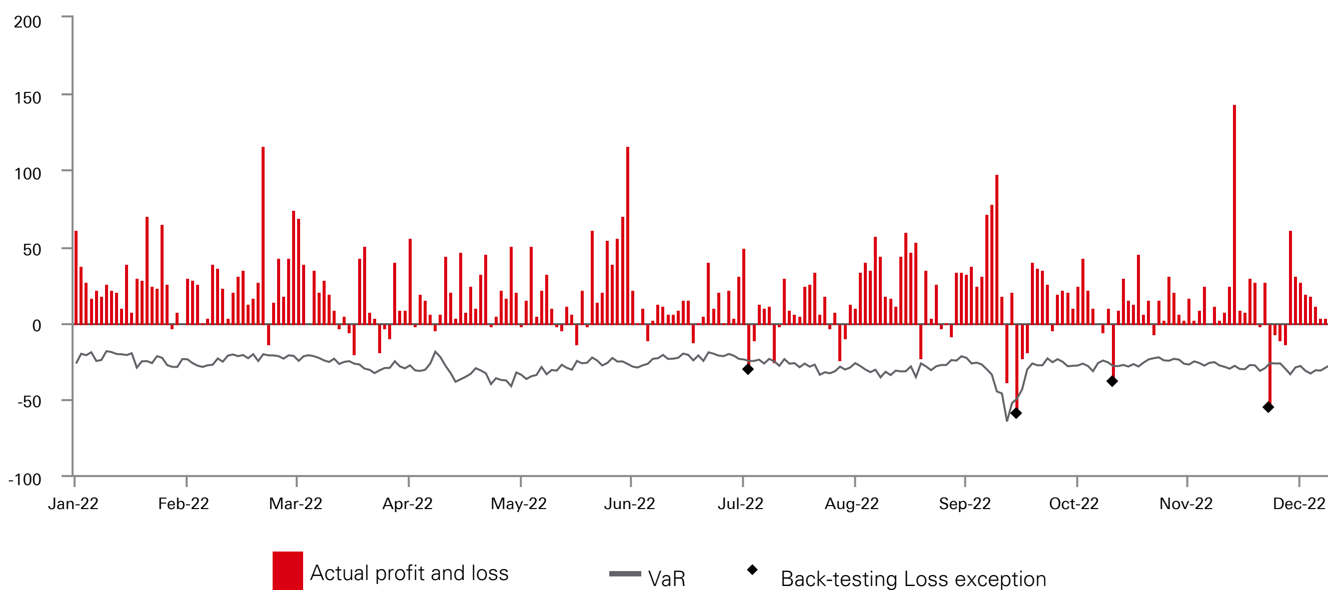
The Group experienced four loss back-testing exceptions against actual profit and losses during 2022. Losses were attributable to fair value adjustments that were adopted for factors not incorporated within valuation models, and from the impacts of restructuring of derivative exposures under our RWA optimisation programme.

Given the heightened number of hypothetical loss back-testing exceptions in the second half of 2022, we have undertaken a review of our VaR model assumptions and updated the risk parameters within the model.

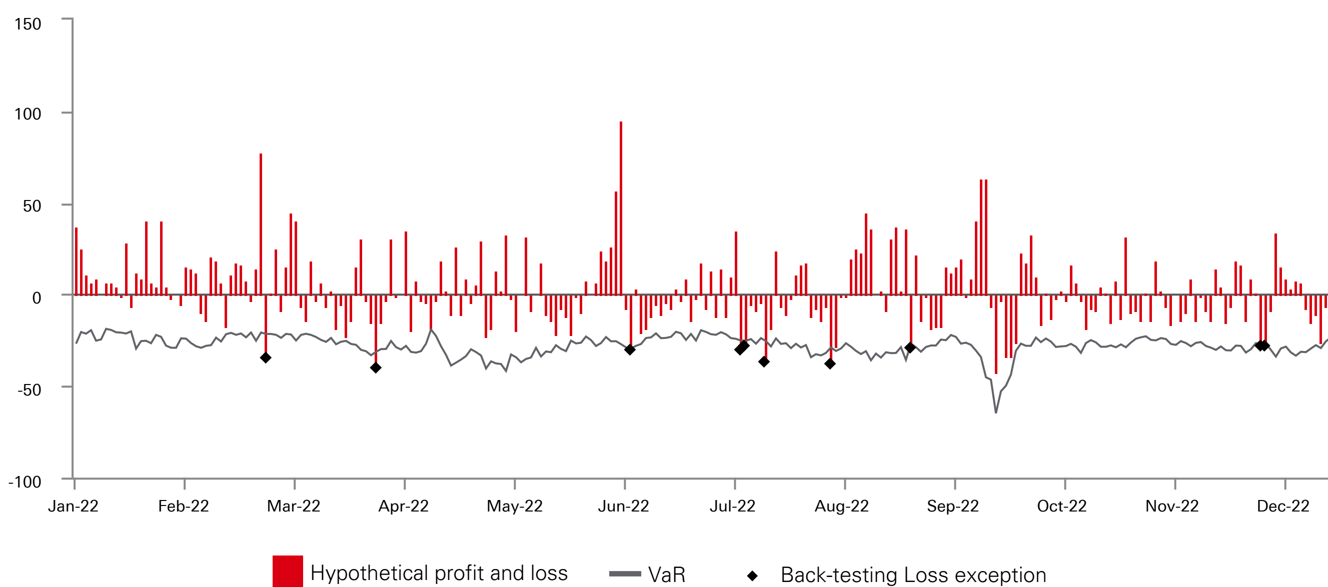
The following graphs show a one-year history for VaR back-testing exceptions against both actual and hypothetical profit and loss.

Table 60: Comparison of VaR estimates with gains/losses (MR4)

VaR back-testing exceptions against actual profit and loss ($m)



VaR back-testing exceptions against hypothetical profit and loss ($m)



Stress testing

Stress testing is an integral part of our market risk management framework which is used to evaluate the potential impact on portfolio values of more extreme, although plausible, events or movements in a set of financial variables. In such scenarios, losses can be greater than those predicted by VaR modelling.

Stress testing is implemented at legal entity, regional and overall Group levels. A set of scenarios is used consistently across all regions within the Group. The risk appetite around potential stress losses for the Group is set and monitored against referral limits.

Market risk reverse stress tests are designed to identify vulnerabilities in our portfolios by looking for scenarios that lead to loss levels considered severe for the relevant portfolio. These scenarios may be local or idiosyncratic in nature, and complement the systematic top-down stress testing.

Stressed VaR and stress testing, together with reverse stress testing and the management of gap risk, provide senior management with insights regarding the 'tail risk' beyond VaR, for which HSBC's appetite is limited.

The market risk stress testing incorporates both historical and hypothetical events.

During 2022, HSBC ran stress scenarios focusing on the economic and financial impact of the Russia-Ukraine war, together with a number of scenarios to assess the impact of the increased cost of living, monetary policy tightening and climate risks.

These scenarios were run in addition to existing scenarios that capture potential events of concern.

Market risk capital models

HSBC has permission to use a number of market risk capital models to calculate regulatory capital as listed in the table below. For regulatory purposes, the trading book comprises all positions in financial instruments and commodities held with trading intent and positions where it can be demonstrated that they hedge positions in the trading book. Trading book positions must either be free of any restrictive covenants on their tradability or be capable of being hedged.

A financial instrument is defined as any contract that gives rise to both a financial asset to one party and a financial liability or equity instrument to another party.

HSBC maintains a trading book policy, which defines the minimum requirements for trading book positions and the process for classifying positions as trading or non-trading book. Positions in the trading book are subject to market risk-based rules, i.e. market risk capital, calculated using regulatory approved models. Where we do not have permission to use internal models, market risk capital is calculated using the standardised approach.

If any of the policy criteria are not met, then the position is categorised as a non-trading book exposure.

Model component	Confidence level	Liquidity horizon	Model description and methodology
VaR	99%	10 day	Uses most recent two years' history of daily returns to determine a loss distribution. The result is scaled, using the square root of 10, to provide an equivalent 10-day loss.
Stressed VaR	99%	10 day	Stressed VaR is calibrated to a one-year period of stress observed in history, calculated using 10 day returns.
IRC	99.9%	1 year	Uses a multi-factor Gaussian Monte-Carlo simulation, which includes product basis, concentration, hedge mismatch, recovery rate and liquidity as part of the simulation process. A minimum liquidity horizon of three months is applied and is based on a combination of factors, including issuer type, currency and size of exposure.

Non-proprietary details of these models are available in the Financial Services Register on the PRA website.

Table 61: IMA values for trading portfolios (MR3)

		At 31 Dec	
		2022	2021
		$m	$m
VaR (10 day 99%)			
1	Maximum value	**260.6**	176.2
2	Average value	**150.3**	133.6
3	Minimum value	**113.7**	105.6
4	Period end	**160.1**	134.6
Stressed VaR (10 day 99%)			
5	Maximum value	**312.5**	306.4
6	Average value	**206.3**	258.7
7	Minimum value	**136.6**	204.4
8	Period end	**160.6**	214.2
Incremental risk charge (99.9%)			
9	Maximum value	**301.1**	394.5
10	Average value	**258.6**	283.4
11	Minimum value	**200.5**	140.0
12	Period end	**274.0**	141.3

VaR

VaR used for regulatory purposes differs from VaR used for management purposes. The key differences are listed below:

VaR	Regulatory	Management
Scope	Regulatory approval (PRA)	Broader population of trading and non-trading book positions
Confidence interval	99%	99%
Liquidity horizon	10 day	1 day
Data set	Past 2 years	Past 2 years

We calculate VaR for regulatory purposes only in respect of the trading books for which we have received approval to use an internal model from the regulator. Overall regulatory VaR also includes VaR-based RNIVs.

The regulatory VaR table is calculated on consolidated positions according to the regulatory permissions received, plus aggregated sites. This differs from the daily VaR reported in the *Annual Report and Accounts 2022*, which shows a fully diversified view used for internal risk management.

The increase in Trading VaR was mainly driven by interest rate risk factors across business lines, but returned to normal operating range in the last quarter of 2022.

Stressed VaR

Stressed VaR is primarily used for regulatory capital purposes and is integrated into the risk management process to ensure prudent capital management. Stressed VaR complements other risk measures by providing the potential losses under stressed market conditions.

Stressed VaR modelling follows the same approach as our VaR risk measure except that:

- potential market movements employed for stressed VaR calculations are based on a continuous one-year period of stress for the trading portfolio;
- the choice of period is based on the assessment at the Group level of the most volatile period in recent history.

  This is assessed at least quarterly and changed during 2022 as follows:

  – between November 2007 and October 2008 from January 2022;

  – between November 2007 and November 2008 from March 2022;

  – between December 2007 and December 2008 from September 2022; and

- it is calculated to a 99% confidence using a 10-day holding period; and
- it is based on an actual 10-day holding period, whereas regulatory VaR is based on a one-day holding period scaled to 10 days.

Stressed VaR decreased during the year primarily due to a reduction in losses from the Global Debt Markets and Foreign Exchange businesses and greater diversification benefits across asset classes.

Incremental risk charge

The incremental risk charge ('IRC') measures the default and migration risk of issuers of traded debt instruments.

IRC risk factors include credit migration, default, product basis, concentration, hedge mismatch, recovery rate and liquidity. The PDs are derived from historical data on defaults and a period of stress is used to calibrate the spread changes for rating migration events. The IRC model is validated quarterly by stressing key model parameters and reviewing the response of the model.

The IRC is a stand-alone charge generating no diversification benefit with other charges. Positions in scope of IRC are assigned liquidity horizons from three months to one year. A wide range of criteria can indicate the liquidity of a position. The liquidity horizon for the IRC measure depends on a set of factors such as issuer features, including rating, sector, geography and size of positions, including product, maturity and concentration.

The IRC transition matrices are calibrated using transition and default data published by three rating agencies (S&P, Moody's and Fitch) as the starting point, in combination with internal estimates used for flooring of PDs.

The IRC correlation matrix is derived quarterly from historical CDS spreads data, covering the latest two-year VaR period. The correlations are calibrated separately for positions with different liquidity. The IRC correlations model utilises factors related to sector and rating of issuers.

The increase of the IRC during 2022 was mainly driven by the credit desk market-making inventory and a high volume of individually small exposures to financials and emerging markets sovereigns, combined with the effect of a recalibration of model parameters.

Prudent valuation adjustment

Prudent value represents a conservative estimate with a 90% degree of certainty of a price that would be received to sell an asset or paid to transfer a liability in orderly transactions occurring between market participants at the balance sheet date. HSBC has documented policies and maintains systems and controls for the calculation of the prudent valuation adjustment ('PVA'). HSBC's methodology addresses fair value uncertainties arising from a number of sources: market price uncertainty, bid-offer uncertainty, model risk, concentration, administrative costs, unearned credit spreads and investing and funding costs.

Table 62: Prudential valuation adjustments (PV1)

		Risk Category					Category level AVA - Valuation uncertainty				
		Equity	Interest rates	FX	Credit	Commodities	Unearned credit spreads AVA	Investment and funding costs AVA	Total category level post-diversification	*of which: Total core approach in the trading book*	*of which: Total core approach in the banking book*
		$m	$m	$m	$m	$m	$m	$m	$m	*$m*	*$m*
1	Market price uncertainty	**394**	**303**	**34**	**185**	**5**	**73**	**—**	**415**	***271***	***144***
3	Close-out cost	**83**	**116**	**31**	**29**	**2**	**232**	**—**	**247**	***224***	***23***
4	Concentrated positions	***50***	***135***	***19***	***88***	**—**			***292***	***199***	***93***
5	Early termination	**—**	**—**	**—**	**—**	**—**			**—**	**—**	**—**
6	Model risk	**35**	**104**	**4**	**16**	**—**	**79**	**36**	**137**	***136***	***1***
7	Operational risk	**23**	**31**	**3**	**10**	**—**			**67**	***51***	***16***
10	Future administrative costs	**—**	**5**	**—**	**6**	**—**			**11**	***9***	***2***
12	**Total Additional Valuation Adjustments (AVAs) at 31 Dec 2022**								**1,169**	***890***	***279***
1	Market price uncertainty	386	328	31	190	4	130	—	448	*292*	*156*
3	Close-out cost	56	93	14	16	1	269	—	225	*212*	*13*
4	Concentrated positions	64	156	22	86	—			328	*206*	*122*
5	Early termination	—	—	—	—	—			—	—	—
6	Model risk	104	33	8	17	—	53	8	111	*110*	*1*
7	Operational risk	21	36	2	9	—			68	*51*	*17*
10	Future administrative costs	—	7	—	6	—			13	*11*	*2*
12	Total Additional Valuation Adjustments (AVAs) at 31 Dec 2021								1,193	*882*	*311*

The net PVA charge decreased by $24m compared to 2021 as a result of:

- reduction in underlying exposures and improvement in credit and liquidity conditions combined with some methodology refinements partially offset by more conservative close out cost assumptions and increased model risk charge.

The items for which the highest PVA is observed include (i) asset backed securities and other fixed income securities, (ii) structured derivative products and (iii) valuation adjustments related to derivatives.

Non-financial risk

Non-financial risk is the risk to achieving our strategy or objectives as a result of inadequate or failed internal processes, people and systems, or from external events. Sound non-financial risk management is central to achieving good outcomes for our customers. Non-financial risk is relevant to every aspect of our business and is broadly managed through the risk management framework ('RMF'). Non-financial risk covers a wide spectrum of areas, such as technology and cyber security, transaction processing, data risk, third party risk, facilities availability, safety and security, business interruption and incident risk, financial crime and fraud, regulatory compliance, financial reporting and tax risk, legal risk, model risk and people risk. Losses arising from breaches of regulation and law, unauthorised activities, error, omission, inefficiency, fraud, systems failure or external events all fall within the definition of non-financial risk.

Operational risk is part of non-financial risk. Table 63 provides details of the overall calculation. We currently use the standardised approach in determining our operational risk capital requirement.

Table 63: Operational risk own funds requirements and risk-weighted exposure amounts (OR1)

		Relevant indicator			Own funds requirements	Risk weighted exposure amount
		2020	2021	2022		
	Banking activities	$m	$m	$m	$m	$m
2	Banking activities subject to standardised (TSA)/alternative standardised (ASA) approaches				6,874	85,926
3	Subject to TSA:					
	Corporate Finance	1,170	1,227	665		
	Trading and Sales	7,125	5,371	7,530		
	Retail Brokerage	—	—	—		
	Commercial Banking	18,007	17,053	21,621		
	Retail Banking	16,177	14,977	18,410		
	Payment and Settlement	1,213	1,569	1,800		
	Agency Services	1,057	1,043	1,032		
	Asset Management	1,870	2,142	2,005		

Organisation and responsibilities

The RMF sets out our approach to governance and risk appetite and sets the principles for our management of non-financial risks and associated controls. Responsibility for managing non-financial risk lies with our people.

During 2022, we remained focused on strengthening our approach to managing non-financial risk. Progress has been made in enhancing the framework and tools for strengthening the control environment and we will continue to improve practices in the management of non-financial risk.

Non-financial risk is organised as a specific risk discipline within Global Risk and is headed by the Group Head of Operational and Resilience Risk. The Group Head of Operational and Resilience Risk is responsible for monitoring the effectiveness of the internal control environment, overseeing the management of risks and controls, ensuring the Group takes appropriate mitigating actions against emerging risks, and monitoring the level of operational losses. The Group Head of Operational and Resilience Risk is accountable to the Group Chief Risk Officer in respect of this element of the overall RMF.

The Operational and Resilience Risk sub-function helps the business grow safely by driving governance and management of operational risk and resilience risk through the delivery and embedding of effective frameworks and policies, and continuous oversight and assurance of risks, controls, events and impacts.

Activity to strengthen the first and second lines of defence continued to be a key focus in 2022. The first line of defence owns the risk and is accountable for identifying, assessing, managing key existing and emerging risks. The second line of defence sets the policy and control standards to manage risks, and provides advice and guidance to support these policies. It also challenges the first line to ensure it is managing risk effectively. The third line of defence is Global Internal Audit, which provides independent assurance to the Board and management that our risk management approach and processes are designed and operating effectively.

The effectiveness of first line of defence risk and control owners, and second line of defence risk stewards in managing our Non-Financial Risk processes and practices is reported through Risk Management Meetings (RMMs) and the Non-Financial Risk Management Board (NFRMB). The NFRMB is a formal governance body which provides recommendations and advice to the Group Chief Risk Officer in relation to the management of the HSBC Non-Financial Risk profile, including elements of the RMF which support non-financial risk management.

Measurement and monitoring

The RMF is written as a high-level standard, supplemented by detailed policies. These policies explain our approach to identifying, assessing, monitoring and controlling non-financial risk, and give guidance on mitigating actions to be taken when weaknesses are identified. In order to drive risk awareness in a more forward looking manner, we set out our risk appetite and then regularly monitor non-financial risk exposure against that risk appetite. This assists management in determining whether further action is required.

Risk scenario analysis across material legal entities provides an aggregated, forward-looking assessment of risks for stress testing and to help assess capital requirements.

In each of our subsidiaries, the first line of defence are responsible for maintaining an appropriate level of internal control, commensurate with the scale and nature of operations. They are responsible for identifying and assessing risks, designing controls and monitoring the effectiveness of these controls. The RMF helps managers to fulfil these responsibilities by defining a standard risk assessment methodology and providing a tool for the systematic reporting of operational loss data.

Risk and control assessment approach

Non-financial risk and control assessments are performed by the first line of defence. The risk and control assessment process is designed to provide the first line of defence with a view of non-financial risks, an assessment of the effectiveness of controls, and a tracking mechanism for action plans so that they can proactively manage non-financial risks within acceptable levels. Appropriate means of mitigation and controls are considered. These include making specific changes to strengthen the internal control environment, and investigating whether cost-effective insurance cover is available to mitigate the risk.

Recording

We use a Group-wide risk management system to record the results of our non-financial risk management process. Non-financial risk and control assessments, as described above, are input and maintained by the first line of defence. The first line of defence monitors and followsup the progress of documented action plans. Operational risk losses are entered into the Group-wide risk management system and reported to governance on a monthly basis. Loss capture thresholds are in line with industry standards

Liquidity

Management of liquidity and funding risk

We aim to ensure that management has oversight of our liquidity and funding risks at Group and entity level by maintaining comprehensive policies, metrics and controls.

Liquidity coverage ratio

The LCR aims to ensure that a bank has sufficient unencumbered high-quality liquid assets ('HQLA') to meet its liquidity needs in a 30 calendar day liquidity stress scenario. For the calculation of the LCR, we follow Article 451a of CRR II.

At 31 December 2022, all of the Group's material operating entities were above regulatory levels. The Group average LCR for the 12 months to 31 December 2022 was 132% or $156bn above regulatory requirement after the application of the Group adjustment required under the PRA Rulebook. This Group consolidation adjustment was used to reflect the impact of limitations in the fungibility of entity liquidity around the Group and resulted in an adjustment of $165bn to LCR HQLA and $9bn to LCR inflows. The period end LCR ratio at 31 December 2022 was 132%.

Net stable funding ratio

We use the NSFR or other appropriate metrics as a basis for ensuring operating entities raise sufficient stable funding to support their business activities. The NSFR is defined as the ratio between the amount of stable funding available and the amount of stable funding required. From 1 January 2022, we transitioned to the PRA's NSFR rules. The Group NSFR was 135% at 31 December 2022 and the four quarter average was 136%.

Currency mismatch in the LCR

The Group's internal liquidity and funding risk management framework requires all operating entities to monitor the LCR for material currencies. Limits are set to ensure that outflows can be met, given assumptions on stressed capacity in the FX swap markets. This continuous monitoring helps with overall management of currency exposures, in line with our internal framework.

For details on our approach to managing Liquidity Risk, please refer the Treasury Risk management section page 14.

More details on the concentration of funding and liquidity sources may be found on page 210 of the Annual Report and Accounts 2022.

Table 64: Level and components of HSBC Group consolidated liquidity coverage ratio[1] (LIQ1)

	Quarter ended 31 Dec 2022		Quarter ended 30 Sep 2022		Quarter ended 30 Jun 2022		Quarter ended 31 Mar 2022	
	Total unweigh-ted value	Total weighted value	Total unweigh-ted value	Total weighted value	Total unweigh-ted value	Total weighted value	Total unweigh-ted value	Total weighted value
	$m	$m	$m	$m	$m	$m	$m	$m
Number of data points used in the calculation of averages		12		12		12		12
High quality liquid assets								
Total high quality liquid assets ('HQLA')		647,046		662,875		675,533		688,313
Cash outflows								
Retail deposits and small business funding	864,427	89,484	878,293	90,110	890,120	90,544	896,212	90,617
– *of which:* *stable deposits*	*364,294*	*18,215*	*374,849*	*18,742*	*385,465*	*19,273*	*392,991*	*19,650*
less stable deposits	*500,133*	*71,269*	*503,443*	*71,367*	*502,067*	*71,119*	*503,221*	*70,967*
Unsecured wholesale funding	827,862	375,510	843,630	382,791	853,967	386,608	856,070	387,419
– operational deposits (all counterparties) and deposits in networks of cooperative banks	266,713	65,333	271,688	66,565	274,274	67,206	273,243	66,947
– non-operational deposits (all counterparties)	550,851	299,879	560,647	304,931	567,965	307,674	570,880	308,525
– unsecured debt	10,298	10,298	11,295	11,295	11,728	11,728	11,947	11,947
Secured wholesale funding		22,018		17,845		14,536		11,688
Additional requirements	319,363	109,062	326,828	110,187	336,204	111,080	345,220	112,305
– outflows related to derivative exposures and other collateral requirements	58,036	54,609	56,795	53,575	55,752	52,457	54,789	51,665
– outflows related to loss of funding on debt products	—	—	—	—	—	—	—	—
– credit and liquidity facilities	261,327	54,453	270,033	56,612	280,452	58,622	290,431	60,640
Other contractual funding obligations	96,178	52,648	94,467	47,634	92,096	45,184	89,059	43,948
Other contingent funding obligations	640,540	19,333	637,255	18,708	633,981	18,084	628,046	17,135
Total cash outflows		668,055		667,275		666,036		663,112
Cash inflows								
Secured lending transactions (including reverse repos)	292,139	42,794	290,536	41,425	286,636	40,089	284,756	38,862
Inflows from fully performing exposures	112,942	84,424	113,381	84,488	113,676	83,903	114,502	84,263
Other cash inflows	103,435	50,087	98,632	44,508	96,650	41,651	93,422	38,487
(Difference between total weighted inflows and total weighted outflows arising from transactions in third countries where there are transfer restrictions or which are denominated in non-convertible currencies)		—		—		—		—
(Excess inflows from a related specialised credit institution)		—		—		—		—
Total cash inflows	508,516	177,305	502,549	170,421	496,962	165,643	492,680	161,612
Fully exempt inflows	—	—	—	—	—	—	—	—
Inflows Subject to 90% Cap	—	—	—	—	—	—	—	—
Inflows Subject to 75% Cap	508,516	177,305	502,549	170,421	478,400	165,643	492,680	161,612
Liquidity coverage ratio (Adjusted value)								
Liquidity Buffer		647,046		662,875		675,533		688,313
Total net cash outflows		490,750		496,854		500,392		501,500
Liquidity coverage ratio (%)		131.8		133.4		135.1		137.3

1 *The above table sets out the requirement to disclose the liquidity coverage ratio, liquid assets and net outflows based on end-of-the-month observations over the preceding 12 months for each quarter. Since 1 January 2022, the LCR has been reported as specified in the PRA Rulebook. Prior to 1 January 2022, the LCR figures reported above were prepared as specified by the Commission Delegated Regulation (EU) 2015/61. The differences in the LCR basis of preparation reflect the UK's withdrawal from the EU and do not materially impact the above metrics.*

Table 65: Net stable funding ratio (LIQ2)

		Unweighted value by residual maturity				Weighted value
		No maturity	< 6 months	6 months to < 1yr	≥ 1yr	
		$m	$m	$m	$m	$m
Available stable funding ('ASF') Items						
1	Capital items and instruments	**181,299**	**—**	**2**	**22,715**	**204,014**
2	– Own funds	**181,299**	**—**	**2**	**22,715**	**204,014**
3	– Other capital instruments		**—**	**—**	**—**	**—**
4	Retail deposits		**863,711**	**1,944**	**310**	**797,557**
5	– Stable deposits		**363,776**	**512**	**67**	**346,110**
6	– Less stable deposits		**499,935**	**1,432**	**243**	**451,447**
7	Wholesale funding:		**1,067,123**	**39,756**	**161,892**	**537,266**
8	– Operational deposits		**257,372**	**—**	**83**	**128,381**
9	– Other wholesale funding		**809,751**	**39,756**	**161,809**	**408,885**
10	Interdependent liabilities		**3,034**	**—**	**—**	**—**
11	Other liabilities:	**1,458**	**266,213**	**181**	**13,036**	**13,127**
12	– NSFR derivative liabilities	**1,458**				
13	– All other liabilities and capital instruments not included in the above categories		**266,213**	**181**	**13,036**	**13,127**
14	**Total available stable funding ('ASF')**					**1,551,964**
Required stable funding ('RSF') Items						
15	Total high-quality liquid assets ('HQLA')					**40,715**
UK-15a	Assets encumbered for more than 12m in cover pool		**—**	**—**	**—**	**—**
16	Deposits held at other financial institutions for operational purposes		**137**	**—**	**—**	**68**
17	Performing loans and securities:		**578,774**	**97,176**	**853,370**	**876,950**
18	– Performing securities financing transactions with financial customers collateralised by Level 1 HQLA subject to 0% haircut		**201,569**	**10,244**	**1,637**	**13,932**
19	– Performing securities financing transactions with financial customer collateralised by other assets and loans and advances to financial institutions		**92,957**	**2,803**	**4,464**	**14,652**
20	– Performing loans to non-financial corporate clients, loans to retail and small business customers, and loans to sovereigns, and PSEs		**154,459**	**55,113**	**306,612**	**627,587**
21	*– of which: With a risk weight of less than or equal to 35% under the Basel II standardised approach for credit risk*		***2,034***	***1,880***	***74,199***	***238,637***
22	– Performing residential mortgages		**10,628**	**9,807**	**357,656**	**—**
23	*– of which: With a risk weight of less than or equal to 35% under the Basel II standardised approach for credit risk*		***6,488***	***6,717***	***258,903***	**—**
24	– Other loans and securities that are not in default and do not qualify as HQLA, including exchange-traded equities and trade finance on-balance sheet products		**119,161**	**19,209**	**183,001**	**220,779**
25	Interdependent assets		**1,564**	**—**	**3,074**	**—**
26	Other assets:	**—**	**200,726**	**47**	**150,600**	**184,245**
27	– Physical traded commodities				**14,024**	**11,920**
28	– Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs		**21,817**			**18,544**
29	– NSFR derivative assets		**2,652**			**2,648**
30	– NSFR derivative liabilities before deduction of variation margin posted		**123,285**			**6,446**
31	– All other assets not included in the above categories		**52,972**	**47**	**136,576**	**144,687**
32	Off-balance sheet items		**237,272**	**22,908**	**579,258**	**36,374**
33	**Total RSF**					**1,138,352**
34	Net stable funding ratio (%)					**136 %**

Analysis of on-balance sheet encumbered and unencumbered assets and off-balance sheet collateral

On-balance sheet encumbered and unencumbered assets

The table on the following page summarises the total on-balance sheet assets capable of supporting future funding and collateral needs, and shows the extent to which they are currently pledged for this purpose. This disclosure aims to facilitate an understanding of available and unrestricted assets that could be used to support potential future funding and collateral needs.

Off-balance sheet collateral

The fair value of assets accepted as collateral that we are permitted to sell or repledge in the absence of default was $450bn at 31 December 2022 (2021: $476bn).

The fair value of any such collateral actually sold or repledged was $228bn (2021: $272bn).

We are obliged to return equivalent securities. These transactions are conducted under terms that are usual and customary to standard reverse repo, stock borrowing and derivative transactions.

The fair value of collateral received and re-pledged in relation to reverse repos, stock borrowing and derivatives is reported on a gross basis. The related balance sheet receivables and payables are reported on a net basis where required under IFRS offset criteria.

As a consequence of reverse repo, stock borrowing and derivative transactions where the collateral received could be sold or re-pledged but had not been, we held $222bn (2021: $183bn) of unencumbered collateral available to support potential future funding and collateral needs at 31 December 2022.

Further information on collateral obligations under derivative contracts in the event of downgrade is provided on page 71. For further details on risks to liquidity, see page 203 onwards of the Annual Report and Accounts 2022.

Table 66: Analysis of on-balance sheet encumbered and unencumbered assets

	Assets encumbered as a result of transactions with counterparties other than central banks			Assets positioned at central banks (i.e. pre-positioned plus encumbered)	Unencumbered assets not positioned at central banks				
	As a result of covered bonds	As a result of securitisations	Other		Assets readily available for encumbrance	Other assets capable of being encumbered	Reverse repos/stock borrowing receivables and derivative assets	Assets that cannot be encumbered	Total
	$m	$m	$m	$m	$m	$m	$m	$m	$m
Cash and balances at central banks	—	—	—	—	326,910	6	—	86	327,002
Items in the course of collection from other banks	—	—	—	—	—	—	—	7,297	7,297
Hong Kong Government certificates of indebtedness	—	—	—	—	—	—	—	43,787	43,787
Trading assets	—	—	60,259	423	118,062	6,272	25,502	7,575	218,093
– treasury and other eligible bills	—	—	6,304	147	16,193	253	—	—	22,897
– debt securities	—	—	27,090	276	41,518	1,887	—	7,355	78,126
– equity securities	—	—	26,865	—	60,351	810	—	—	88,026
– loans and advances to banks	—	—	—	—	—	88	8,556	125	8,769
– loans and advances to customers	—	—	—	—	—	3,234	16,946	95	20,275
Financial assets designated and otherwise mandatorily measured at fair value through profit or loss	—	—	1,610	—	1,937	2,021	270	39,225	45,063
– treasury and other eligible bills	—	—	—	—	—	—	—	744	744
– debt securities	—	—	—	—	307	118	—	5,974	6,399
– equity securities	—	—	—	—	1,610	731	—	32,124	34,465
– loans and advances to banks and customers	—	—	—	—	20	1,169	270	382	1,841
– other assets	—	—	1,610	—	—	3	—	1	1,614
Derivatives	—	—	—	—	—	—	284,146	—	284,146
Loans and advances to banks	—	—	547	12,641	4,241	68,288	—	19,165	104,882
Loans and advances to customers	843	3,537	2,758	63,365	19,754	799,349	—	35,248	924,854
Reverse repurchase agreements – non-trading	—	—	—	—	—	—	253,754	—	253,754
Financial investments	—	173	36,965	15,731	284,011	4,717	—	83,967	425,564
– treasury and other eligible bills	—	173	6,005	5,734	107,722	942	—	1,455	122,031
– debt securities	—	—	30,960	9,960	175,849	3,191	—	81,769	301,729
– equity securities	—	—	—	37	440	584	—	635	1,696
– other instruments	—	—	—	—	—	—	—	108	108
Prepayments, accrued income and other assets	—	14	65,904	110	5,139	25,596	—	60,103	156,866
Assets held for sale	8,467	2,145	4,053	9,766	26,273	58,531	5,513	1,171	115,919
Current tax assets	—	—	—	—	—	—	—	1,230	1,230
Interest in associates and joint ventures	—	—	—	—	73	28,763	—	418	29,254
Goodwill and intangible assets	—	—	—	—	—	—	—	21,321	21,321
Deferred tax	—	—	—	—	—	—	—	7,498	7,498
At 31 Dec 2022	**9,310**	**5,869**	**172,096**	**102,036**	**786,400**	**993,543**	**569,185**	**328,091**	**2,966,530**

Table 66: Analysis of on-balance sheet encumbered and unencumbered assets (continued)

	Assets encumbered as a result of transactions with counterparties other than central banks			Assets positioned at central banks (i.e. pre-positioned plus encumbered)	Unencumbered assets not positioned at central banks				
	As a result of covered bonds	As a result of securitisations	Other		Assets readily available for encumbrance	Other assets capable of being encumbered	Reverse repos/stock borrowing receivables and derivative assets	Assets that cannot be encumbered	Total
	$m	$m	$m	$m	$m	$m	$m	$m	$m
Cash and balances at central banks	—	—	—	211	402,249	26	—	532	403,018
Items in the course of collection from other banks	—	—	—	—	—	—	—	4,136	4,136
Hong Kong Government certificates of indebtedness	—	—	—	—	—	—	—	42,578	42,578
Trading assets	—	—	72,789	1,155	140,168	10,472	23,075	1,183	248,842
– treasury and other eligible bills	—	—	1,583	588	19,667	1,267	—	5	23,110
– debt securities	—	—	36,771	567	46,302	5,813	—	491	89,944
– equity securities	—	—	34,435	—	74,199	979	—	1	109,614
– loans and advances to banks	—	—	—	—	—	326	6,914	527	7,767
– loans and advances to customers	—	—	—	—	—	2,087	16,161	159	18,407
Financial assets designated and otherwise mandatorily measured at fair value through profit or loss	—	—	1,171	—	1,968	4,703	267	41,695	49,804
– treasury and other eligible bills	—	—	—	—	—	—	—	630	630
– debt securities	—	—	—	—	237	227	—	6,365	6,829
– equity securities	—	—	2	—	1,706	927	—	34,219	36,854
– loans and advances to banks and customers	—	—	—	—	25	3,534	267	481	4,307
– other assets	—	—	1,169	—	—	15	—	—	1,184
Derivatives	—	—	—	—	—	—	196,882	—	196,882
Loans and advances to banks	—	—	330	3,437	4,795	57,477	—	17,097	83,136
Loans and advances to customers	7,328	5,191	4,013	64,622	18,904	909,466	—	36,290	1,045,814
Reverse repurchase agreements – non-trading	—	—	—	—	—	—	241,648	—	241,648
Financial investments	—	—	24,895	21,101	314,887	4,572	—	80,819	446,274
– treasury and other eligible bills	—	—	620	7,135	111,513	1,594	—	930	121,792
– debt securities	—	—	24,275	13,931	202,848	2,472	—	79,140	322,666
– equity securities	—	—	—	35	526	506	—	703	1,770
– other instruments	—	—	—	—	—	—	—	46	46
Prepayments, accrued income and other assets	—	10	43,443	829	5,978	26,463	—	59,848	136,571
Assets held for sale	—	—	—	—	—	3,411	—	—	3,411
Current tax assets	—	—	—	—	—	—	—	970	970
Interest in associates and joint ventures	—	—	—	—	56	29,131	—	422	29,609
Goodwill and intangible assets	—	—	—	—	—	—	—	20,622	20,622
Deferred tax	—	—	—	—	—	—	—	4,624	4,624
At 31 Dec 2021	7,328	5,201	146,641	91,355	889,005	1,045,721	461,872	310,816	2,957,939

Other risks

Insurance Manufacturing Operations Risk

We sell insurance products through a range of channels including our branches, insurance salesforces, direct channels and third-party distributors. The majority of sales are through an integrated bancassurance model that provides insurance products principally for customers with whom we have a banking relationship, although the proportion of sales through other sources such as independent financial advisers, tied agents and digital is increasing. For the insurance products we manufacture, the majority of sales are savings, universal life and protection contracts.

We choose to manufacture these insurance products in HSBC subsidiaries based on an assessment of operational scale and risk appetite. Manufacturing insurance allows us to retain the risks and rewards associated with writing insurance contracts by keeping part of the underwriting profit and investment income within the Group. We have life insurance manufacturing subsidiaries in eight markets, which are Hong Kong, Singapore, mainland China, France, the UK, Malta, Mexico and Argentina. We also have a life insurance manufacturing associate in India.

Where we do not have the risk appetite or operational scale to be an effective insurance manufacturer, we engage with a small number of leading external insurance companies in order to provide insurance products to our customers. These arrangements are generally structured with our exclusive strategic partners and earn the Group a combination of commissions, fees and a share of profits. We distribute insurance products in all of our geographical regions.

The insurance manufacturing subsidiaries are equity accounted in the regulatory consolidation and then deducted from CET1 capital subject to thresholds (amounts below the thresholds are risk-weighted). As a result, losses incurred by the insurance manufacturing subsidiaries do not directly impact the Group's regulatory capital position, except to the extent that they impair the ability of the insurance subsidiaries to make planned dividend payments, or where the deterioration of an insurance subsidiary's capital position requires capital support from the Group to address a shortfall, reducing the Group's regulatory capital supply. Therefore, the capital risk associated with our insurance manufacturing subsidiaries is assessed in the ICAAP based on their financial capacity to support the risks to which they are exposed, on a standalone basis. Capital adequacy is assessed on both an economic capital basis, and the relevant local insurance regulatory basis. The economic capital basis is largely aligned to European Solvency II regulations, other than in Hong Kong where this is based on the emerging Hong Kong risk based capital regulations.

Further details of the management of risks arising from the insurance manufacturing operations are provided on page 233 of the Annual Report and Accounts 2022.

Board Diversity

Diversity and inclusion are embedded within the culture of HSBC. The Board remains committed to having an inclusive culture that recognises the importance of gender, social and ethnic diversity, and the benefits gained from different perspectives.

This section outlines the key diversity and inclusion metrics for Board members and executive management as at 31 December 2022. This includes tenure, age, skills and experience, gender and ethnic representation.

The Financial Conduct Authority, in its capacity as the UK Listing Authority, introduced new rules during 2022 that require listed companies to publish information on female and ethnic heritage representation on the Board and in senior management within the *Annual Report and Accounts 2022*. The following tables outline the current gender and ethnic diversity of the HSBC Holdings Board and Group Executive Committee in advance of these requirements becoming applicable.

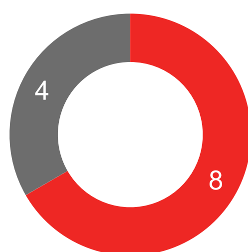
Board gender representation

HSBC Board adheres to its agreed principles for recruitment to the Board and its diversity and inclusion policy. Details of the Board members, their directorships, targets and achievements can be found in the *Annual Report and Accounts 2022* pages 240 to 243 and 308.

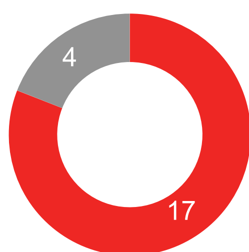
	Board members			Executive management	
	Number	%	Number of senior positions[1]	Number	%
Male	8	67	4	17	81
Female	4	33	0	4	19
Other	—	—	—	—	—
Not specified/prefer not to say	—	—	—	—	—

Gender

Board

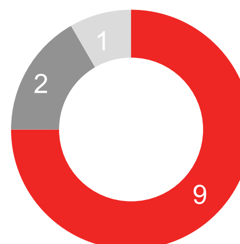


Executive management

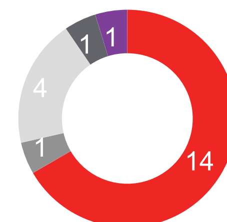


Ethnic diversity

Board



Executive management



	Board members			Executive management[2]	
	Number	%	Number of senior positions[1]	Number	%
White British or other White (including minority-White groups)	9	75	4	14	66
Mixed/multiple ethnic groups	0	—	0	1	5
Asian/Asian British	2	17	0	4	19
Black/African/Caribbean/ Black British	0		0	0	—
Other ethnic groups, including Arab	1	8	0	1	5
Not specified/prefer not to say	0		0	1	5

1 *Senior positions on the Board comprise the Group Chairman, Group Chief Executive, Group Chief Financial Officer and Senior Independent non-executive Director.*

2 *Executive management comprises the Group Chief Executive, his direct reports, and the Group Company Secretary and Chief Governance Officer.*

Further details of our diversity and inclusion activity, together with our Gender and Ethnicity Pay Gap Report 2022, can be found at www.hsbc.com/diversitycommitments.

Appendix I

Countercyclical capital buffer

The table below discloses the geographical distribution of credit exposures relevant to the calculation of the countercyclical buffer under Article 440 of CRR II. Countries or territories that have a CCyB requirement, or have an own funds requirement of greater than 0.7%, or that are material in nature are disclosed below.

Table 67: Geographical distribution of credit exposures relevant for the calculation of the countercyclical buffer (UK CCyB1)

	General credit exposures		Relevant credit exposures – Market risk		Securitisation exposures		Own funds requirements						
	SA	IRB	Sum of long/short positions for SA	Internal models	Total Exposure value for non-trading book	Total exposure value	Relevant credit risk exposures – Credit risk	Relevant credit exposures – Market risk	Securitisation positions in the non-trading book	Total	Risk weighted exposure amounts	Own funds requirements weights	CCyB rate
Country	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m	%	%
Australia	937	40,379	694	17	769	42,796	1,027	19	10	1,056	13,200	2.1	—
Bulgaria	1	13	—	1	—	15	—	—	—	—	—	—	1.00
Canada	776	70,429	—	10	188	71,403	2,062	4	3	2,069	25,850	4.1	—
China	25,526	66,571	316	604	1,285	94,302	6,246	16	15	6,277	78,475	12.5	—
Czech Republic	70	390	—	2	—	462	23	—	—	23	300	0.1	1.50
Denmark	1	1,833	—	26	—	1,860	72	2	—	74	925	0.2	2.00
Estonia	—	1	—	—	—	1	—	—	—	—	—	—	1.00
France	4,346	49,688	51	48	6,110	60,243	1,453	8	77	1,538	19,225	3.1	—
Germany	840	13,846	172	12	606	15,476	571	7	6	584	7,300	1.2	—
Hong Kong	22,358	347,602	—	297	—	370,257	11,165	20	—	11,185	139,813	22.2	1.00
Iceland	—	14	—	—	—	14	—	—	—	—	—	—	2.00
India	3,941	17,643	—	208	501	22,293	1,173	5	14	1,192	14,900	2.4	—
Indonesia	658	6,055	—	1	—	6,714	348	7	—	355	4,438	0.7	—
Luxembourg	1,323	7,167	3	11	—	8,504	361	2	—	363	4,538	0.7	0.50
Malaysia	2,539	11,869	—	9	—	14,417	647	4	—	651	8,138	1.3	—
Mexico	21,271	3,760	—	45	517.00	25,593	1,400	9	6	1,415	17,700	2.8	—
Netherlands	1,422	8,723	375	56	952.00	11,528	417	10	12	439	5,488	0.9	—
Norway	1	463	—	31	—	495	8	1	—	9	113	—	2.00
Romania	—	28	—	5	—	33	1	—	—	1	13	—	0.50
Saudi Arabia	20,912	3,354	—	112	—	24,378	1,536	18	—	1,554	19,425	3.1	—
Singapore	2,269	33,694	—	55	—	36,018	890	4	—	894	11,175	1.8	—
Slovakia	14	35	—	1	—	50	1	—	—	1	25	—	1.00
Sweden	6	1,113	—	17	—	1,136	30	1	—	31	388	0.1	1.00
United Arab Emirates	4,538	17,336	—	42	—	21,916	719	1	—	720	9,000	1.4	—
United Kingdom	13,967	349,536	935	324	12,002	376,764	9,010	50	248	9,308	116,350	18.5	1.00
United States	6,154	112,427	82	276	9,508	128,447	4,594	15	162	4,771	59,638	9.5	—
Other	32,114	114,883	1,036	926	962	149,921	5,706	119	14	5,839	72,933	11.6	—
Total	**165,984**	**1,278,852**	**3,664**	**3,136**	**33,400**	**1,485,036**	**49,460**	**322**	**567**	**50,349**	**629,350**	**100.0**	**—**

Table 68: Amount of institution-specific countercyclical capital buffer (UK CCyB2)

	2022
Total Risk Exposure Amount ($m)	839,720
Institution specific countercyclical capital buffer rate (%)	0.42
Institution specific countercyclical capital buffer requirement ($m)	3,527

Appendix II

Asset encumbrance

Table 69: Encumbered and unencumbered assets (UK AE1)[1]

		Carrying amount of encumbered assets		Fair value of encumbered assets		Carrying amount of unencumbered assets		Fair value of unencumbered assets	
		Total	*of which: notionally eligible EHQLA and HQLA*	Total	*of which: notionally eligible EHQLA and HQLA*	Total	*of which: EHQLA and HQLA*	Total	*of which: EHQLA and HQLA*
		010	*030*	040	*050*	060	080	090	*100*
		$m	*$m*	$m	*$m*	$m	$m	$m	*$m*
010	**Assets of the reporting institution**	**219,088**	***73,632***			**2,664,127**	***708,342***		
020	Loans on demand	**6,707**	**—**			**385,783**	***347,851***		
030	Equity instruments	**20,873**	***10,333***	**20,873**	***10,333***	**60,919**	***12,776***	**60,919**	***12,776***
040	Debt securities	**80,322**	***62,677***	**80,161**	***62,551***	**386,917**	***333,487***	**385,450**	***332,223***
050	– *of which:* *covered bonds*	***8***	**5**	***8***	**5**	***5,834***	**5,355**	***5,834***	**5,355**
060	*securitisations*	***—***	**—**	***—***		***4,018***	**1**	***4,006***	**1**
070	*issued by general governments*	***70,042***	**57,733**	***69,919***	**57,733**	***294,057***	**260,321**	***293,197***	**259,560**
080	*issued by financial corporations*	***7,090***	**3,822**	***7,089***	**3,822**	***49,805***	**40,229**	***49,404***	**40,229**
090	*issued by non-financial corporations*	***2,485***	**705**	***2,485***	**705**	***8,924***	**4,494**	***8,922***	**4,493**
120	Other assets	**111,186**	***622***			**1,830,508**	***14,228***		

Table 70: Collateral received and own debt securities issued (UK AE2)[1]

		Fair value of encumbered collateral received or own debt securities issued		Unencumbered Fair value of collateral received or own debt securities issued available for encumbrance	
		Total	*of which: notionally eligible EHQLA and HQLA*	Total	*of which: EHQLA and HQLA*
		010	*030*	040	*060*
		$m	*$m*	$m	*$m*
130	**Collateral received by the reporting institution**	**231,584**	***167,273***	**224,007**	***131,201***
140	Loans on demand	**—**		**—**	
150	Equity instruments	**23,431**	***10,236***	**26,614**	***10,813***
160	Debt securities	**208,153**	***157,037***	**197,393**	***120,388***
170	– *of which:* *covered bonds*	***492***	**492**	***316***	**252**
180	*securitisations*	***1,549***	**377**	***1,443***	**453**
190	*issued by general governments*	***173,798***	**141,712**	***141,976***	**92,677**
200	*issued by financial corporations*	***26,040***	**9,735**	***30,905***	**11,373**
210	*issued by non-financial corporations*	***5,726***	**4,297**	***18,597***	**10,553**
220	Loans and advances other than loans on demand	**—**	**—**	**—**	**—**
230	Other collateral received	**—**	**—**	**—**	**—**
240	**Own debt securities issued other than own covered bonds or securitisations**			**—**	
241	**Own covered bonds and asset-backed securities issued and not yet pledged**			**5,691**	**—**
250	**Total assets, collateral received and own debt securities issued**	**450,672**	***240,905***		

Table 71: Sources of encumbrance (UK AE3)[1]

		Matching liabilities, contingent liabilities or securities lent	Assets, collateral received and own debt securities issued other than covered bonds and securitisations encumbered
		010	030
		$m	$m
010	Carrying amount of selected financial liabilities	**274,879**	**351,512**

1 *The values in these tables are the average of quarterly data points in the year.*

Importance of encumbrance

We are a deposit-led bank and hence the majority of our funding is from customer current accounts and customer savings deposits payable on demand or at short notice. Given this structural unsecured funding position, we have little requirement to fund ourselves in secured markets, and therefore our overall low level of encumbrance reflects this position. However, we do provide collateralised financing services to clients as part of our GBM business model, providing cash financing or specific securities, and these result in off-balance sheet encumbrance.

The other sources that contribute to encumbrance are securities pledged in derivative transactions, mostly for hedging purposes, issuance of asset-backed securities, and covered bond programmes. HSBC Holdings ALCO reviews the asset encumbrance of the institution as a whole quarterly and any events changing the asset encumbrance level are examined.

For details on balance sheet encumbered and unencumbered assets, please refer to Table 89.

Appendix III

Summary of disclosures withheld

CRD IV reference	Description	Rationale
448(a)	Key assumptions (including assumptions regarding loan prepayments and behaviour of non-maturity deposits) on their exposure to interest rate risk on positions not included in the trading book.	Assumptions regarding fixed term loan repayments and term behaviouralisation of non-maturity deposits and capital drive HSBC's structural interest rates positioning and market hedging requirements. These assumptions are proprietary and their disclosure could give key business strategy information to our competitors.

Appendix IV

Mapping- Internal ratings to external ratings

Table below sets out IRB exposures by obligor grade for central governments and central banks, institutions and corporates, all of which are assessed using our 23-grade CRR master scale. We benchmark the master scale against the ratings of external rating agencies. Each CRR band is associated with an external rating grade by reference to long-run default rates for that grade, represented by the average of issuer-weighted historical default rates.

The correspondence between the agency long-run default rates and the PD ranges of our master scale is obtained by matching a smoothed curve based on those default rates with our master scale reference PDs. This association between internal and external ratings is indicative and may vary over time. In these tables, the ratings of S&P are cited for illustration purposes, although we also benchmark against other agencies' ratings in an equivalent manner.

Mapping- Internal ratings to external ratings

			Central governments and central banks	Institutions	Corporates[1]
Default risk	**CRR**	**PD range %**	**Mapped external rating**		
Minimal	0.1	0.000 to 0.010	AAA to AA	AAA	0
	1.1	0.011 to 0.028	AA- to A+	AA+ to AA	AAA to AA
	1.2	0.029 to 0.053	A to A-	AA-	AA-
Low	2.1	0.054 to 0.095	BBB+	A+ to A	A+ to A
	2.2	0.096 to 0.169	BBB	A-	A-
Satisfactory	3.1	0.170 to 0.285	BBB-	BBB+	BBB+
	3.2	0.286 to 0.483	BBB-	BBB	BBB
	3.3	0.484 to 0.740	BB+/BB	BBB-	BBB-
Fair	4.1	0.741 to 1.022	BB-	BB+	BB+
	4.2	1.023 to 1.407	B+	BB	BB
	4.3	1.408 to 1.927	B+	BB-	BB-
Moderate	5.1	1.928 to 2.620	B+	BB-	BB-
	5.2	2.621 to 3.579	B	B+	B+
	5.3	3.580 to 4.914	B	B	B
Significant	6.1	4.915 to 6.718	B-	B-	B-
	6.2	6.719 to 8.860	B-	B-	B-
High	7.1	8.861 to 11.402	B-	CCC+	CCC+
	7.2	11.403 to 15.000	CCC+	CCC+	CCC+
Special Management	8.1	15.001 to 22.000	CCC+	CCC	CCC
	8.2	22.001 to 50.000	CCC	CCC- to CC	CCC- to CC
	8.3	50.001 to 99.999	CCC- to C	C	C
Default	9/10	100.000	Default	Default	Default

1 *Corporates excludes specialised lending exposures subject to supervisory slotting approach.*

Other Information

Abbreviations

The following abbreviated terms are used throughout this document.

Currencies

$	United States dollar
A	
ABCP	Asset-backed commercial paper
ABS[1]	Asset-backed security
AIRB[1]	Advanced internal ratings based approach
ALCO	Asset and Liability Management Committee
AT1 capital	Additional tier 1 capital
AVA	Additional value adjustment
B	
Basel	Basel Committee on Banking Supervision
BoE	Bank of England
C	
CCB[1]	Capital conservation buffer
CCP[1]	Central counterparty
CCR[1]	Counterparty credit risk
CCyB[1]	Countercyclical capital buffer
CDS[1]	Credit default swap
CET1[1]	Common equity tier 1
CIU	Collective investment undertakings
CMB	Commercial Banking, a global business
CML[1]	Consumer and Mortgage Lending (US)
CRA	Credit risk adjustment
CRD IV[1]	Capital Requirements Regulation and Directive
CRE[1]	Commercial real estate
CRM[1]	Credit risk mitigation/mitigant
CRR[1]	Customer risk rating
CRR II	Revised Capital Requirements Regulation, as implemented
CRCO	Chief Risk and Compliance Officer
CSA[1]	Credit Support Annex
CVA[1]	Credit valuation adjustment
CVC	Conduct and Values Committee
D	
D-SIB	Domestic systemically important bank
DECL	Disclosure of expected credit losses
E	
EAD[1]	Exposure at default
EBA	European Banking Authority
EC	European Commission
ECA	Export Credit Agency
ECAI	External Credit Assessment Institution
ECL[1]	Expected Credit Losses
EEA	European Economic Area
EL[1]	Expected loss
EHQLA	Extremely high-quality liquid assets
EU	European Union
EVE	Economic value of equity
F	
FFVA	Funding Fair Value Adjustment
Fitch	Fitch Ratings
FPC[1]	Financial Policy Committee (UK)
FRTB	Fundamental Review of the Trading book
FSB	Financial Stability Board
FSVC	Financial System Vulnerabilities Committee
FVOCI[1]	Fair value through other comprehensive income
FIRB	Foundation internal rating based approach
G	
GAC	Group Audit Committee
GBM	Global Banking and Markets, a global business
GEC	Group Executive Committee
GRC	Group Risk Committee
Group	HSBC Holdings together with its subsidiary undertakings
G-SIB[1]	Global systemically important bank
G-SII	Global systemically important institution
H	
HKMA	Hong Kong Monetary Authority
Hong Kong	The Hong Kong Special Administrative Region of the People's Republic of China
HQLA	High-quality liquid assets
HSBC	HSBC Holdings together with its subsidiary undertakings
HVCRE	High volatility commercial real estate
I	
IAA	Internal assessment approach
ICAAP[1]	Internal capital adequacy assessment process
ICG	Individual capital guidance
ICR	Individual capital requirement
IFRSs	International Financial Reporting Standards
ILAAP	Individual liquidity adequacy assessment
ILR	Inherent Liquidity Risk
IMM[1]	Internal model method
IMR	Independent Model Review
IRB[1]	Internal ratings-based approach
IRRBB	Interest rate risk in the banking book
IRC	Incremental risk charge
L	
LCR[1]	Liquidity coverage ratio
LFRF	Liquidity and funding risk framework
LGD[1]	Loss given default
Libor	London interbank offered rate
M	
MDB	Multilateral Development Bank
MENA	Middle East and North Africa
MOC	Model Oversight Committee
Moody's	Moody's Investor Service
MPE	Multiple point of entry
MREL	Minimum requirements for own funds and eligible liabilities
MRM	Model Risk Management
N	
NCOA	Non-credit obligation asset
NPL	Non-performing loans
NSFR[1]	Net stable funding ratio
O	
ORMF	Operational risk management framework
OTC[1]	Over-the-counter
P	
PD[1]	Probability of default
PFE	Potential future exposure
PIT	Point-in-time
POCI	Purchased or originated credit impaired loans
PPE	Property, plant and equipment
PRA[1]	Prudential Regulation Authority (UK)
PVA	Prudent valuation adjustment
Q	
QCCP	Qualifying central counterparty
R	
RAF	Resolvability Assessment Framework
RAS	Risk appetite statement
RBM[1]	Ratings Based Method
RBWM	Retail Bank and Wealth Management, a former global business now part of Wealth and Personal Banking
Retail IRB[1]	Retail internal ratings-based approach
RMM	Group Risk Management Meeting
RNIV	Risks not in VaR
ROU	Right of use
RWA	Risk-weighted asset

S	
SA/STD[1]	Standardised approach
SA-CCR	Standardised approach for counterparty credit risk
S&P	Standard and Poor's rating agency
SEC-ERBA	Securitisation external rating-based approach
SEC-IRBA	Securitisation internal rating-based approach
SEC-SA	Securitisation standardised approach
SFM	Supervisory Formula Method
SFT	Securities financing transactions
SIC	Securities Investment Conduit
SME	Small and medium-sized enterprise
SPE[1]	Special purpose entity
SRB[1]	Systemic risk buffer
SREP	Supervisory review and evaluation process
SSFA/SFA	Simplified supervisory formula approach
SVaR	Stressed Value at risk
T	
TCFD	Task Force on Climate-related Financial Disclosures
TLAC[1]	Total Loss Absorbing Capacity
TTC	Through-the-cycle
T1 capital[1]	Tier 1 capital
T2 capital[1]	Tier 2 capital
U	
UK	United Kingdom
US	United States
V	
VaR[1]	Value at risk
W	
WPB	Wealth and Personal Banking, a global business

1 *Full definition included in the Glossary published on HSBC website www.hsbc.com*

Cautionary statement regarding forward-looking statements

The *Pillar 3 Disclosures at 31 December 2022* contains certain forward-looking statements with respect to HSBC's financial condition, results of operations, capital position and business.

Statements that are not historical facts, including statements about HSBC's beliefs and expectations, are forward-looking statements. Words such as 'may', 'will', 'should', 'expects', 'targets', 'anticipates', 'intends', 'plans', 'believes', 'seeks', 'estimates', 'potential' and 'reasonably possible', or the negative thereof, other variations thereon or similar expressions are intended to identify forward-looking statements. These statements are based on current plans, information, data, estimates and projections, and therefore undue reliance should not be placed on them. Forward-looking statements speak only as of the date they are made. HSBC makes no commitment to revise or update any forward-looking statements to reflect events or circumstances occurring or existing after the date of any forward-looking statements. Written and/or oral forward-looking statements may also be made in the periodic reports to the US Securities and Exchange Commission, summary financial statements to shareholders, proxy statements, offering circulars and prospectuses, press releases and other written materials, and in oral statements made by HSBC's Directors, officers or employees to third parties, including financial analysts. Forward-looking statements involve inherent risks and uncertainties. Readers are cautioned that a number of factors could cause actual results to differ, in some instances materially, from those anticipated or implied in any forward-looking statement. These include, but are not limited to:

- changes in general economic conditions in the markets in which we operate, such as new, continuing or deepening recessions, prolonged inflationary pressures and fluctuations in employment and creditworthy customers beyond those factored into consensus forecasts (including, without limitation, as a result of the Russia-Ukraine war and, to a lesser extent, the Covid-19 pandemic); the Russia-Ukraine war and the Covid-19 pandemic and their impact on global economies and the markets where HSBC operates, which could have a material adverse effect on (among other things) our financial condition, results of operations, prospects, liquidity, capital position and credit ratings; deviations from the market and economic assumptions that form the basis for our ECL measurements (including, without limitation, as a result of the Russia-Ukraine war, inflationary pressures and the Covid-19 pandemic); potential changes in HSBC's dividend policy; changes in foreign exchange rates and interest rates, including the accounting impact resulting from financial reporting in respect of hyperinflationary economies; volatility in equity markets; lack of liquidity in wholesale funding or capital markets, which may affect our ability to meet our obligations under financing facilities or to fund new loans, investments and businesses; geopolitical tensions or diplomatic developments producing social instability or legal uncertainty, such as the Russia-Ukraine war (including the continuation and escalation thereof) and the related imposition of sanctions and trade restrictions, supply chain restrictions and disruptions, sustained increases in energy prices and key commodities, claims of human rights violations, diplomatic tensions, including between China and the US, the UK, the EU, India and other countries, and developments in Hong Kong and Taiwan, alongside other potential areas of tension, which may adversely affect HSBC by creating regulatory, reputational and market risks; the efficacy of government, customer, and HSBC's actions in managing and mitigating ESG risks, in particular climate risk, nature-related risks and human rights risks, and in supporting the global transition to net zero carbon emissions, each of which can impact HSBC both directly and indirectly through our customers and which may result in potential financial and non-financial impacts; illiquidity and downward price pressure in national real estate markets; adverse changes in central banks' policies with respect to the provision of liquidity support to financial markets; heightened market concerns over sovereign creditworthiness in over-indebted countries; adverse changes in the funding status of public or private defined benefit pensions; societal shifts in customer financing and investment needs, including consumer perception as to the continuing availability of credit; exposure to counterparty risk, including third parties using us as a conduit for illegal activities without our knowledge; the discontinuation of certain key Ibors and the development of near risk-free benchmark rates, as well as the transition of legacy Ibor contracts to near risk-free benchmark rates, which exposes HSBC to material execution risks, including in relation to the effectiveness of its Ibor remediation strategy, and increases some financial and non-financial risks; and price competition in the market segments we serve;
- changes in government policy and regulation, including the monetary, interest rate and other policies of central banks and other regulatory authorities in the principal markets in which we operate and the consequences thereof (including, without limitation, actions taken as a result of the impact of the Russia-Ukraine war on inflation and as a result of the Covid-19 pandemic); initiatives to change the size, scope of activities and interconnectedness of financial institutions in connection with the implementation of stricter regulation of financial institutions in key markets worldwide; revised capital and liquidity benchmarks, which could serve to deleverage bank balance sheets and lower returns available from the current business model and portfolio mix; changes to tax laws and tax rates applicable to HSBC, including the imposition of levies or taxes designed to change business mix and risk appetite; the practices, pricing or responsibilities of financial institutions serving their consumer markets; expropriation, nationalisation, confiscation of assets and changes in legislation relating to foreign ownership; the UK's relationship with the EU, which continues to be characterised by uncertainty and political disagreement, particularly with respect to the regulation of financial services, despite the signing of the Trade and Cooperation Agreement between the UK and the EU; changes in UK macroeconomic and fiscal policy as a result of the change in UK government leadership, which may result in fluctuations in the value of the pound sterling; general changes in government policy that may significantly influence investor decisions; the costs, effects and outcomes of regulatory reviews, actions or litigation, including any additional compliance

requirements; and the effects of competition in the markets where we operate including increased competition from non-bank financial services companies; and

- factors specific to HSBC, including our success in adequately identifying the risks we face, such as the incidence of loan losses or delinquency, and managing those risks (through account management, hedging and other techniques); our ability to achieve our financial, investment, capital and ESG targets, commitments and ambitions (including with respect to the commitments set forth in our thermal coal phase-out policy and our energy policy and our targets to reduce our on-balance sheet financed emissions in eight high-emitting sectors), which may result in our failure to achieve any of the expected benefits of our strategic priorities; model limitations or failure, including, without limitation, the impact that high inflationary pressures, rising interest rates and the consequences of the Covid-19 pandemic have had on the performance and usage of financial models, which may require us to hold additional capital, incur losses and/or use compensating controls, such as judgemental post-model adjustments, to address model limitations; changes to the judgements, estimates and assumptions we base our financial statements on; changes in our ability to meet the requirements of regulatory stress tests; a reduction in the credit ratings assigned to us or any of our subsidiaries, which could increase the cost or decrease the availability of our funding and affect our liquidity position and net interest margin; changes to the reliability and security of our data management, data privacy, information and technology infrastructure, including threats from cyber-attacks, which may impact our ability to service clients and may result in financial loss, business disruption and/or loss of customer services and data; the accuracy and effective use of data, including internal management information that may not have been independently verified, changes in insurance customer behaviour and insurance claim rates; our dependence on loan payments and dividends from subsidiaries to meet our obligations; changes in accounting standards, including the implementation of IFRS 17 'Insurance Contracts', which may have a material impact on the way we prepare our financial statements and (with respect to IFRS 17) may negatively affect the profitability of HSBC's insurance business; changes in our ability to manage third-party, fraud and reputational risks inherent in our operations; employee misconduct, which may result in regulatory sanctions and/or reputational or financial harm; changes in skill requirements, ways of working and talent shortages, which may affect our ability to recruit and retain senior management and diverse and skilled personnel; and changes in our ability to develop sustainable finance and climate-related products consistent with the evolving expectations of our regulators, and our capacity to measure the climate impact from our financing activity (including as a result of data limitations and changes in methodologies), which may affect our ability to achieve our climate ambition, our targets to reduce financed emissions in our high-emitting sectors portfolio and the commitments set forth in our thermal coal phase-out policy and our energy policy, and increase the risk of greenwashing. Effective risk management depends on, among other things, our ability through stress testing and other techniques to prepare for events that cannot be captured by the statistical models it uses; our success in addressing operational, legal and regulatory, and litigation challenges; and other risks and uncertainties we identify in 'Top and emerging risks' on pages 135 to 142 of the *Annual Report and Accounts 2022*.

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