HSBC Holdings plc

Pillar 3 Disclosures at 31 December 2021

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.

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The Group has adopted the EU's regulatory transitional arrangements for International Financial Reporting Standard ('IFRS') 9 Financial instruments. A number of tables in this document report under this arrangement as follows:

a. Some figures (indicated with ^) within the table have been prepared on an IFRS 9 transitional basis.

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

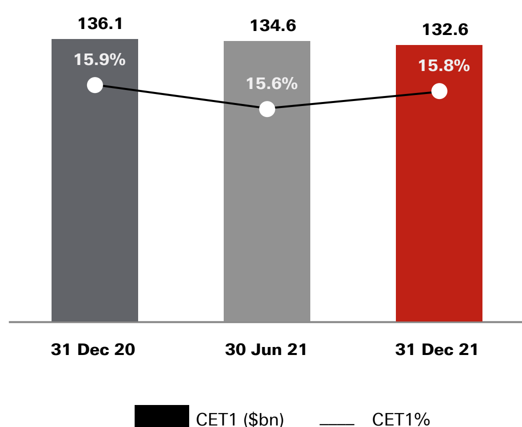
All other tables report numbers on the basis of full adoption of IFRS 9.

Introduction

Highlights

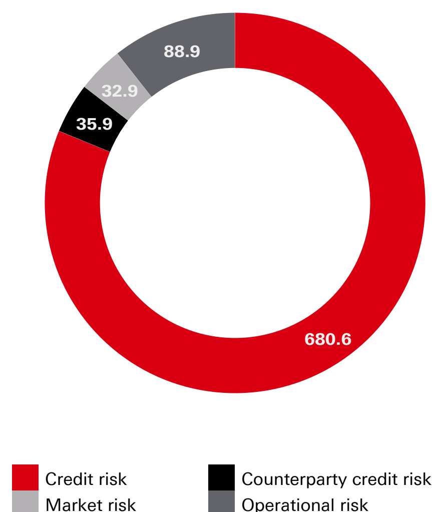
Common equity tier 1 ratio ('CET1') of 15.8%, down 0.1 percentage points from 15.9% at 31 December 2020. Capital generation was more than offset by dividends, the up to $2bn share buy-back announced in October, foreign exchange movements and other deductions. Risk-weighted assets ('RWAs') fell due to the saves programme and favourable movements in asset quality, which more than offset increases due to lending growth and regulatory change.

Common equity tier 1: $bn and %[1]

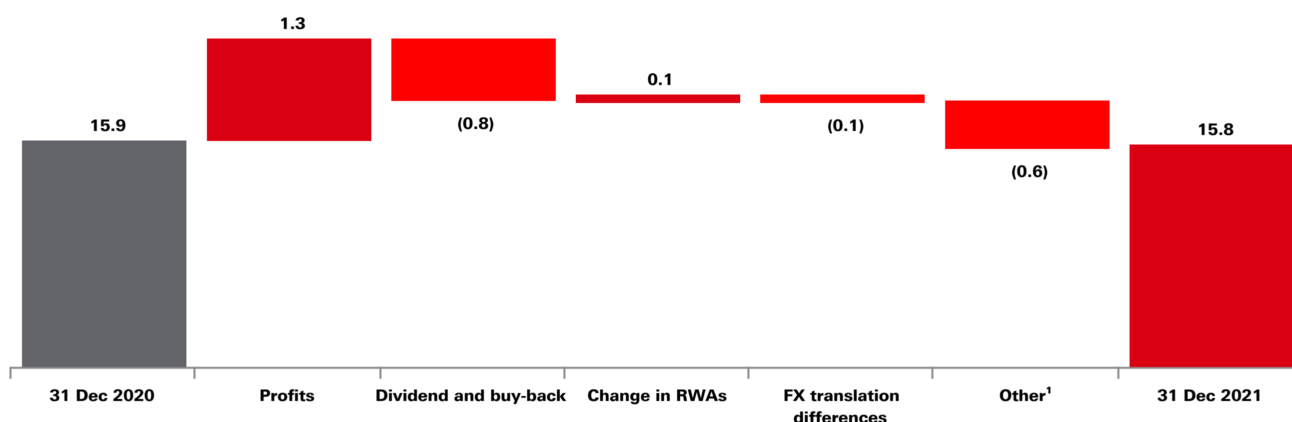


1 *Capital figures and ratios are reported on a CRR II transitional basis for capital instruments.*

Risk-weighted assets by risk type at 31 December 2021 ($bn)



Common equity tier 1 ratio movement, %



1 *Includes movements in fair value through other comprehensive income reserve (0.3)%, deductions for excess expected loss (0.2)% and investments in financial sector entities (0.2)%.*

Key metrics

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

Ref*		At				
		31 Dec 2021	30 Sep 2021	30 Jun 2021	31 Mar 2021	31 Dec 2020
	Available capital ($bn)[1]					
1	Common equity tier 1 (‘CET1’) capital^	**132.6**	133.2	134.6	134.5	136.1
2	CET1 capital as if IFRS 9 transitional arrangements had not been applied	**131.8**	132.5	133.8	133.6	134.9
3	Tier 1 capital^	**156.3**	156.9	158.3	160.2	160.2
4	Tier 1 capital as if IFRS 9 transitional arrangements had not been applied	**155.5**	156.2	157.5	159.3	159.0
5	Total regulatory capital^	**177.8**	179.0	181.1	183.1	184.4
6	Total capital as if IFRS 9 transitional arrangements had not been applied	**177.0**	178.3	180.3	182.2	183.2
	Risk-weighted assets (‘RWAs’) ($bn)					
7	Total RWAs	**838.3**	839.2	862.3	846.8	857.5
8	Total RWAs as if IFRS 9 transitional arrangements had not been applied	**837.4**	838.6	861.5	846.1	856.6
	Capital ratios (%)[1]					
9	CET1^	**15.8**	15.9	15.6	15.9	15.9
10	CET1 as if IFRS 9 transitional arrangements had not been applied	**15.7**	15.8	15.5	15.8	15.7
11	Tier 1^	**18.6**	18.7	18.4	18.9	18.7
12	Tier 1 as if IFRS 9 transitional arrangements had not been applied	**18.6**	18.6	18.3	18.8	18.6
13	Total capital^	**21.2**	21.3	21.0	21.6	21.5
14	Total capital as if IFRS 9 transitional arrangements had not been applied	**21.1**	21.3	20.9	21.5	21.4
	Additional CET1 buffer requirements as a percentage of RWA (%)					
	Capital conservation buffer requirement	**2.5**	2.5	2.5	2.5	2.5
	Countercyclical buffer requirement	**0.2**	0.2	0.2	0.2	0.2
	Bank G-SIB and/or D-SIB additional requirements	**2.0**	2.0	2.0	2.0	2.0
	Total of bank CET1 specific buffer requirements	**4.7**	4.7	4.7	4.7	4.7
	Total capital requirement (%)[2]					
	Total capital requirement	**10.7**	11.0	10.9	11.0	11.0
	CET1 available after meeting the bank’s minimum capital requirements	**9.8**	9.7	9.5	9.7	9.7
	Leverage ratio[3]					
15	Total leverage ratio exposure measure ($bn)^	**2,962.7**	2,964.8	2,968.5	2,930.2	2,897.1
16	Leverage ratio (%)^	**5.2**	5.2	5.3	5.4	5.5
17	Leverage ratio as if IFRS 9 transitional arrangements had not been applied (%)	**5.2**	5.2	5.3	5.4	5.4
	Liquidity Coverage Ratio (‘LCR’)[4]					
	Total high-quality liquid assets ($bn)	**717.0**	664.0	659.3	695.10	677.90
	Total net cash outflow ($bn)	**518.0**	490.2	493.7	487.0	487.3
	LCR ratio (%)	**138.4**	135.5	133.5	142.7	139.1

* *The references in this and subsequent tables identify the lines prescribed in the EBA 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 using the CRR II transitional basis for capital instruments.*

2 *Total capital requirement is defined as the sum of Pillar 1 and Pillar 2A capital requirements set by the UK Prudential Regulation Authority (‘PRA’). The minimum requirements represent the total capital requirement to be met by CET1.*

3 *Leverage ratio is calculated using the CRR II end point basis for capital instruments.*

4 *The EU’s regulatory transitional arrangements for IFRS 9 in article 473a of the Capital Requirements Regulation do not apply to liquidity coverage measures. LCR is calculated as at the end of each period rather than using average values.*

We have adopted the regulatory transitional arrangements in the amendments to the Capital Requirements Regulation (‘CRR II’) for IFRS 9, including paragraph four of article 473a. These allow banks to add back to their capital base a proportion of the impact that IFRS 9 has upon their loan loss allowance. The impact 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 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 enacted in June 2020 increased from 70% to 100% the relief that banks may take for loan loss allowances recognised since 1 January 2020 on the non-credit-impaired book.

At 31 December 2021, the add-back to CET1 capital amounted to $1.0bn under the STD approach with a tax impact of $0.2bn. This resulted in a net add-back of $0.8bn.

Where applicable, our reporting throughout this document also reflects government relief schemes intended to mitigate the impact of the Covid-19 pandemic.

Pillar 3 disclosures

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 adequacy of, and sets capital 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 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 reporting 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 and/or directive, as onshored into UK law under the European Union (Withdrawal) Act 2018, and as may be subsequently amended under UK law.

The regulators of the Group's banking entities outside the EU are at varying stages of implementation of Basel's framework, so local regulation in 2021 may have been on the basis of Basel I, II or III.

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 condition, risk exposures and risk management processes, and hence their capital adequacy.

Our Pillar 3 Disclosures at 31 December 2021 comprises both quantitative and qualitative information required under Pillar 3. The disclosures are made in accordance with Part Eight of CRR II and the European Banking Authority's ('EBA') guidelines on disclosure requirements. These disclosures are supplemented by specific additional requirements of the PRA and discretionary disclosures on our part.

The Pillar 3 disclosures are governed by the Group's disclosure policy framework as approved by the Group Audit Committee ('GAC'). Information relating to the rationale for withholding certain disclosures is provided in Appendix IV.

Comparatives and references

To give insight into movements during the year, we provide comparative figures for the previous year or period, analytical review of 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 of the Capital Requirements Regulation. Table name references and row numbering in tables identify those prescribed in the relevant EBA guidelines where applicable and where there is a value.

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

Frequency and location

We publish comprehensive Pillar 3 disclosures annually and at interim on our website www.hsbc.com, concurrently with the release of our Annual Report and Accounts and Interim Report. Quarterly earnings releases also include regulatory information in line with the guidelines on the frequency of regulatory disclosures. 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 2021* or other locations. We continue to engage in the work of the UK authorities and industry associations to improve the transparency and comparability of UK banks' Pillar 3 disclosures.

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 135 of the *Annual Report and Accounts 2021*. This includes:

- Credit risk (refer to page 137 of the *Annual Report and Accounts 2021*)
- Treasury risk (refer to page 189 of the *Annual Report and Accounts 2021*)
- Market risk (refer to page 203 of the *Annual Report and Accounts 2021*)
- Resilience risk (refer to page 207 of the *Annual Report and Accounts 2021*)
- Regulatory compliance risk (refer to page 208 of the *Annual Report and Accounts 2021*)
- Financial crime and fraud risk (refer to page 208 of the *Annual Report and Accounts 2021*)
- Model risk (refer to page 209 of the *Annual Report and Accounts 2021*)
- Insurance manufacturing operations risk (refer to page 210 of the *Annual Report and Accounts 2021*)

Further information on Climate Risk can be found on page 125 of the *Annual Report and Accounts 2021*.

Capital buffers

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

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 254 of the *Annual Report and Accounts 2021*.

Regulatory developments

Amendments to the Capital Requirements Regulation ('CRR II') and the Basel III Reforms

The Basel Committee on Banking Supervision ('Basel') completed the Basel III Reforms in July 2020 when it published the final revisions to the credit valuation adjustment ('CVA') framework. In the UK, a two stage approach to implementation has been adopted for these changes.

The CRR II represents the first tranche of changes to implement the Basel III Reforms, including the changes to the market risk rules under the Fundamental Review of the Trading Book, the standardised approach for measuring counterparty risk, the equity investments in funds rules, the amendments to the large exposures rules, the new leverage ratio rules and the implementation of the net stable funding ratio ('NSFR'). With the exception of the changes to the market risk framework, the CRR II was implemented in the UK on 1 January 2022. The market risk changes will be implemented with the remainder of the Basel III Reforms.

The remaining reforms are scheduled for implementation by Basel on 1 January 2023. These include the changes to the RWA rules on credit risk, market risk, operational risk and credit valuation adjustments, and the implementation of an RWA floor based upon the standardised approach. Given the PRA is not expected to consult on these other elements until the second half of 2022, this increases the likelihood that the UK's implementation will be delayed.

The UK's withdrawal from the EU

In 2020, the PRA granted transitional provisions which allowed firms to delay the effect of any rule changes arising from the UK's withdrawal from the EU, with limited exceptions, until 31 March 2022.

Credit risk

In order to address concerns about the variability and comparability of RWAs under the IRB approach, the EU developed a series of amendments to the framework, known as the IRB repair package. The majority of these were developed and finalised while the UK was a member of the EU and therefore were implemented in the UK by the PRA on 1 January 2022. However, there were some elements of the EU's package that were not in force when the UK ceased to be subject to EU law. These include the EU's technical standards on economic downturns, the European Banking Authority's ('EBA') guidelines on credit risk mitigation for the advanced IRB ('A-IRB') approach, and the EU's final technical standards on risk-weighting specialised lending exposures.

The PRA has confirmed that it would not be implementing the technical standards on specialised lending. Similarly, it will not implement the EBA's guidelines on credit risk mitigation in the A-IRB approach in 2022, although it may consider reflecting the guidelines as part of its implementation of the Basel III Reforms.

In July 2021, the PRA published its final policy on the flooring of risk weights of UK mortgages subject to the IRB approach. From 1 January 2022, exposures to UK residential mortgages, excluding those in default, are subject to an exposure-weighted average portfolio risk weight of at least 10%.

Capital buffers

The Financial Policy Committee ('FPC') in its December 2021 Financial Stability Report confirmed that it is increasing the UK's countercyclical capital buffer rate from 0% to 1%. This rate will come into effect on 13 December 2022 in line with the usual 12-month implementation period. Absent a material change in the outlook for UK's financial stability, the FPC expects to increase the rate further to 2% in the second quarter of 2022, which would take effect 12 months later.

Capital and reporting impacts

The PRA has confirmed that software assets are deducted in full from CET1 capital, starting 1 January 2022. This reverses the beneficial changes to the treatment of software assets that were implemented as part of the EU's response to the Covid-19 pandemic. As a result, the CET1 capital ratio will reduce by approximately 25bps.

Overall, we expect RWAs to increase by around 3% as a result of changes in regulations during 2022. These include the changes to the UK's version of the CRR II, as well as other regulatory statements including changes to IRB modelling requirements and the expiry of transitional provisions in relation to the UK's withdrawal from the EU. The CRR II changes, including the PRA's new rules on NSFR, counterparty credit risk, equity investment in funds, and leverage ratio, will be reflected in disclosures starting in the first quarter of 2022.

Further changes will occur with the introduction of the remaining Basel III Reforms on which the PRA is expected to consult in the second half of 2022. We currently do not foresee a material net impact on initial implementation. The RWA output floor under the Basel III reforms will be subject to a five-year transitional provision. Any impact from the output floor would be towards the end of the transition period.

Based on our capital position at 31 December 2021, we would expect that the proposed classification of our retail banking operations in France as being held for sale would reduce our CET1 ratio by around 30bps. Separately, our recent strategic actions are likely to lead to a fall in our CET1 ratio of around 15bps, of which we expect approximately half will occur in the first quarter of 2022. These actions include the acquisitions of AXA Singapore, L&T Investment Management and HSBC Life China, and the exit of mass market retail banking in the US.

Environmental, social and governance ('ESG') risk

Globally, regulators and standard setters continue to publish multiple proposals and discussion papers on ESG topics. These include publications in the UK by Her Majesty's Treasury ('HMT'), the Department for Business, Energy and Industrial Strategy, and the Financial Conduct Authority ('FCA') on the implementation of climate-related financial disclosures that are aligned to the Taskforce on Climate-related Financial Disclosure ('TCFD'). This work is supported by the development of green taxonomies by bodies such as the newly-formed Green Technical Advisory Group in the UK. Further work by the TCFD included new disclosure guidance on metrics, targets and transition plans.

In June 2021, the Bank of England ('BoE') launched the climate biennial exploratory scenario exercise. This aims to test the resilience of financial institutions and their business models to transition and physical risks depending upon the speed of government policy action. The impact is based on an end-2020 static balance sheet and is assumed to take place over the period 2021 to 2050 focusing on credit risk. The BoE is expected to publish the results of the exercise in May 2022.

In October 2021, HMT published a Roadmap setting out the government's long-term ambition to green the financial system and align it with the UK's net zero commitment. This included the planned implementation of sustainable disclosure requirements and the implementation of a UK green taxonomy subject to consultation in the first quarter of 2022.

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. We continue to actively review and develop our risk management framework and enhance our approach to managing risk, through our activities with regard to: people and capabilities; governance; reporting and management information; credit risk management models; and data.

Further information on our risk management framework is set out on page 122 of the Annual Report and Accounts 2021*. The management and mitigation of principal risks facing the Group is described in our top and emerging risks on page 124 of the* Annual Report and Accounts 2021*.*

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, values and standards that shape behaviours 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 281 of the Annual Report and Accounts 2021*.*

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 249 to 253 of the Annual Report and Accounts 2021*.*

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.

Further information is available on page 208 of the Annual Report and Accounts 2021*.*

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 123 of the Annual Report and Accounts 2021*.*

Risk appetite

Risk appetite is a key component of our management of risk. It describes the type and quantum of risk that the Group is willing to accept in achieving its strategic goals. 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 informs our strategic and financial planning process, defining the desired forward-looking risk profile of the Group. 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 121 of the Annual Report and Accounts 2021*.*

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 our capital and liquidity strength 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 123 of the Annual Report and Accounts 2021*.*

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.

We merged our Group Risk and Compliance functions on 1 July 2021 to take an increasingly comprehensive view of risk, and enhance cross-discipline collaboration on key areas such as fraud, credit and conduct risk. This merger did not have an impact on our policies and practices regarding the management of risk. Led by the Group Chief Risk and Compliance Officer, this merged function 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 123 of the Annual Report and Accounts 2021*.*

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 249 of the Annual Report and Accounts 2021*, 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. Notably, the PRA published a Dear CEO letter addressed to UK regulated banks, which highlighted areas of concern over the processes firms use to deliver regulatory returns. Recent sanctions issued by the PRA demonstrate their intent in this respect. We are progressing with a comprehensive programme to strengthen our processes, improve consistency, and enhance controls on various aspects of regulatory reporting. We have commissioned a number of independent external reviews, some at the request of our regulators, including one on our credit risk RWA reporting process, which is currently ongoing. As a result of these initiatives, there may be an impact on some of our regulatory ratios, such as the CET1 and LCR.

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 continue to invest significant resources in IT systems and processes in order to maintain and improve our risk management capabilities. Group standards govern the procurement and operation of systems used in our subsidiaries to process risk information within business lines and risk functions.

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 formulate 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 toward 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, Finance and global businesses. 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. We have significantly enhanced our model risk management practices over the last two years and continue to invest in developing and embedding these capabilities.

Further information is available on page 209 of the Annual Report and Accounts 2021.

Linkage to the Annual Report and Accounts 2021

Structure of the regulatory group

Assets, liabilities and post-acquisition reserves of subsidiaries engaged in insurance activities are excluded from the regulatory consolidation. Our investments in these insurance subsidiaries are recorded at cost and deducted from CET1 capital, subject to thresholds.

The regulatory consolidation also excludes 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, profit and loss, and risk-weighted assets in accordance with the PRA's application of EU legislation. Non-participating significant investments are deducted from capital, subject to thresholds. The Group has a 19.03% investment in Bank of Communications Co., Limited ('BoCom'). This is recognised as a significant investment in a financial sector entity, subject to the threshold deduction tests, and goodwill is fully deducted from Group's CET1. This treatment is consistent with the equity method accounting.

Table 2: Reconciliation of balance sheets – financial accounting to regulatory scope of consolidation

	Ref †	Accounting balance sheet $m	Deconsolidation of insurance/ other entities $m	Consolidation of banking associates $m	Regulatory balance sheet $m
Assets					
Cash and balances at central banks		403,018	(2)	304	403,320
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		248,842	(4,140)	—	244,702
Financial assets designated and otherwise mandatorily measured at fair value through profit or loss		49,804	(40,911)	972	9,865
– *of which: debt securities eligible as tier 2 issued by Group Financial Sector Entities (‘FSEs’) that are outside the regulatory scope of consolidation*	*s*	—	*609*	—	*609*
Derivatives		196,882	48	121	197,051
Loans and advances to banks	k	83,136	(2,311)	1,443	82,268
Loans and advances to customers	k	1,045,814	(784)	13,514	1,058,544
– *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*	*(9,156)*	—	—	*(9,156)*
Reverse repurchase agreements – non-trading		241,648	1,693	25	243,366
Financial investments		446,274	(73,293)	5,344	378,325
– *of which: lending eligible as tier 2 to Group FSEs outside the regulatory scope of consolidation*	*s*	—	*366*	—	*366*
Capital invested in insurance and other entities		—	2,619	—	2,619
Prepayments, accrued income and other assets		139,982	(6,792)	695	133,885
– *of which: retirement benefit assets*	*j*	*10,269*	—	—	*10,269*
Current tax assets		970	(2)	12	980
Interests in associates and joint ventures		29,609	(422)	(5,380)	23,807
– *of which: positive goodwill on acquisition*	*e*	*531*	*(12)*	—	*519*
Goodwill and intangible assets	*e*	20,622	(9,813)	902	11,711
Deferred tax assets	*f*	4,624	190	90	4,904
Total assets at 31 Dec 2021		**2,957,939**	**(133,920)**	**18,042**	**2,842,061**
Liabilities and equity					
Hong Kong currency notes in circulation		42,578	—	—	42,578
Deposits by banks		101,152	(22)	1,536	102,666
Customer accounts		1,710,574	4,693	14,883	1,730,150
Repurchase agreements – non-trading		126,670	(32)	48	126,686
Items in course of transmission to other banks		5,214	—	—	5,214
Trading liabilities		84,904	—	—	84,904
Financial liabilities designated at fair value		145,502	(4,700)	—	140,802
– *of which:*					
included in tier 1	*n*	—	—	—	—
included in tier 2	*p, r, i*	*10,100*	—	—	*10,100*
Derivatives		191,064	59	163	191,286
– *of which: debit valuation adjustment*	*i*	*71*	—	—	*71*
Debt securities in issue		78,557	(1,213)	—	77,344
Accruals, deferred income and other liabilities		123,778	(3,576)	873	121,075
Current tax liabilities		698	(182)	59	575
Liabilities under insurance contracts		112,745	(112,745)	—	—
Provisions		2,566	(26)	64	2,604
– *of which: credit-related contingent liabilities and contractual commitments on IRB portfolios*	*h*	*394*	—	—	*394*
Deferred tax liabilities		4,673	(1,395)	1	3,279
Subordinated liabilities		20,487	—	415	20,902
– *of which:*					
included in tier 1	*m, o*	*1,847*	—	—	*1,847*
included in tier 2	*p, r*	*18,289*	—	—	*18,289*
Total liabilities at 31 Dec 2021		**2,751,162**	**(119,139)**	**18,042**	**2,650,065**
Equity					
Called up share capital	*a*	10,316	—	—	10,316
Share premium account	*a, m*	14,602	—	—	14,602
Other equity instruments	*l*	22,414	—	—	22,414
Other reserves	*c, g*	6,460	1,920	—	8,380
Retained earnings	*b, c*	144,458	(15,369)	—	129,089
Total shareholders' equity		**198,250**	**(13,449)**	**—**	**184,801**
Non-controlling interests	*d, n, o, q*	8,527	(1,332)	—	7,195
Total equity at 31 Dec 2021		**206,777**	**(14,781)**	**—**	**191,996**
Total liabilities and equity at 31 Dec 2021		**2,957,939**	**(133,920)**	**18,042**	**2,842,061**

† *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.*

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

			At 31 Dec 2021		
			Method of regulatory consolidation		
	Principal activities	Method of accounting consolidation	Proportional consolidation	Neither consolidated nor deducted	Deducted from capital subject to thresholds
Principal associates					
The Saudi British Bank	Banking services	Equity	●		
Principal insurance entities excluded from the regulatory consolidation					
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			●
Principal SPEs excluded from the regulatory consolidation[1]					
Metrix Portfolio Distribution plc	Securitisation	Fully consolidated		●	
Neon Portfolio Distribution DAC	Securitisation	Fully consolidated		●	
Regency Assets DAC	Securitisation	Fully consolidated		●	

1 *These SPEs issued no or* de minimis *share capital.*

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 2021*.

The Pillar 3 Disclosures at 31 December 2021 are prepared in accordance with regulatory capital adequacy concepts and rules, while the *Annual Report and Accounts 2021* 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	Subject to deduction from capital or not subject to regulatory capital requirements
	$bn	$bn	$bn	$bn	$bn	$bn	$bn
Assets							
Cash and balances at central banks	**403.0**	**403.3**	**403.3**	**–**	**–**	**–**	**–**
Items in the course of collection from other banks	**4.1**	**4.1**	**4.1**	**–**	**–**	**–**	**–**
Hong Kong Government certificates of indebtedness	**42.6**	**42.6**	**42.6**	**–**	**–**	**–**	**–**
Trading assets	**248.8**	**244.7**	**1.5**	**23.1**	**0.2**	**244.7**	**–**
Financial assets designated and otherwise mandatorily measured at fair value	**49.8**	**9.9**	**5.0**	**4.7**	**–**	**0.1**	**0.1**
Derivatives	**196.9**	**197.1**	**–**	**195.6**	**1.4**	**197.1**	**–**
Loans and advances to banks	**83.1**	**82.3**	**81.5**	**0.5**	**0.3**	**–**	**–**
Loans and advances to customers	**1,045.9**	**1,058.5**	**1,038.2**	**0.1**	**19.5**	**–**	**0.7**
Reverse repurchase agreements – non-trading	**241.6**	**243.4**	**–**	**243.4**	**–**	**–**	**–**
Financial investments	**446.3**	**378.3**	**376.2**	**–**	**1.7**	**–**	**0.4**
Capital invested in insurance and other entities	**–**	**2.6**	**1.5**	**–**	**–**	**–**	**1.1**
Prepayments, accrued income and other assets	**140.0**	**133.9**	**49.1**	**50.5**	**–**	**15.7**	**26.0**
Current tax assets	**1.0**	**1.0**	**1.0**	**–**	**–**	**–**	**–**
Interests in associates and joint ventures[4]	**29.6**	**23.8**	**12.8**	**–**	**–**	**–**	**11.0**
Goodwill and intangible assets	**20.6**	**11.7**	**2.8**	**–**	**–**	**–**	**8.7**
Deferred tax assets	**4.6**	**4.9**	**6.4**	**–**	**–**	**–**	**(1.5)**
Total assets at 31 Dec 2021	**2,957.9**	**2,842.1**	**2,026.0**	**517.9**	**23.1**	**457.6**	**46.5**
Liabilities							
Hong Kong currency notes in circulation	**42.6**	**42.6**	**–**	**–**	**–**	**–**	**42.6**
Deposits by banks	**101.1**	**102.7**	**–**	**–**	**–**	**–**	**102.7**
Customer accounts	**1,710.5**	**1,730.1**	**–**	**–**	**–**	**–**	**1,730.1**
Repurchase agreements – non-trading	**126.7**	**126.7**	**–**	**126.7**	**–**	**–**	**–**
Items in course of transmission to other banks	**5.2**	**5.2**	**–**	**–**	**–**	**–**	**5.2**
Trading liabilities	**84.9**	**84.9**	**–**	**13.3**	**–**	**84.9**	**–**
Financial liabilities designated at FV	**145.5**	**140.8**	**–**	**–**	**–**	**48.1**	**92.7**
Derivatives	**191.1**	**191.3**	**–**	**191.3**	**–**	**191.3**	**–**
Debt securities in issue	**78.6**	**77.3**	**–**	**–**	**–**	**–**	**77.3**
Accruals, deferred income, and other liabilities	**123.8**	**121.1**	**–**	**50.2**	**–**	**–**	**70.9**
Current tax liabilities	**0.7**	**0.6**	**–**	**–**	**–**	**–**	**0.6**
Liabilities under insurance contract	**112.7**	**–**	**–**	**–**	**–**	**–**	**–**
Provisions	**2.6**	**2.6**	**0.7**	**–**	**–**	**–**	**1.9**
Deferred tax liabilities	**4.7**	**3.3**	**1.6**	**–**	**–**	**–**	**5.0**
Subordinated liabilities	**20.5**	**20.9**	**–**	**–**	**–**	**–**	**20.9**
Total liabilities at 31 Dec 2021	**2,751.2**	**2,650.1**	**2.3**	**381.5**	**–**	**324.3**	**2,149.9**

1 *The amounts shown in the column 'Carrying values under scope of regulatory consolidation' do not equal the sum of the amounts shown in the remaining columns of this table for line items 'Derivatives', 'Trading assets' 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 in the column 'Subject to the counterparty credit risk framework' include both non-trading book and trading book.*

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

4 *Our investment in BoCom is recognised as a significant investment in a financial sector entity. At 31 December 21, $11.0bn was deducted from CET1 and $31.6bn RWAs were reported for this investment, with a related exposure of $12.7bn.*

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	CCR framework	Securitisation framework
	$bn	$bn	$bn	$bn
Carrying value of assets within scope of regulatory consolidation[1]	2,795.6	2,026.0	517.9	23.1
Carrying value of liabilities within scope of regulatory consolidation[1]	500.2	2.3	381.5	–
Net carrying value within scope of regulatory consolidation	2,295.4	2,023.7	136.4	23.1
Off-balance sheet amounts and potential future exposure for counterparty risk	905.8	290.1	49.4	12.3
Differences in netting rules	5.9	10.9	(5.0)	–
Differences due to financial collateral on standardised approach	(5.0)	(5.0)	–	–
Differences due to expected credit losses on IRB approach	8.9	8.9	–	–
Differences due to EAD modelling and other differences	4.0	5.8	–	(1.8)
Differences due to credit risk mitigation	(32.7)	–	(32.7)	–
Exposure values considered for regulatory purposes at 31 Dec 2021	3,182.3	2,334.4	148.1	33.6

1 *Excludes amounts subject to deduction from capital or not subject to regulatory capital requirements.*

Explanations of differences between accounting and regulatory exposure amounts

Off-balance sheet amounts and potential future exposure for counterparty risk

Off-balance sheet amounts subject to credit risk and securitisation regulatory frameworks include undrawn portions of committed facilities, various trade finance commitments and guarantees. We apply a credit conversion factor ('CCF') to these items and add potential future exposures ('PFE') for counterparty credit risk.

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 financial collateral

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

Differences due to expected credit losses

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 EAD modelling and other differences

The carrying value of assets is usually measured at amortised cost or fair value as at the balance sheet date. For certain IRB models, the exposure value used as EAD is the projected value over the next year. Other differences include IFRS 9 transitional arrangements applicable to standardised credit risk exposure and dilution risk.

Differences due to credit risk mitigation

In counterparty credit risk ('CCR'), differences arise between accounting carrying values and regulatory exposure as a result of the application of credit risk mitigation and the use of modelled exposures.

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 67 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 2021.

Treasury risk management

Treasury risk is the risk of having insufficient capital, liquidity or funding resources to meet financial obligations and satisfy regulatory requirements, together with the financial risks arising from the provision of pensions and other post-employment benefits to staff and their dependants. Treasury risk also includes the risk to our earnings or capital due to non-trading book foreign exchange exposures and changes in market interest rates.

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, which is co-owned together with the Group Head of Performance, Reward and Employee Relations.

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 189 of the Annual Report and Accounts 2021.

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 2021, 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 III of Commission Implementing Regulation 1423/2013 is also published on our website at www.hsbc.com with reference to our balance sheet on 31 December 2021. The full terms and conditions of our securities are also available at www.hsbc.com.

Liquidity risk

We aim to ensure that management have 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 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.

The Global Treasury function 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

Non-trading book foreign exchange exposures

Structural foreign exchange exposures represent net assets or capital investments in subsidiaries, branches, joint arrangements or associates, together with any associated hedges, the functional currencies of which are currencies other than the US dollar. An entity's functional 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 exposures arise from transactions in the banking book generating profit and loss or OCI 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 the Markets Treasury business within a limit framework to be agreed in the first half of 2022.

Capital and RWAs

Own funds

Table 6: Own funds disclosure

Ref*		Ref †	At 31 Dec 2021 $m	At 31 Dec 2020 $m
	Common equity tier 1 ('CET1') capital: instruments and reserves[1]			
1	Capital instruments and the related share premium accounts		**23,513**	23,219
	– ordinary shares	*a*	**23,513**	23,219
2	Retained earnings[1,2]	*b*	**121,059**	126,314
3	Accumulated other comprehensive income (and other reserves)[1]	*c*	**8,273**	9,768
5	Minority interests (amount allowed in consolidated CET1)	*d*	**4,186**	4,079
5a	Independently reviewed interim net profits net of any foreseeable charge or dividend	*b*	**5,887**	(252)
6	**Common equity tier 1 capital before regulatory adjustments[2]**		**162,918**	163,128
	Common equity tier 1 capital: regulatory adjustments			
7	Additional value adjustments[3]		**(1,217)**	(1,175)
8	Intangible assets (net of related deferred tax liability)	*e*	**(9,123)**	(9,590)
10	Deferred tax assets that rely on future profitability excluding those arising from temporary differences (net of related tax liability)	*f*	**(1,520)**	(1,741)
11	Fair value reserves related to gains or losses on cash flow hedges	*g*	**170**	(365)
12	Negative amounts resulting from the calculation of expected loss amounts	*h*	**(2,020)**	(1,462)
14	Gains or losses on liabilities valued at fair value resulting from changes in own credit standing	*i*	**1,571**	2,101
15	Defined benefit pension fund assets	*j*	**(7,146)**	(7,885)
16	Direct and indirect holdings of own CET1 instruments[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)[5]		**(11,794)**	(9,272)
UK-27a	Other regulatory adjustments to CET1 capital (including IFRS 9 transitional adjustments when relevant)[2,6]	k	**766**	2,351
28	**Total regulatory adjustments to common equity tier 1[2]**		**(30,353)**	(27,078)
29	**Common equity tier 1 capital**		**132,565**	136,050
	Additional tier 1 ('AT1') capital: instruments			
30	Capital instruments and the related share premium accounts		**22,414**	22,414
31	– classified as equity under IFRSs	*l*	**22,414**	22,414
33	Amount of qualifying items and the related share premium accounts subject to phase out from AT1	*m*	**900**	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, o*	**473**	869
35	– *of which: instruments issued by subsidiaries subject to phase out*	*n*	***406***	*812*
36	**Additional tier 1 capital before regulatory adjustments**		**23,787**	24,183
	Additional tier 1 capital: regulatory adjustments			
37	Direct and indirect holdings of own AT1 instruments[4]		**(60)**	(60)
43	**Total regulatory adjustments to additional tier 1 capital**		**(60)**	(60)
44	**Additional tier 1 capital**		**23,727**	24,123
45	**Tier 1 capital (T1 = CET1 + AT1)**		**156,292**	160,173
	Tier 2 capital: instruments and provisions			
46	Capital instruments and the related share premium accounts	*p*	**18,905**	20,987
	– *of which: instruments grandfathered under CRR II*		***7,140***	*7,357*
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[4]	*q, r*	**4,113**	4,735
49	– *of row 48: instruments issued by subsidiaries subject to phase out*	*r*	***1,879***	*2,150*
	– *of row 48: instruments issued by subsidiaries grandfathered under CRR II*		***1,264***	*1,427*
51	**Tier 2 capital before regulatory adjustments**		**23,018**	25,722
	Tier 2 capital: regulatory adjustments			
52	Direct and indirect holdings of own T2 instruments[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*	**(1,484)**	(1,432)
57	**Total regulatory adjustments to tier 2 capital**		**(1,524)**	(1,472)
58	**Tier 2 capital**		**21,494**	24,250
59	**Total capital (TC = T1 + T2)**		**177,786**	184,423
60	**Total risk-weighted assets**		**838,263**	857,520

Table 6: Own funds disclosure (continued)

Ref*		Ref †	At 2021 $m	2020 $m
	Capital ratios and buffers			
61	Common equity tier 1		**15.8%**	15.9%
62	Tier 1		**18.6%**	18.7%
63	Total capital		**21.2%**	21.5%
64	Institution specific buffer requirement		**4.7%**	4.7%
65	– capital conservation buffer requirement		**2.5%**	2.5%
66	– counter-cyclical buffer requirement		**0.2%**	0.2%
67a	– Global Systemically Important Institution ('G-SII') buffer		**2.0%**	2.0%
68	Common equity tier 1 available to meet buffers		**9.8%**	9.7%
	Amounts below the threshold for deduction (before risk weighting)			
72	Direct and indirect holdings of the capital 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)		**3,116**	2,485
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 10% threshold and net of eligible short positions)		**14,359**	14,409
75	Deferred tax assets arising from temporary differences (amount below 10% threshold, net of related tax liability)		**4,812**	4,418
	Applicable caps on the inclusion of provisions in tier 2			
77	Cap on inclusion of credit risk adjustments in T2 under standardised approach		**2,027**	2,022
79	Cap for inclusion of credit risk adjustments in T2 under internal ratings-based approach		**3,157**	3,262
	Capital instruments subject to phase-out arrangements (only applicable until 1 Jan 2022)			
82	Current cap on AT1 instruments subject to phase out arrangements		**1,730**	3,461
83	Amount excluded from AT1 due to cap (excess over cap after redemptions and maturities)		**541**	144
84	Current cap on T2 instruments subject to phase out arrangements		**894**	1,792
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 balance sheets – financial accounting to regulatory scope of consolidation which is 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 *Since the publication of our 31 December 2020 results we have made certain reclassifications to align with our regulatory reporting submission. These did not impact the capital ratios.*

2 *We now report the IFRS 9 transitional arrangement as a regulatory adjustment in row UK-27a. We have restated rows 2, 6, 27a and 28 for 31 December 2020 for comparison.*

3 *Additional value adjustments are deducted from CET1. These are calculated on all assets measured at fair value.*

4 *The deduction for holdings of own CET1, T1 and T2 instruments is set by the PRA.*

5 *The threshold deduction for significant investments is drawn from numerous lines of the balance sheet and includes: investments in insurance subsidiaries and non-consolidated associates, other CET1 equity held in financial institutions, and connected funding of a capital nature.*

6 *From 1H21, the deduction for insufficient coverage for non-performing exposures is reported in row UK- 27a.*

At 31 December 2021, our common equity tier 1 ('CET1') capital ratio decreased to 15.8% from 15.9% at 31 December 2020. RWAs decreased due to RWA reductions under the transformation programme, foreign currency translation differences and favourable movements in asset quality. CET1 capital fell due to higher regulatory deductions and fair value movements net of capital generation.

The $3.5bn fall in CET1 capital was mainly as a result of:

- a $2.9bn net increase in deductions for excess expected loss, investment in financial sector entities and defined benefit pension assets surplus;
- $2.5bn unfavourable foreign currency translation differences; and;
- a $2.2bn decrease in fair value through other comprehensive income reserve.

These decreases were partly offset by capital generation of $3.9bn through profits net of share buy-back, foreseeable dividend and dividends paid.

Our Pillar 2A requirement at 31 December 2021, as per the PRA's Individual Capital Requirement based on a point-in-time assessment, was $22.5bn, equivalent to 2.7% of RWAs, of which 1.5% must be met by CET1. With effect from 31 December 2021, structural foreign exchange risk is capitalised in RWAs under Pillar 1 with a consequent reduction in Pillar 2A. Going forward, structural foreign exchange risk will be assessed for Pillar 2A in the same manner as other risks capitalised under Pillar 1.

Leverage

Table 7: Leverage ratio common disclosure (LRCom)

Ref*		At 31 Dec	
		2021	2020
		$bn	$bn
	On-balance sheet exposures (excluding derivatives and SFT)		
1	On-balance sheet items (excluding derivatives, SFTs and fiduciary assets, but including collateral)	**2,378.2**	2,317.1
2	(Asset amounts deducted in determining tier 1 capital)	**(30.9)**	(27.7)
3	**Total on-balance sheet exposures (excluding derivatives, SFTs and fiduciary assets)**	**2,347.3**	2,289.4
	Derivative exposures		
4	Replacement cost associated with all derivatives transactions (i.e. net of eligible cash variation margin)	**57.4**	82.4
5	Add-on amounts for potential future exposure ('PFE') associated with all derivatives transactions (mark-to-market method)	**144.3**	146.4
6	Gross-up for derivatives collateral provided where deducted from the balance sheet assets pursuant to IFRSs	**9.5**	18.0
7	(Deductions of receivables assets for cash variation margin provided in derivatives transactions)	**(39.8)**	(64.5)
8	(Exempted central counterparty ('CCP') leg of client-cleared trade exposures)	**(77.2)**	(86.5)
9	Adjusted effective notional amount of written credit derivatives	**89.1**	127.6
10	(Adjusted effective notional offsets and add-on deductions for written credit derivatives)	**(85.4)**	(121.3)
11	**Total derivative exposures**	**97.9**	102.1
	Securities financing transaction exposures		
12	Gross SFT assets (with no recognition of netting), after adjusting for sales accounting transactions	**446.0**	434.0
13	(Netted amounts of cash payables and cash receivables of gross SFT assets)	**(180.7)**	(174.1)
14	Counterparty credit risk exposure for SFT assets	**10.3**	11.4
16	**Total securities financing transaction exposures**	**275.6**	271.3
	Other off-balance sheet exposures		
17	Off-balance sheet exposures at gross notional amount	**905.8**	893.9
18	(Adjustments for conversion to credit equivalent amounts)	**(663.9)**	(659.6)
19	**Total off-balance sheet exposures**	**241.9**	234.3
	Capital and total exposures		
20	**Tier 1 capital**[1]	**155.0**	158.5
21	**Total leverage ratio exposure**	**2,962.7**	2,897.1
22	**Leverage ratio (%)**[1]	**5.2**	5.5
EU-23	Choice of transitional arrangements for the definition of the capital measure	**Fully phased-in**	Fully phased-in

1 *Leverage ratio is calculated using the CRR II end point basis for capital*

Our leverage ratio calculated in accordance with the Capital Requirements Regulation was 5.2% at 31 December 2021, down from 5.5% at 31 December 2020, due to a decrease in tier 1 capital and an increase in leverage exposure, primarily due to growth in central bank deposits and customer lending, offset by a decrease in financial investments.

At 31 December 2021, the Group's leverage ratio measured under the PRA's UK leverage framework was 6.2%. This measure excludes qualifying central bank balances and loans under the UK Bounce Back Loan scheme from the calculation of exposure.

At 31 December 2021, our UK minimum leverage ratio requirement of 3.25% under the PRA's UK leverage framework was supplemented by an additional leverage ratio buffer of 0.7% and a countercyclical leverage ratio buffer of 0.1%. These additional buffers translated into capital values of $17.6bn and $2.5bn respectively. We exceeded these leverage requirements.

For further details of the UK leverage ratio, please see page 195 of the Annual Report and Accounts 2021.

The following 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 (LRSum)

Ref*		At 31 Dec 2021 $bn	At 31 Dec 2020 $bn
1	Total assets as per published financial statements	**2,957.9**	2,984.2
	Adjustments for:		
2	– entities which are consolidated for accounting purposes but are outside the scope of regulatory consolidation	**(115.9)**	(109.1)
4	– derivative financial instruments	**(99.2)**	(205.6)
5	– securities financing transactions ('SFT')	**9.0**	15.2
6	– off-balance sheet items (i.e. conversion to credit equivalent amounts of off-balance sheet exposures)	**241.9**	234.3
7	– other	**(31.0)**	(21.9)
8	**Total leverage ratio exposure**	**2,962.7**	2,897.1

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

Ref*		At 31 Dec 2021 $bn	At 31 Dec 2020 $bn
EU-1	Total on-balance sheet exposures (excluding derivatives, SFTs and exempted exposures)	**2,338.4**	2,252.6
EU-2	– trading book exposures	**220.2**	207.1
EU-3	– banking book exposures	**2,118.2**	2,045.5
	'banking book exposures' comprises:		
EU-4	covered bonds	**2.0**	2.7
EU-5	exposures treated as sovereigns	**793.0**	743.5
EU-6	exposures to regional governments, multilateral development banks ('MDB'), international organisations and public sector entities not treated as sovereigns	**11.2**	9.4
EU-7	institutions	**65.9**	60.1
EU-8	secured by mortgage of immovable property	**399.9**	380.2
EU-9	retail exposures	**90.6**	91.3
EU-10	corporate	**558.1**	565.6
EU-11	exposures in default	**13.4**	13.8
EU-12	other exposures (e.g. equity, securitisations and other non-credit obligation assets)	**184.1**	178.9

Pillar 1 minimum capital requirements and RWA flow

Pillar 1 covers the minimum capital resource requirements for credit risk, counterparty credit risk, equity, securitisation, market risk and operational risk. These requirements are expressed in terms of RWAs. The table provides information on the scope of permissible approaches and our adopted approach by risk type.

Risk category	Scope of permissible approaches	Approach adopted by HSBC
Credit risk	The Basel 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 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 determining PD and in 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	Four approaches to calculating CCR and determining exposure values are defined by Basel: mark-to-market, original exposure, standardised and internal model method ('IMM'). These exposure values are used to determine capital requirements under one of the three approaches to credit risk: standardised, FIRB or AIRB.	We use the mark-to-market 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	For the non-trading book, equity exposures can be assessed under standardised or IRB approaches.	For Group reporting purposes, all non-trading book equity exposures are treated under the standardised 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'). Where a split between IRB and standardised approaches is disclosed, exposures under the SEC-IRBA approach are mapped to IRB. Exposures under the other approaches are mapped to standardised.	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. • Wherever broader approach categorisation is required, 'SEC-IRBA' is mapped to IRB approach and the remaining three approaches are mapped to standardised category.
Market risk	Market risk capital requirements are calculated using a combination of standard rules and 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. The internal model approach also includes stressed VaR ('SVaR') and incremental risk charge ('IRC'). HSBC does not use or need a Comprehensive Risk Model ('CRM').	The market risk capital requirement is measured using internal market risk models, where approved by the PRA, or under the standard 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	Basel 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 RWAs (OV1)

		At		
		31 Dec 2021	30 Sep 2021	31 Dec 2021
		RWAs	RWAs	Capital required
		$bn	$bn	$bn
1	**Credit risk (excluding counterparty credit risk)**	**623.8**	622.0	**50.0**
2	– standardised approach	**113.1**	111.6	**9.1**
3	– foundation IRB approach	**91.6**	96.1	**7.4**
4	– advanced IRB approach	**419.1**	414.3	**33.5**
6	**Counterparty credit risk**	**35.8**	38.7	**2.9**
7	– mark-to-market	**20.0**	21.8	**1.6**
10	– internal model method	**12.6**	13.6	**1.0**
11	– risk exposure amount for contributions to the default fund of a central counterparty	**0.8**	0.7	**0.1**
12	– credit valuation adjustment	**2.4**	2.6	**0.2**
13	**Settlement risk**	**0.1**	0.1	**–**
14	**Securitisation exposures in the non-trading book**	**8.8**	8.9	**0.7**
14a	– internal ratings-based approach ('SEC-IRBA')	**1.9**	2.0	**0.2**
14b	– external ratings-based approach ('SEC-ERBA')	**2.7**	2.7	**0.2**
14c	– internal assessment approach ('IAA')	**1.3**	1.3	**0.1**
14d	– standardised approach ('SEC-SA')	**2.9**	2.9	**0.2**
19	**Market risk**	**32.9**	28.1	**2.7**
20	– standardised approach	**13.3**	6.5	**1.1**
21	– internal models approach	**19.6**	21.6	**1.6**
23	**Operational risk**	**88.9**	93.7	**7.1**
25	– standardised approach	**88.9**	93.7	**7.1**
27	**Amounts below the thresholds for deduction (subject to 250% risk weight)**	**48.0**	47.7	**3.8**
29	**Total**	**838.3**	839.2	**67.2**

Credit risk (including amounts below the thresholds for deduction)

Despite a decrease of $1.3bn due to foreign currency translation differences, credit risk RWAs increased by $2.1bn overall.

A $4.9bn increase due to asset size movements was mostly due to corporate and personal lending growth in Asia.

Changes in asset quality led to a $0.9bn fall in RWAs, largely due to favourable portfolio mix changes in Global Banking and Markets ('GBM') in Asia and North America.

Changes to methodology and policy caused a $0.3bn decrease in RWAs, primarily due to risk parameter refinements in GBM.

The sale of a US credit card portfolio led to a $0.4bn fall in Wealth and Personal Banking RWAs.

Counterparty credit risk (including settlement risk)

Counterparty credit risk RWAs fell by $2.9bn primarily due to reductions under management initiatives and lower exposures, mostly in Europe.

Market risk

The $4.8bn increase in market risk was predominantly due to the $8.4bn increase in RWAs on our adoption of a Pillar 1 approach to the capitalisation of structural foreign exchange risk, following confirmation from the PRA. This was partly offset by $3.6bn reduction through asset size movements, mostly due to risk mitigation actions and lower exposures.

Securitisation

An increase in securitisation RWAs due to new activity in North America was offset by reductions in Europe.

Operational risk

RWAs fell by $4.8bn due to lower average revenue in the annual recalculation of operational risk.

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

		RWAs	Capital required
		$bn	$bn
1	**At 1 Oct 2021**	**510.4**	**40.8**
2	Asset size	**3.7**	**0.3**
3	Asset quality	**(1.7)**	**(0.1)**
4	Model updates	**0.1**	**–**
5	Methodology and policy	**(1.1)**	**(0.1)**
6	Acquisitions and disposals	**(0.4)**	**–**
7	Foreign exchange movements	**(0.3)**	**–**
9	**At 31 Dec 2021**	**510.7**	**40.9**

1 *Securitisation positions are not included in this table.*

Excluding foreign currency translation differences, RWAs under the IRB approach increased by $0.6bn in the fourth quarter of the year. These movements comprised:

- Asset size movements led to an RWA increase of $3.7bn, which was primarily due to lending growth in Asia and North America offset by reduced lending in Europe;

- A fall of $1.7bn due to changes in asset quality, mostly due to favourable portfolio mix changes and credit migration in North America, Europe and Asia.
- Changes in methodology and policy that led to a $1.1bn fall in RWAs, largely due to risk parameter refinements.
- The sale of a US credit card portfolio led to a $0.4bn fall in acquisitions and disposals.

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

		RWAs	Capital required
		$bn	$bn
1	**At 1 Oct 2021**	**15.6**	**1.2**
2	Asset size	**(1.3)**	**(0.1)**
3	Asset quality	**(0.1)**	**—**
4	Model updates	**—**	**—**
5	Methodology and policy	**—**	**—**
9	**At 31 Dec 2021**	**14.2**	**1.1**

RWAs under the IMM decreased by $1.4bn primarily due to management initiatives, mark-to-market movements and lower market volatility.

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

		VaR	Stressed VaR	IRC	Other	Total RWAs	Total capital required
		$bn	$bn	$bn	$bn	$bn	$bn
1	**At 1 Oct 2021**	**4.9**	**11.0**	**4.3**	**1.4**	**21.6**	**1.7**
2	Movement in risk levels	**0.3**	**(1.4)**	**(1.1)**	**0.2**	**(2.0)**	**(0.1)**
3	Model updates/changes	**—**	**—**	**—**	**—**	**—**	**—**
4	Methodology and policy	**—**	**—**	**—**	**—**	**—**	**—**
8	**At 31 Dec 2021**	**5.2**	**9.6**	**3.2**	**1.6**	**19.6**	**1.6**

RWAs under the IMA decreased by $2.0bn in the fourth quarter of 2021. A $1.4bn decrease in stressed VaR followed a reduction in exposures and increased risk mitigation. A further $1.1bn reduction in IRC RWAs was mostly due to a fall in sovereign exposure.

Minimum requirement for own funds and eligible liabilities

Overview and requirements

A requirement for total loss-absorbing capacity ('TLAC') in line with the final standards adopted by the Financial Stability Board was implemented via CRR II in June 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.

In view of the HSBC Group's corporate structure, which comprises a group of locally regulated operating banks, the preferred resolution strategy for the HSBC Group, as confirmed by its regulators, is a multiple point of entry ('MPE') bail-in strategy. This provides flexibility for HSBC to be resolved (i) through a bail-in at the HSBC Holdings level, which recapitalises in the HSBC Group (as required) while restructuring actions are undertaken, with the HSBC Group remaining together; or (ii) at a local subsidiary level pursuant to the application of statutory resolution powers by local resolution authorities.

HSBC issues loss absorbing instruments to external investors from HSBC Holdings in order to ensure loss absorbing capacity ('LAC') 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 MREL issued externally by HSBC Holdings would be written down or converted to equity by the BoE using its statutory powers. This would enable subsidiaries of the Group to be recapitalised, as needed, to support the resolution objectives and maintain the provision of critical functions. Recapitalisation of operating bank subsidiaries could be achieved through the write-down, or conversion to equity, of internally issued MREL, TLAC or LAC. It is anticipated that this approach to recapitalising the Group's operating bank subsidiaries would allow the Group to stay together in order to ensure an effective stabilisation of the Group as a whole, while also facilitating an orderly restructuring process, as needed, to remediate the cause of resolution. Any resolution of HSBC as a group would be coordinated by the BoE.

Given the HSBC Group's corporate structure, HSBC is overseen by various regulators and resolution authorities, such as its lead global regulators and resolution authority, the BoE and the PRA and a number of host regulators and resolution authorities, such as the ECB, the European Banking Union's Single Resolution Board, the HKMA, and the FRB, FDIC and OCC. Many of these host resolution authorities have statutory resolution powers which could be applied to subsidiaries of the HSBC Group in their jurisdictions. The application of local statutory resolution powers may result in one or more individual resolution authorities leading a local resolution of the subsidiaries within their jurisdiction. This 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 authority.

HSBC considers that a bail-in at the HSBC Holdings level that enables subsidiaries in the HSBC Group to be recapitalised (as required), and the subsequent implementation of restructuring actions while the HSBC Group remains together, is the strategy most likely to deliver the most effective resolution outcome for the HSBC Group's stakeholders.

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

The external MREL requirement for the Group as a whole at 31 December 2021 is the highest of:

- 16% of the Group's consolidated RWAs;
- 6% of the Group's consolidated leverage exposure; or
- the sum of all LAC requirements and other capital requirements relating to Group entities or sub-groups.

The external MREL requirement applicable in 2022 is expected to be the highest of:

- 18% of the Group's consolidated RWAs;
- 6.75% of the Group's consolidated leverage exposure; or
- the sum of all 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 are 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.

Further details of our approach to capital management can be found in 'Treasury risk management' on page 189 of the Annual Report and Accounts 2021*.*

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

		At				
		31 Dec 2021	30 Sep 2021	30 Jun 2021	31 Mar 2021	31 Dec 2020
		$bn	$bn	$bn	$bn	$bn
1	Total loss absorbing capacity ('TLAC') available	**107.7**	100.0	98.2	97.3	97.9
1a	Fully loaded ECL accounting model TLAC available	**107.6**	99.9	98.2	97.3	97.8
2	Total RWAs at the level of the resolution group	**270.7**	282.7	286.9	290.3	302.5
3	TLAC as a percentage of RWA (row1/row2)	**39.8**	35.4	34.2	33.5	32.4
3a	Fully loaded ECL accounting model TLAC as a percentage of fully loaded ECL accounting model RWA	**39.8**	35.3	34.2	33.5	32.3
4	Leverage exposure measure at the level of the resolution group	**1,277.6**	1,288.5	1,293.6	1,285.2	1,265.2
5	TLAC as a percentage of leverage exposure measure (row1/row4)	**8.4**	7.8	7.6	7.6	7.7
5a	Fully loaded ECL accounting model TLAC as a percentage of fully loaded ECL accounting model leverage exposure measure	**8.4**	7.8	7.6	7.6	7.7
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 14.ii: Key metrics of the Asian resolution group[2]

		At				
		31 Dec 2021	30 Sep 2021	30 Jun 2021	31 Mar 2021	31 Dec 2020
		$bn	$bn	$bn	$bn	$bn
1	Total loss absorbing capacity ('TLAC') available	**101.9**	103.0	102.1	96.9	102.2
1a	Fully loaded ECL accounting model TLAC available	**101.9**	103.0	102.1	96.9	102.2
2	Total RWA at the level of the resolution group	**404.8**	394.0	401.5	387.3	381.4
3	TLAC as a percentage of RWA (row1/row2)	**25.2**	26.2	25.4	25.0	26.8
3a	Fully loaded ECL accounting model TLAC as a percentage of fully loaded ECL accounting model RWA	**25.2**	26.2	25.4	25.0	26.8
4	Leverage exposure measure at the level of the resolution group	**1,177.8**	1,174.6	1,166.7	1,143.3	1,121.8
5	TLAC as a percentage of leverage exposure measure (row1/row4)	**8.7**	8.8	8.8	8.5	9.1
5a	Fully loaded ECL accounting model TLAC as a percentage of fully loaded ECL accounting model Leverage exposure measure	**8.7**	8.8	8.8	8.5	9.1
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 14.iii: Key metrics of the US resolution group[3]

		At				
		31 Dec 2021	30 Sep 2021	30 Jun 2021	31 Mar 2021	31 Dec 2020
		$bn	$bn	$bn	$bn	$bn
1	Total loss absorbing capacity ('TLAC') available	**26.2**	27.9	28.8	29.5	30.2
1a	Fully loaded ECL accounting model TLAC available	**26.2**	27.9	28.8	29.5	30.1
2	Total RWAs at the level of the resolution group[4]	**107.1**	109.0	109.7	112.4	115.4
3	TLAC as a percentage of RWA (row1/row2)	**24.5**	25.6	26.2	26.2	26.2
3a	Fully loaded ECL accounting model TLAC as a percentage of fully loaded ECL accounting model RWA	**24.5**	25.6	26.2	26.2	26.1
4	Leverage exposure measure at the level of the resolution group	**314.6**	318.6	314.6	257.7	273.1
5	TLAC as a percentage of leverage exposure measure (row1/row4)	**8.3**	8.7	9.1	11.4	11.1
5a	Fully loaded ECL accounting model TLAC as a percentage of fully loaded ECL accounting model leverage exposure measure	**8.3**	8.7	9.1	11.4	11.0
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

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.*
2 *Reporting for the Asian resolution group follows the Hong Kong Monetary Authority's rules. For the Asian resolution group, there are no IFRS 9 transitional arrangements.*
3 *The US accounting standard for current expected credit losses corresponding to IFRS 9 has been effective since 31 March 2020 with transitional adjustments. Leverage exposure and ratio 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 FRB).*
4 *The treatment of collateral in RWA calculations in the US resolution group has been revised. Data at 31 December 2020 has been restated to be on a consistent basis with the current year.*

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 15: TLAC composition (TLAC1)

		At 31 Dec 2021				At 31 Dec 2020			
			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	**132.6**	**118.9**	**62.2**	**15.1**	136.1	116.1	65.8	17.1
	Deduction of CET1 exposures between MPE resolution groups and other group entities	**—**	**101.8**	**—**	**—**	—	99.4	—	—
1	Common equity tier 1 capital ('CET1')	**132.6**	**17.1**	**62.2**	**15.1**	136.1	16.7	65.8	17.1
2	Additional tier 1 capital ('AT1') before TLAC	**23.7**	**23.4**	**5.9**	**1.8**	24.1	23.6	5.9	2.2
3	AT1 ineligible as TLAC as issued out of subsidiaries to third parties	**—**	**—**	**—**	**—**	—	—	—	—
4	Other adjustments	**—**	**6.3**	**—**	**—**	—	6.7	—	—
5	AT1 instruments eligible under the TLAC framework (row 2 minus row 3 minus row 4)	**23.7**	**17.1**	**5.9**	**1.8**	24.1	16.9	5.9	2.2
6	Tier 2 capital ('T2') before TLAC adjustments	**21.5**	**22.5**	**7.6**	**3.2**	24.2	25.0	7.6	5.7
7	Amortised portion of T2 instruments where remaining maturity > 1 year	**2.5**	**2.5**	**—**	**—**	1.4	1.4	—	—
8	T2 capital ineligible as TLAC as issued out of subsidiaries to third parties	**—**	**—**	**0.4**	**—**	—	—	0.4	—
9	Other adjustments	**—**	**6.6**	**—**	**2.2**	—	9.2	—	2.8
10	T2 instruments eligible under the TLAC framework (row 6 plus row 7 minus row 8 minus row 9)	**24.0**	**18.4**	**7.2**	**1.0**	25.6	17.2	7.2	2.9
11	TLAC arising from regulatory capital	**180.3**	**52.6**	**75.3**	**18.0**	185.8	50.8	78.9	22.2
	Non-regulatory capital elements of TLAC								
12	External TLAC instruments issued directly by the bank and subordinated to excluded liabilities	**90.5**	**55.1**	**26.6**	**8.3**	79.4	47.1	23.3	8.0
17	TLAC arising from non-regulatory capital instruments before adjustments	**90.5**	**55.1**	**26.6**	**8.3**	79.4	47.1	23.3	8.0
	Non-regulatory capital elements of TLAC: adjustments								
18	TLAC before deductions	**270.8**	**107.7**	**101.9**	**26.2**	265.2	97.9	102.2	30.2
20	Deduction of investments in own other TLAC liabilities	**—**	**—**	**—**	**—**	—	—	—	—
22	TLAC after deductions (row 18 minus row 19 minus row 20 minus row 21)	**270.8**	**107.7**	**101.9**	**26.2**	265.2	97.9	102.2	30.2
	Risk-weighted assets and leverage exposure measure for TLAC purposes								
23	Total risk-weighted assets[4]	**838.3**	**270.7**	**404.8**	**107.1**	857.5	302.5	381.4	115.4
24	Leverage exposure measure	**2,962.7**	**1,277.6**	**1,177.8**	**314.6**	2,897.1	1,265.2	1,121.8	273.1
	TLAC ratios and buffers								
25	TLAC (as a percentage of risk-weighted assets)	**32.3**	**39.8**	**25.2**	**24.5**	30.9	32.4	26.8	26.2
26	TLAC (as a percentage of leverage exposure)	**9.1**	**8.4**	**8.7**	**8.3**	9.2	7.7	9.1	11.1
27	CET1 (as a percentage of risk-weighted assets) available after meeting the resolution group's minimum capital and TLAC requirements[5]	**9.8**	**N/A**	**N/A**	**6.5**	9.7	N/A	N/A	8.2
28	Institution-specific buffer requirement expressed as a percentage of risk-weighted assets	**4.7**	**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	– *of which: bank specific countercyclical buffer requirement*	***0.2***	***N/A***	***N/A***	***N/A***	*0.2*	*N/A*	*N/A*	*N/A*
31	– *of which: 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 European resolution group reports in accordance with CRR II. Unless otherwise stated all figures are calculated using the regulatory transitional arrangements for IFRS 9 in article 473a. Investments by the European resolution group in the regulatory capital or TLAC of other group companies are deducted from the corresponding form of capital in rows 1, 4 & 9. Buffer requirements are reported as 'Not applicable' as none have yet been set for the European resolution group.*

2 *Reporting for the Asian resolution group follows the Hong Kong Monetary Authority's regulatory rules. For the Asian resolution group, there are no IFRS 9 transitional arrangements.*

3 *Reporting for the US resolution group is prepared in accordance with local regulatory rules. The US accounting standard for current expected credit losses corresponding to IFRS 9 has been effective since 31 March 2020 with transitional adjustments. Leverage exposure and ratio 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 FRB). Other adjustments for the US resolution group relate to allowances for loan and lease losses that are not TLAC eligible and Tier 2 instruments that currently do not qualify as TLAC. Under the US Final TLAC rules, in addition to the risk-weighted assets component of the TLAC requirement, the US resolution group is subject to an external 2.5% TLAC buffer that is similar to the capital conservation buffer.*

4 *The treatment of collateral in RWA calculations in the US resolution group has been revised. Data at 31 December 2020 has been restated to be on a consistent basis with the current year.*

5 *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 2021. 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 16: HSBC Holdings plc creditor ranking (TLAC3)

		Creditor ranking ($m)				
		1	2	3	4	
		(most junior)			(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	10,316	23,163	20,044	95,910	149,433
3	*– of row 2 that are excluded liabilities*[2]	—	—	—	*151*	*151*
4	Total capital and liabilities less excluded liabilities (row 2 minus row 3)[3]	10,316	23,163	20,044	95,759	149,282
5	*– of row 4 that are potentially eligible as TLAC*[3]	*10,316*	*22,263*	*20,044*	*89,064*	*141,687*
6	*– of row 5 with 1 year ≤ residual maturity < 2 years*	—	—	—	*9,863*	*9,863*
7	*– of row 5 with 2 years ≤ residual maturity < 5 years*	—	—	*6,705*	*37,396*	*44,101*
8	*– of row 5 with 5 years ≤ residual maturity < 10 years*	—	—	*2,896*	*34,093*	*36,989*
9	*– of row 5 with residual maturity ≥ 10 years, but excluding perpetual securities*	—	—	*10,443*	*7,712*	*18,155*
10	*– of row 5 that are perpetual securities*	*10,316*	*22,263*	—	—	*32,579*

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.
3 The difference between rows 4 and 5 relates to TLAC eligible securities of $3,917m which are maturing within one year, pari passu *liabilities of $2,779m and the ineligible internal subordinated notes issued to HSBC Capital Funding (Dollar 1) LP of $900m .*

Table 17: HSBC UK Bank plc creditor ranking (TLAC2)

		Creditor ranking ($m)				
		1	2	3	4	
		(most junior)			(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	—	2,971	4,060	12,674	19,705
4	*– of row 3 that are excluded liabilities*	—	—	—	—	—
5	Total capital and liabilities less excluded liabilities (row 3 minus row 4)	—	2,971	4,060	12,674	19,705
6	*– of row 5 that are eligible as TLAC*	—	*2,971*	*4,060*	*12,674*	*19,705*
7	*– of row 6 with 1 year ≤ residual maturity < 2 years*	—	—	—	—	—
8	*– of row 6 with 2 years ≤ residual maturity < 5 years*	—	—	—	*4,598*	*4,598*
9	*– of row 6 with 5 years ≤ residual maturity < 10 years*	—	—	*3,180*	*8,076*	*11,256*
10	*– of row 6 with residual maturity ≥ 10 years, but excluding perpetual securities*	—	—	*880*	—	*880*
11	*– of row 6 that are perpetual securities*	—	*2,971*	—	—	*2,971*

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 18: 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[3]	
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	1,079	5,290	1,550	17,749	25,668
4	*– of row 3 that are excluded liabilities*	–	–	–	–	–
5	Total capital and liabilities less excluded liabilities (row 3 minus row 4)	1,079	5,290	1,550	17,749	25,668
6	*– of row 5 that are eligible as TLAC[4]*	*1,079*	*5,290*	*1,550*	*16,052*	*23,971*
7	*– of row 6 with 1 year ≤ residual maturity < 2 years*	–	–	–	*2,111*	*2,111*
8	*– of row 6 with 2 years ≤ residual maturity < 5 years*	–	–	–	*2,005*	*2,005*
9	*– of row 6 with 5 years ≤ residual maturity < 10 years*	–	–	–	*10,143*	*10,143*
10	*– of row 6 with residual maturity ≥ 10 years, but excluding perpetual securities*	–	–	–	*1,793*	*1,793*
11	*– of row 6 that are perpetual securities*	*1,079*	*5,290*	*1,550*	–	*7,919*

1 The entity's ordinary shares are owned by HSBC Holdings plc. Other instruments are either owned by HSBC Holdings plc or by third parties.
2 Excludes the value of share premium and reserves attributable to ordinary shareholders.
3 Out of the $17.7bn under creditor ranking 4, $3.9bn has been issued to third parties; the remaining instruments are owned by HSBC Holdings plc.
4 The difference between rows 5 and 6 relates to TLAC eligible securities of $750m which are maturing within one year and the ineligible internal subordinated notes issued to HSBC Capital Funding (Sterling 1) LP of $947m

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 19: 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	56,587	5,700	1,780	25,484	89,551
3	*– of row 2 that are excluded liabilities*	–	–	–	–	–
4	Total capital and liabilities less excluded liabilities (row 2 minus row 3)	56,587	5,700	1,780	25,484	89,551
5	*– of row 4 that are potentially eligible as TLAC*	*56,587*	*5,700*	*1,780*	*25,484*	*89,551*
6	*– of row 5 with 1 year ≤ residual maturity < 2 years*	–	–	–	*2,750*	*2,750*
7	*– of row 5 with 2 years ≤ residual maturity < 5 years*	–	–	–	*8,104*	*8,104*
8	*– of row 5 with 5 years ≤ residual maturity < 10 years*	–	–	*1,780*	*9,630*	*11,410*
9	*– of row 5 with residual maturity ≥ 10 years, but excluding perpetual securities*	–	–	–	*5,000*	*5,000*
10	*– of row 5 that are perpetual securities*	*56,587*	*5,700*	–	–	*62,287*

1 The entity's capital and TLAC are held by HSBC Holdings plc.
2 Excludes the value of share premium and reserves attributable to ordinary shareholders.

Table 20: 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[1]	Yes	Yes	
2	Description of creditor ranking	Ordinary shares[2]	AT1 instruments	Primary capital notes	Tier 2 instruments	LAC loans	
3	Total capital and liabilities net of credit risk mitigation	22,098	5,700	400	1,780	25,484	55,462
4	*– of row 3 that are excluded liabilities*	–	–	–	–	–	–
5	Total capital and liabilities less excluded liabilities (row 3 minus row 4)	22,098	5,700	400	1,780	25,484	55,462
6	*– of row 5 that are eligible as TLAC*	*22,098*	*5,700*	–	*1,780*	*25,484*	*55,062*
7	*– of row 6 with 1 year ≤ residual maturity < 2 years*	–	–	–	–	*2,750*	*2,750*
8	*– of row 6 with 2 years ≤ residual maturity < 5 years*	–	–	–	–	*8,104*	*8,104*
9	*– of row 6 with 5 years ≤ residual maturity < 10 years*	–	–	–	*1,780*	*9,630*	*11,410*
10	*– of row 6 with residual maturity ≥ 10 years, but excluding perpetual securities*	–	–	–	–	*5,000*	*5,000*
11	*– of row 6 that are perpetual securities*	*22,098*	*5,700*	–	–	–	*27,798*

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 21: Hang Seng Bank Ltd creditor ranking (TLAC2)

		Creditor ranking ($m)			Sum of 1 to 3
		1 (most junior)	2	3 (most senior)	
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	1,238	1,500	3,140	5,878
4	*– of row 3 that are excluded liabilities*	—	—	—	—
5	Total capital and liabilities less excluded liabilities (row 3 minus row 4)	1,238	1,500	3,140	5,878
6	*– of row 5 that are eligible as TLAC*	*1,238*	*1,500*	*3,140*	*5,878*
7	*– of row 6 with 1 year ≤ residual maturity < 2 years*	—	—	—	—
8	*– of row 6 with 2 years ≤ residual maturity < 5 years*	—	—	*800*	*800*
9	*– of row 6 with 5 years ≤ residual maturity < 10 years*	—	—	*2,340*	*2,340*
10	*– of row 6 with residual maturity ≥ 10 years, but excluding perpetual securities*	—	—	—	—
11	*– of row 6 that are perpetual securities*	*1,238*	*1,500*	—	*2,738*

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 22: HSBC North America Holdings Inc. 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	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	1,000	9,683	12,523
3	*– of row 2 that are excluded liabilities*[3]	—	—	—	*329*	*329*
4	Total capital and liabilities less excluded liabilities (row 2 minus row 3)	—	1,840	1,000	9,354	12,194
5	*– of row 4 that are potentially eligible as TLAC*	—	*1,840*	*1,000*	*8,250*	*11,090*
6	*– of row 5 with 1 year ≤ residual maturity < 2 years*	—	—	—	—	—
7	*– of row 5 with 2 years ≤ residual maturity < 5 years*	—	—	—	*250*	*250*
8	*– of row 5 with 5 years ≤ residual maturity < 10 years*	—	—	*1,000*	*6,500*	*7,500*
9	*– of row 5 with residual maturity ≥ 10 years, but excluding perpetual securities*	—	—	—	*1,500*	*1,500*
10	*– of row 5 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 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 123 of the Annual Report and Accounts 2021.

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 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 subjective overlay to better reflect any idiosyncratic elements of the customer's risk profile.

See 'Application of the IRB Approach' on page 51 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.

The credit process provides for at least an annual review of facility limits granted. Review may be more frequent, as required by circumstances such as the emergence of adverse risk factors.

We constantly 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.

Credit risk model governance

All new or materially changed IRB capital models require the PRA's approval, as set out in more detail on page 51. Throughout HSBC, such models fall directly under the remit of the 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 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 209 of the Annual Report and Accounts 2021.

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

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.

The table below provides a summary of credit risk exposure by exposure class and approach. Further information on credit risk exposure by industry and geography can be found in the Concentration risk section on page 41.

Table 23: Credit risk exposure – summary (CRB-B)

	At 31 Dec 2021					At 31 Dec 2020				
	Net carrying values	Average net carrying values[3]	RWAs^	Capital required ^	RWA density^	Net carrying values	Average net carrying values[3]	RWAs^	Capital required ^	RWA density^
	$bn	$bn	$bn	$bn	%	$bn	$bn	$bn	$bn	%
IRB advanced approach	1,963.1	1,935.0	403.1	32.2	26	1,902.4	1,865.0	403.6	32.3	27
– central governments and central banks	441.3	439.6	44.7	3.6	10	433.2	393.7	44.4	3.6	10
– institutions	87.0	85.8	12.6	1.0	17	78.6	81.9	11.6	0.9	17
– corporates[1]	818.6	802.0	261.3	20.9	49	791.0	824.8	264.0	21.1	52
of which SMEs[4]	44.6	N/A	14.9	1.2	44	—	—	—	—	—
– total retail	616.2	607.6	84.5	6.7	16	599.6	564.6	83.6	6.7	17
secured by mortgages on immovable property SME	*1.5*	*1.5*	*0.5*	—	32	*1.5*	*1.9*	*0.6*	—	*37*
secured by mortgages on immovable property non-SME	*385.8*	*376.8*	*53.5*	*4.3*	14	*368.0*	*336.5*	*49.8*	*4.0*	*14*
qualifying revolving retail	*139.5*	*141.3*	*16.0*	*1.3*	20	*143.1*	*139.6*	*17.5*	*1.4*	*21*
other SME	*14.2*	*14.8*	*3.1*	*0.2*	69	*14.8*	*10.9*	*3.7*	*0.3*	*70*
other non-SME	*75.2*	*73.2*	*11.4*	*0.9*	24	*72.2*	*75.7*	*12.0*	*1.0*	*25*
IRB securitisation positions	7.8	6.6	1.9	0.2	24	6.3	9.0	2.0	0.2	33
IRB non-credit obligation assets	68.1	66.9	16.0	1.3	24	65.9	63.2	15.4	1.2	23
IRB foundation approach	234.4	254.7	91.6	7.4	58	265.9	222.8	103.5	8.3	56
– central governments and central banks	—	—	0.1	—	26	—	—	0.1	—	29
– institutions	0.4	0.6	0.1	—	40	0.9	0.8	0.2	—	30
– corporates	234.0	254.1	91.4	7.4	57	265.0	222.0	103.2	8.3	56
of which SMEs[4]	18.2	N/A	8.4	0.7	61	—	—	—	—	—
Standardised approach	673.7	660.5	168.0	13.4	30	633.7	585.6	167.4	13.4	32
– central governments and central banks	338.3	321.4	11.0	0.9	3	293.1	239.9	11.1	0.9	4
– regional governments or local authorities	9.9	9.6	3.1	0.2	28	10.5	9.5	1.9	0.2	18
– public sector entities	15.3	16.6	0.1	—	—	18.0	16.5	0.1	—	—
– multilateral development banks	0.0	0.0	—	—	—	0.0	0.0	—	—	—
– international organisations	1.0	1.6	—	—	—	2.3	1.7	—	—	—
– institutions	0.9	1.0	0.7	0.1	66	0.8	1.5	0.6	0.0	65
– corporates	136.5	136.2	61.6	5.0	92	132.6	143.5	60.2	4.8	93
– retail	73.0	72.3	14.2	1.1	73	74.4	74.7	13.5	1.1	73
– secured by mortgages on immovable property	35.2	34.4	12.8	1.0	37	34.2	32.9	12.3	1.0	37
– exposures in default	4.1	3.8	5.1	0.4	124	3.7	3.2	4.5	0.4	115
– items associated with particularly high risk	3.7	4.5	4.6	0.4	150	5.1	5.4	5.9	0.5	150
– securitisation positions	25.8	26.8	6.9	0.5	27	28.2	25.8	8.2	0.7	29
– collective investment undertakings ('CIU')	0.2	0.2	0.2	—	100	0.4	0.4	0.4	—	100
– equity exposures[2]	17.3	17.6	38.8	3.1	225	17.8	17.1	39.5	3.2	221
– other items	12.5	14.5	8.9	0.7	71	12.6	13.5	9.2	0.7	73
Total	2,947.1	2,923.7	680.6	54.5	29	2,874.2	2,745.6	691.9	55.4	30

^ *Figures have been prepared on an IFRS 9 transitional basis.*
1 *Corporates includes specialised lending exposures which are reported in more detail in Table 80: Specialised lending on slotting approach (CR10).*
2 *Equity exposures include investments that are risk weighted at 250%.*
3 *Average net carrying values are calculated by aggregating net carrying values of the last five quarters and dividing by five.*
4 *We have started reporting Corporate SME exposures from 31 December 2021. Average net carrying values will be reported from 2022 onwards.*

Credit quality

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 tables present information on the credit quality of exposures by exposure class, industry and geography. For further detail on the credit quality of STD exposures, refer to Tables 44 and 79. Information on the credit quality of IRB exposures can be found in Table 81.

Table 24: Credit quality of exposures by exposure classes and instruments[1] (CR1-A)

		Gross carrying values of					
		Defaulted exposures	Non-defaulted exposures	Specific credit risk adjustments	Write-offs in the year[2]	Credit risk adjustment charges of the period[2]	Net carrying values
		$bn	$bn	$bn	$bn	$bn	$bn
1	Central governments and central banks	–	441.3	–	–	–	441.3
2	Institutions	–	87.4	–	–	(0.1)	87.4
3	Corporates	12.3	1,047.2	6.9	0.8	(0.7)	1,052.6
4	– *of which: specialised lending*	*0.9*	*49.7*	*0.5*	–	–	*50.1*
5	– *of which: SMEs*[3]	–	*63.0*	*0.2*	–	*0.2*	*62.8*
6	Retail	3.8	614.4	2.0	1.0	(0.1)	616.2
7	– Secured by real estate property	2.7	385.0	0.4	–	–	387.3
8	*SMEs*	*0.1*	*1.4*	–	–	–	*1.5*
9	*Non-SMEs*	*2.6*	*383.6*	*0.4*	–	–	*385.8*
10	– Qualifying revolving retail	0.2	140.2	0.9	0.5	0.1	139.5
11	– Other retail	0.9	89.2	0.7	0.5	(0.2)	89.4
12	*SMEs*	*0.6*	*13.9*	*0.3*	*0.1*	*(0.2)*	*14.2*
13	*Non-SMEs*	*0.3*	*75.3*	*0.4*	*0.4*	–	*75.2*
15	**Total IRB approach**	16.1	2,190.3	8.9	1.8	(0.9)	2,197.5
16	Central governments and central banks	–	338.3	–	–	–	338.3
17	Regional governments or local authorities	–	9.9	–	–	–	9.9
18	Public sector entities	–	15.3	–	–	–	15.3
19	Multilateral development banks	–	–	–	–	–	–
20	International organisations	–	1.0	–	–	–	1.0
21	Institutions	–	0.9	–	–	–	0.9
22	Corporates	4.4	137.4	2.3	0.2	0.1	139.5
23	– *of which: SMEs*[3]	–	*6.0*	–	–	–	*6.0*
24	Retail	0.6	74.1	1.3	0.6	0.3	73.4
25	– *of which: SMEs*	–	*2.8*	*0.1*	–	–	*2.7*
26	Secured by mortgages on immovable property	1.0	35.3	0.4	–	–	35.9
27	– *of which: SMEs*	–	*0.4*	–	–	–	*0.4*
28	Exposures in default	6.0	–	1.9	0.8	0.6	4.1
29	Items associated with particularly high risk	–	3.7	–	–	–	3.7
32	Collective investment undertakings ('CIU')	–	0.2	–	–	–	0.2
33	Equity exposures	–	17.3	–	–	–	17.3
34	Other exposures	–	12.5	–	–	–	12.5
35	**Total standardised approach**	6.0	645.9	4.0	0.8	0.4	647.9
36	**Total at 31 Dec 2021**	22.1	2,836.2	12.9	2.6	(0.5)	2,845.4
	– *of which: loans*	*20.0*	*1,543.6*	*12.0*	*2.6*	*(0.4)*	*1,551.6*
	– *of which: debt securities*	–	*377.9*	*0.1*	–	*(0.1)*	*377.8*
	– *of which: off-balance sheet exposures*	*2.1*	*878.0*	*0.8*	–	–	*879.3*

Table 24: Credit quality of exposures by exposure classes and instruments[1] (CR1-A) (continued)

		Gross carrying values of					
		Defaulted exposures	Non-defaulted exposures	Specific credit risk adjustments	Write-offs in the year[2]	Credit risk adjustment charges of the period[2]	Net carrying values
		$bn	$bn	$bn	$bn	$bn	$bn
1	Central governments and central banks	0.2	433.1	0.1	—	—	433.2
2	Institutions	—	79.6	0.1	—	0.1	79.5
3	Corporates	13.3	1,050.9	8.2	1.2	4.6	1,056.0
4	– *of which: specialised lending*	*1.2*	*48.7*	*0.5*	—	—	*49.4*
6	Retail	4.0	599.0	3.4	0.8	2.3	599.6
7	– Secured by real estate property	2.8	367.1	0.4	—	0.3	369.5
8	*SMEs*	*0.1*	*1.4*	—	—	—	*1.5*
9	*Non-SMEs*	*2.7*	*365.7*	*0.4*	—	*0.3*	*368.0*
10	– Qualifying revolving retail	0.4	144.2	1.5	0.4	1.0	143.1
11	– Other retail	0.8	87.7	1.5	0.4	1.0	87.0
12	*SMEs*	*0.4*	*15.0*	*0.6*	*0.1*	*0.3*	*14.8*
13	*Non-SMEs*	*0.4*	*72.7*	*0.9*	*0.3*	*0.7*	*72.2*
15	Total IRB approach	17.5	2,162.6	11.8	2.0	7.0	2,168.3
16	Central governments and central banks	—	293.1	—	—	—	293.1
17	Regional governments or local authorities	—	10.5	—	—	—	10.5
18	Public sector entities	—	18.0	—	—	—	18.0
19	Multilateral development banks	—	—	—	—	—	—
20	International organisations	—	2.3	—	—	—	2.3
21	Institutions	—	0.8	—	—	—	0.8
22	Corporates	4.0	133.4	2.5	0.3	0.7	134.9
24	Retail	1.1	75.9	1.9	0.7	1.3	75.1
25	– *of which: SMEs*	*0.1*	*2.6*	*0.2*	—	—	*2.5*
26	Secured by mortgages on immovable property	0.8	34.3	0.2	—	0.1	34.9
27	– *of which: SMEs*	—	*0.3*	—	—	—	*0.3*
28	Exposures in default	6.0	—	2.3	1.1	2.0	3.7
29	Items associated with particularly high risk	0.1	5.1	0.1	—	—	5.1
32	Collective investment undertakings ('CIU')	—	0.4	—	—	—	0.4
33	Equity exposures	—	17.8	—	—	—	17.8
34	Other exposures	—	12.6	—	—	—	12.6
35	Total standardised approach	6.0	604.2	4.7	1.0	2.1	605.5
36	Total at 31 Dec 2020	23.5	2,766.8	16.5	3.0	9.1	2,773.8
	– *of which: loans*	*20.6*	*1,438.9*	*15.2*	*3.0*	*8.3*	*1,444.3*
	– *of which: debt securities*	*0.3*	*417.0*	*0.1*	—	*0.1*	*417.2*
	– *of which: off-balance sheet exposures*	*2.6*	*872.5*	*1.2*	—	*0.7*	*873.9*

1 Securitisation positions and non-credit obligation assets are not included in this table.
2 Presented on a year-to-date basis.
3 We have started reporting Corporate SME exposures in our 31 December 2021 disclosures.

Table 25: Credit quality of exposures by industry or counterparty types[1] (CR1-B)

		Gross carrying values of					
		Defaulted exposures	Non-defaulted exposures	Specific credit risk adjustments	Write-offs in the year[2]	Credit risk adjustment charges of the period[2]	Net carrying values
		$bn	$bn	$bn	$bn	$bn	$bn
1	Agriculture	**0.4**	**10.7**	**0.1**	**—**	**(0.1)**	**11.0**
2	Mining & oil extraction	**0.4**	**33.4**	**0.3**	**—**	**(0.2)**	**33.5**
3	Manufacturing	**2.7**	**237.9**	**1.6**	**0.5**	**—**	**239.0**
4	Utilities	**0.1**	**36.4**	**0.1**	**—**	**—**	**36.4**
5	Water supply	**—**	**3.1**	**—**	**—**	**—**	**3.1**
6	Construction	**1.1**	**43.5**	**0.5**	**—**	**—**	**44.1**
7	Wholesale & retail trade	**3.7**	**200.0**	**2.6**	**0.2**	**0.3**	**201.1**
8	Transportation & storage	**0.7**	**53.4**	**0.4**	**—**	**—**	**53.7**
9	Accommodation & food services	**1.1**	**27.9**	**0.5**	**—**	**0.1**	**28.5**
10	Information & communication	**0.6**	**18.1**	**0.2**	**—**	**—**	**18.5**
11	Financial & insurance	**0.3**	**791.9**	**0.2**	**—**	**(0.2)**	**792.0**
12	Real estate	**2.4**	**187.5**	**1.3**	**—**	**0.1**	**188.6**
13	Professional activities	**0.3**	**31.0**	**0.2**	**—**	**(0.1)**	**31.1**
14	Administrative service	**2.8**	**164.4**	**1.1**	**—**	**(0.7)**	**166.1**
15	Public admin & defence	**0.2**	**276.0**	**0.2**	**—**	**(0.1)**	**276.0**
16	Education	**0.1**	**3.8**	**—**	**—**	**—**	**3.9**
17	Human health & social work	**0.2**	**10.9**	**0.1**	**0.1**	**—**	**11.0**
18	Arts & entertainment	**0.2**	**7.6**	**0.1**	**0.1**	**0.1**	**7.7**
19	Other services	**0.2**	**15.2**	**0.1**	**0.1**	**0.1**	**15.3**
20	Personal	**4.6**	**676.1**	**3.3**	**1.6**	**0.2**	**677.4**
21	Extra-territorial bodies	**—**	**7.4**	**—**	**—**	**—**	**7.4**
22	**Total at 31 Dec 2021**	**22.1**	**2,836.2**	**12.9**	**2.6**	**(0.5)**	**2,845.4**
1	Agriculture	0.4	10.1	0.2	—	—	10.3
2	Mining & oil extraction	0.9	38.8	0.5	0.1	0.4	39.2
3	Manufacturing	3.0	250.2	2.2	0.8	1.2	251.0
4	Utilities	0.1	35.6	0.1	—	—	35.6
5	Water supply	—	3.2	—	—	—	3.2
6	Construction	1.3	44.4	0.6	—	—	45.1
7	Wholesale & retail trade	3.9	195.8	2.6	0.2	1.6	197.1
8	Transportation & storage	0.8	49.7	0.5	—	0.2	50.0
9	Accommodation & food services	0.6	31.3	0.4	—	0.3	31.5
10	Information & communication	0.7	18.4	0.2	—	—	18.9
11	Financial & insurance	0.3	716.3	0.4	0.1	0.2	716.2
12	Real estate	1.9	188.3	1.2	—	0.3	189.0
13	Professional activities	0.3	31.7	0.2	—	0.1	31.8
14	Administrative service	2.6	165.1	1.7	0.2	0.7	166.0
15	Public admin & defence[3]	0.4	277.1	0.3	—	0.1	277.2
16	Education	—	4.1	—	—	0.1	4.1
17	Human health & social work	0.3	8.7	0.2	—	0.2	8.8
18	Arts & entertainment	0.3	8.9	0.2	0.1	0.3	9.0
19	Other services	0.3	14.6	0.1	—	—	14.8
20	Personal	5.4	665.0	4.9	1.5	3.4	665.5
21	Extra-territorial bodies[3]	—	9.5	—	—	—	9.5
22	Total at 31 Dec 2020	23.5	2,766.8	16.5	3.0	9.1	2,773.8

1 *Securitisation positions and non-credit obligation assets are not included in this table.*
2 *Presented on a year-to-date basis.*
3 *The industry classifications of this disclosure have been revised. Data for 31 December 2020 has been restated to be on a consistent basis with the current year.*

Table 26: Credit quality of exposures by geography[1,2] (CR1-C)

		Gross carrying values of					
		Defaulted exposures	Non-defaulted exposures	Specific credit risk adjustments	Write-offs in the year[3]	Credit risk adjustment charges of the period[3]	Net carrying values
		$bn	$bn	$bn	$bn	$bn	$bn
1	**Europe**	**8.8**	**1,000.0**	**4.2**	**1.0**	**(1.5)**	**1,004.6**
2	– United Kingdom	**5.7**	**650.2**	**2.9**	**0.9**	**(1.5)**	**653.0**
3	– France	**1.1**	**171.5**	**0.7**	**0.1**	**0.1**	**171.9**
4	– Other countries	**2.0**	**178.3**	**0.6**	**—**	**(0.1)**	**179.7**
5	**Asia**	**5.7**	**1,143.3**	**4.3**	**0.6**	**1.0**	**1,144.7**
6	– Hong Kong	**2.2**	**553.9**	**1.8**	**0.3**	**0.6**	**554.3**
7	– China	**0.4**	**190.1**	**0.4**	**0.1**	**0.1**	**190.1**
8	– Singapore	**1.2**	**95.1**	**0.9**	**—**	**—**	**95.4**
9	– Australia	**0.4**	**66.9**	**0.2**	**—**	**—**	**67.1**
10	– Other countries	**1.5**	**237.3**	**1.0**	**0.2**	**0.3**	**237.8**
11	**MENA**	**4.0**	**150.8**	**2.1**	**0.3**	**(0.1)**	**152.7**
12	**North America**	**2.3**	**477.0**	**1.0**	**0.2**	**(0.1)**	**478.3**
13	– United States of America	**1.5**	**336.6**	**0.5**	**0.2**	**(0.1)**	**337.6**
14	– Canada	**0.3**	**128.6**	**0.3**	**—**	**—**	**128.6**
15	– Other countries	**0.5**	**11.8**	**0.2**	**—**	**—**	**12.1**
16	**Latin America**	**1.3**	**52.4**	**1.3**	**0.5**	**0.2**	**52.4**
17	**Other geographical areas**	**—**	**12.7**	**—**	**—**	**—**	**12.7**
18	**Total at 31 Dec 2021**	**22.1**	**2,836.2**	**12.9**	**2.6**	**(0.5)**	**2,845.4**
1	Europe	10.0	980.6	6.9	1.1	3.6	983.7
2	– United Kingdom	6.2	611.7	5.3	0.8	2.9	612.6
3	– France	1.4	172.4	0.7	0.3	0.3	173.1
4	– Other countries	2.4	196.5	0.9	—	0.4	198.0
5	Asia	5.2	1,118.6	3.9	0.7	2.4	1,119.9
6	– Hong Kong	1.9	556.4	1.4	0.3	0.8	556.9
7	– China	0.3	176.5	0.4	0.1	0.1	176.4
8	– Singapore	1.0	88.9	0.9	—	0.8	89.0
9	– Australia	0.5	70.0	0.2	—	0.1	70.3
10	– Other countries	1.5	226.8	1.0	0.3	0.6	227.3
11	MENA	4.2	146.6	2.7	0.2	0.8	148.1
12	North America	2.6	448.3	1.4	0.4	1.2	449.5
13	– United States of America	1.6	306.8	0.8	0.3	0.7	307.6
14	– Canada	0.5	128.3	0.4	0.1	0.3	128.4
15	– Other countries	0.5	13.2	0.2	—	0.2	13.5
16	Latin America	1.5	53.6	1.6	0.6	1.1	53.5
17	Other geographical areas	—	19.1	—	—	—	19.1
18	Total at 31 Dec 2020	23.5	2,766.8	16.5	3.0	9.1	2,773.8

1 Amounts shown by geographical region and country/territory in this table are based on the country/territory of residence of the counterparty.
2 Securitisation positions and non-credit obligation assets are not included in this table.
3 Presented on a year-to-date basis.

Table 27: Changes in stock of general and specific credit risk adjustments (CR2-A)

		Twelve months to 31 Dec			
		2021		2020	
		Accumulated specific credit risk adjustments	**Accumulated general credit risk adjustments**	Accumulated specific credit risk adjustments	Accumulated general credit risk adjustments
		$bn	**$bn**	$bn	$bn
1	**Opening balance at the beginning of the period**	**16.5**	**—**	10.0	—
2	Increases due to amounts set aside for estimated loan losses during the period[1]	**—**	**—**	9.1	—
3	Decreases due to amounts reversed for estimated loan losses during the period	**(0.7)**	**—**	—	—
4	Decreases due to amounts taken against accumulated credit risk adjustments	**(2.6)**	**—**	(3.0)	—
6	Impact of exchange rate differences	**(0.3)**	**—**	0.4	—
9	**Closing balance at the end of the period**	**12.9**	**—**	16.5	—
10	Recoveries on credit risk adjustments recorded directly to the statement of profit or loss	**0.4**	**—**	0.3	—

1 Following adoption of IFRS 9 'Financial Instruments', the movement due to amounts set aside for estimated loan losses during the period is reported on a net basis.

Table 28: Changes in stock of defaulted loans and debt securities (CR2-B)

		Twelve months to 31 Dec	
		2021	2020
		Gross carrying value	Gross carrying value
		$bn	$bn
1	**Defaulted loans and debt securities at the beginning of the period**	**20.9**	14.6
2	Loans and debt securities that have defaulted since the last reporting period	**8.7**	12.6
3	Returned to non-defaulted status	**(2.2)**	(2.3)
4	Amounts written off	**(2.6)**	(3.0)
5	Other changes[1]	**(1.3)**	1.4
7	Repayments	**(3.5)**	(2.4)
6	**Defaulted loans and debt securities at the end of the period**	**20.0**	20.9

1 *Other changes include foreign exchange movements and changes in assets held for sale in default.*

Non-performing and forborne exposures

Tables 29 to 32 are presented in accordance with the EBA's 'Guidelines on disclosure of non-performing and forborne exposures' where, during 2021, we adopted the EBA 'Guidelines on the application of definition of default' for our wholesale portfolios. This did not have a material impact on our wholesale portfolios. For our retail portfolios, these guidelines will be adopted in 2022 and this is not expected to have a material impact.

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. 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 2021* definition of stage 3 credit-impaired is aligned to the EBA's definition of non-performing exposures.

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. In the *Annual Report and Accounts 2021*, forborne exposures are reported as 'renegotiated loans'. HSBC classes loans as forborne when we modify the contractual payment terms where we have significant concerns about the borrowers' ability to meet contractual payments when due.

Although they are indicators of potential impairment, non-payment concessions (for example, covenant waivers) do not currently trigger classification as forborne exposure in our disclosures. However, in 2022, we intend to include non-payment concessions as a new forborne loans classification.

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 at the end of the probation period.

In the *Annual Report and Accounts 2021*, renegotiated loans retain this classification until maturity or de-recognition.

Under EBA and PRA guidelines, the use of support measures introduced as a result of the Covid-19 pandemic does not in itself trigger identification as non-performing or forborne. Borrower-specific support measures are assessed under the existing rules to determine whether forbearance has been granted.

Table 29: Credit quality of forborne exposures

		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*
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
	At 31 Dec 2021								
1	**Loans and advances**	**0.4**	**7.0**	***7.0***	***7.0***	**—**	**(1.7)**	**3.7**	***3.5***
2	Central banks	**—**	**—**	***—***	***—***	**—**	**—**	**—**	***—***
3	General governments	**—**	**—**	***—***	***—***	**—**	**—**	**—**	***—***
4	Credit institutions	**—**	**—**	***—***	***—***	**—**	**—**	**—**	***—***
5	Other financial corporations	**—**	**—**	***—***	***—***	**—**	**—**	**—**	***—***
6	Non-financial corporations	**0.4**	**4.7**	***4.7***	***4.7***	**—**	**(1.3)**	**2.3**	***2.1***
7	Households	**—**	**2.3**	***2.3***	***2.3***	**—**	**(0.4)**	**1.4**	***1.4***
8	**Debt securities**	**—**	**—**	***—***	***—***	**—**	**—**	**—**	***—***
9	**Loan commitments given**	**—**	**0.1**	***0.1***	***0.1***	**—**	**—**	**—**	***—***
10	**Total**	**0.4**	**7.1**	***7.1***	***7.1***	**—**	**(1.7)**	**3.7**	***3.5***
	At 31 Dec 2020								
1	Loans and advances	0.8	6.6	*6.6*	*6.6*	—	(1.8)	3.0	*2.8*
2	Central banks	—	—	*—*	*—*	—	—	—	*—*
3	General governments	—	—	*—*	*—*	—	—	—	*—*
4	Credit institutions	—	—	*—*	*—*	—	—	—	*—*
5	Other financial corporations	—	—	*—*	*—*	—	—	—	*—*
6	Non-financial corporations	0.8	4.2	*4.2*	*4.2*	—	(1.4)	1.5	*1.3*
7	Households	—	2.4	*2.4*	*2.4*	—	(0.4)	1.5	*1.5*
8	Debt securities	—	—	*—*	*—*	—	—	—	*—*
9	Loan commitments given[1]	—	0.2	*0.2*	*0.2*	—	—	—	*—*
10	Total	0.8	6.8	*6.8*	*6.8*	—	(1.8)	3.0	*2.8*

1 *The treatment of financial guarantees received against loan commitments has been revised following recent regulatory guidance. Data for 31 December 2020 has been restated to be on a consistent basis with the current year.*

Table 30 presents an analysis of performing and non-performing exposures by days past due. The gross non-performing loan ('NPL') ratio at 31 December 2021 was 1.43% calculated in line with the EBA guidelines.

Table 30: Credit quality of performing and non-performing exposures by past due days

		Gross carrying amount/nominal amount[1]											
		Performing exposures			Non-performing exposures								
		Total	Not past due or past due ≤ 30 days	Past due > 30 days ≤ 90 days	Total	Unlikely to pay but not past due or 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
	At 31 Dec 2021												
1	**Loans and advances**	**1,810.9**	**1,809.2**	**1.7**	**19.9**	**12.1**	**2.4**	**1.1**	**2.1**	**1.2**	**0.3**	**0.7**	***19.9***
2	Central banks	**458.3**	**458.3**	—	—	—	—	—	—	—	—	—	—
3	General governments	**9.3**	**9.3**	—	—	—	—	—	—	—	—	—	—
4	Credit institutions	**140.2**	**140.2**	—	—	—	—	—	—	—	—	—	—
5	Other financial corporations	**216.4**	**216.4**	—	**0.4**	**0.4**	—	—	—	—	—	—	***0.4***
6	Non-financial corporations	**510.0**	**509.3**	**0.7**	**14.4**	**8.9**	**1.6**	**0.6**	**1.8**	**0.8**	**0.2**	**0.5**	***14.4***
7	*Of which SMEs*[2]	**59.0**	**58.8**	**0.2**	**0.9**	**0.3**	**0.4**	**0.1**	—	—	—	**0.1**	***0.9***
8	Households	**476.7**	**475.7**	**1.0**	**5.1**	**2.8**	**0.8**	**0.5**	**0.3**	**0.4**	**0.1**	**0.2**	***5.1***
9	**Debt securities**	**378.5**	**378.5**	—	—	—	—	—	—	—	—	—	—
10	Central banks	**86.6**	**86.6**	—	—	—	—	—	—	—	—	—	—
11	General governments	**220.9**	**220.9**	—	—	—	—	—	—	—	—	—	—
12	Credit institutions	**32.3**	**32.3**	—	—	—	—	—	—	—	—	—	—
13	Other financial corporations	**35.9**	**35.9**	—	—	—	—	—	—	—	—	—	—
14	Non-financial corporations	**2.8**	**2.8**	—	—	—	—	—	—	—	—	—	—
15	**Off-balance-sheet exposures**	**750.5**	**N/A**	**N/A**	**1.8**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	***1.8***
16	Central banks	—	**N/A**	**N/A**	—	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	—
17	General governments	**3.2**	**N/A**	**N/A**	—	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	—
18	Credit institutions	**50.9**	**N/A**	**N/A**	—	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	—
19	Other financial corporations	**68.3**	**N/A**	**N/A**	—	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	—
20	Non-financial corporations	**387.4**	**N/A**	**N/A**	**1.6**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	***1.6***
21	Households	**240.7**	**N/A**	**N/A**	**0.2**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	***0.2***
22	**Total**	**2,939.9**	**2,187.7**	**1.7**	**21.7**	**12.1**	**2.4**	**1.1**	**2.1**	**1.2**	**0.3**	**0.7**	***21.7***
	At 31 Dec 2020												
1	Loans and advances	1,691.9	1,689.9	2.0	20.3	12.0	2.7	2.2	0.7	1.9	0.3	0.5	*20.3*
2	Central banks	352.9	352.9	—	—	—	—	—	—	—	—	—	—
3	General governments	10.2	10.2	—	—	—	—	—	—	—	—	—	—
4	Credit institutions	131.1	131.1	—	—	—	—	—	—	—	—	—	—
5	Other financial corporations	216.7	216.7	—	0.5	0.5	—	—	—	—	—	—	*0.5*
6	Non-financial corporations	523.3	522.6	0.7	14.0	8.9	1.5	1.4	0.4	1.2	0.2	0.4	*14.0*
8	Households	457.7	456.4	1.3	5.8	2.6	1.2	0.8	0.3	0.7	0.1	0.1	*5.8*
9	Debt securities	422.7	422.7	—	0.3	0.3	—	—	—	—	—	—	*0.3*
10	Central banks	84.5	84.5	—	0.1	0.1	—	—	—	—	—	—	*0.1*
11	General governments	255.5	255.5	—	0.2	0.2	—	—	—	—	—	—	*0.2*
12	Credit institutions	40.5	40.5	—	—	—	—	—	—	—	—	—	—
13	Other financial corporations	37.7	37.7	—	—	—	—	—	—	—	—	—	—
14	Non-financial corporations	4.5	4.5	—	—	—	—	—	—	—	—	—	—
15	Off-balance-sheet exposures	765.3	N/A	N/A	2.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	*2.4*
16	Central banks	1.7	N/A	N/A	—	N/A	N/A	N/A	N/A	N/A	N/A	N/A	—
17	General governments	3.9	N/A	N/A	—	N/A	N/A	N/A	N/A	N/A	N/A	N/A	—
18	Credit institutions	63.7	N/A	N/A	—	N/A	N/A	N/A	N/A	N/A	N/A	N/A	—
19	Other financial corporations	68.1	N/A	N/A	—	N/A	N/A	N/A	N/A	N/A	N/A	N/A	—
20	Non-financial corporations	392.9	N/A	N/A	2.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	*2.2*
21	Households	235.0	N/A	N/A	0.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	*0.2*
22	Total	2,879.9	2,112.6	2.0	23.0	12.3	2.7	2.2	0.7	1.9	0.3	0.5	*23.0*

1 Includes reverse repos and settlement accounts.
2 We have started reporting Corporate SME exposures in our 31 December 2021 disclosures.

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 31: Collateral obtained by taking possession and execution processes

		At 31 Dec 2021		At 31 Dec 2020	
		Collateral obtained by taking possession		Collateral obtained by taking possession	
		Value at initial recognition	Accumulated negative changes	Value at initial recognition	Accumulated negative changes
		$bn	$bn	$bn	$bn
1	Property, plant and equipment (PP&E)	—	—	—	—
2	Other than PP&E	0.1	—	0.1	—
3	Residential immovable property	0.1	—	0.1	—
8	**Total**	0.1	—	0.1	—

The following table provides information about the gross carrying amount of exposures and related impairment with further detail on 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. A lifetime ECL is recognised. These exposures are included in stage 3 in Table 32 below.

Refer to the section 'EL and credit risk adjustments' on page 51 for further information on IFRS 9.

Credit-impaired (stage 3) exposures are disclosed on page 163 and 177 of the Annual Report and Accounts 2021.

Table 32: Performing and non-performing exposures and related provisions

		Gross carrying amount/nominal amount[1]						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
1	**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
2	Central banks	458.3	455.7	2.6	–	–	–	–	–	–	–	–	–	–	19.3	–
3	General governments	9.3	8.2	1.1	–	–	–	–	–	–	–	–	–	–	3.1	–
4	Credit institutions	140.2	140.0	0.1	–	–	–	–	–	–	–	–	–	–	90.7	–
5	Other financial corporations	216.4	207.8	4.0	0.4	–	0.4	(0.1)	(0.1)	–	–	–	–	–	153.8	–
6	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
7	Of which SMEs[3]	59.0	48.5	10.5	0.9	–	0.9	(0.4)	(0.1)	(0.3)	(0.3)	–	(0.3)	–	48.7	0.6
8	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
9	**Debt securities**	378.5	375.0	1.9	–	–	–	(0.1)	(0.1)	–	–	–	–	–	30.5	–
10	Central banks	86.6	85.9	0.7	–	–	–	–	–	–	–	–	–	–	–	–
11	General governments	220.9	219.9	0.3	–	–	–	(0.1)	(0.1)	–	–	–	–	–	6.4	–
12	Credit institutions	32.3	31.7	0.6	–	–	–	–	–	–	–	–	–	–	5.3	–
13	Other financial corporations	35.9	35.3	0.3	–	–	–	–	–	–	–	–	–	–	18.8	–
14	Non-financial corporations	2.8	2.2	–	–	–	–	–	–	–	–	–	–	–	–	–
15	**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
16	Central banks	–	–	–	–	–	–	–	–	–	–	–	–		–	–
17	General governments	3.2	2.3	0.1	–	–	–	–	–	–	–	–	–		–	–
18	Credit institutions	50.9	45.8	0.4	–	–	–	–	–	–	–	–	–		–	–
19	Other financial corporations	68.3	63.7	2.4	–	–	–	–	–	–	–	–	–		5.2	–
20	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
21	Households	240.7	238.9	1.8	0.2	–	0.2	(0.1)	(0.1)	–	–	–	–		49.9	–
22	**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

Table 32: Performing and non-performing exposures and related provisions (continue)

		Gross carrying amount/nominal amount1						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*	Accu-mulated partial write-off	On perfor-ming expo-sures	On non-perfor-ming expo-sures
		$bn	*$bn*	*$bn*	$bn	*$bn*	*$bn*	$bn	*$bn*	*$bn*	$bn	*$bn*	*$bn*	$bn	$bn	$bn
1	Loans and advances	1,691.9	*1,519.1*	*169.4*	20.3	—	*20.3*	(7.3)	*(2.1)*	*(5.2)*	(7.9)	—	*(7.9)*	(0.8)	966.8	7.1
2	Central banks	352.9	*351.0*	*1.9*	—	—	—	—	—	—	—	—	—	—	7.8	—
3	General governments	10.2	*9.1*	*1.1*	—	—	—	—	—	—	—	—	—	—	3.8	—
4	Credit institutions	131.1	*130.3*	*0.8*	—	—	—	—	—	—	—	—	—	—	90.0	—
5	Other financial corporations	216.7	*202.4*	*11.6*	0.5	—	*0.5*	(0.2)	*(0.1)*	*(0.1)*	(0.1)	—	*(0.1)*	—	155.3	—
6	Non-financial corporations	523.3	*394.0*	*128.8*	14.0	—	*14.0*	(3.8)	*(1.1)*	*(2.7)*	(6.2)	—	*(6.2)*	(0.5)	304.2	3.8
8	Households	457.7	*432.3*	*25.2*	5.8	—	*5.8*	(3.3)	*(0.9)*	*(2.4)*	(1.6)	—	*(1.6)*	(0.3)	405.7	3.3
9	Debt securities	422.7	*420.1*	*1.2*	0.3	—	*0.3*	(0.1)	*(0.1)*	—	—	—	—	—	15.6	—
10	Central banks	84.5	*83.9*	*0.6*	0.1	—	*0.1*	—	—	—	—	—	—	—	—	—
11	General governments	255.5	*254.7*	*0.1*	0.2	—	*0.2*	(0.1)	*(0.1)*	—	—	—	—	—	6.7	—
12	Credit institutions	40.5	*40.4*	*0.1*	—	—	—	—	—	—	—	—	—	—	—	—
13	Other financial corporations	37.7	*36.9*	*0.4*	—	—	—	—	—	—	—	—	—	—	8.9	—
14	Non-financial corporations	4.5	*4.2*	—	—	—	—	—	—	—	—	—	—	—	—	—
15	Off-balance-sheet exposures[2]	765.3	*627.8*	*58.9*	2.4	—	*1.7*	(0.9)	*(0.3)*	*(0.4)*	(0.3)	—	*(0.1)*		94.6	0.2
16	Central banks	1.7	*1.7*	—	—	—	—	—	—	—	—	—	—		—	—
17	General governments	3.9	*3.0*	*0.1*	—	—	—	—	—	—	—	—	—		—	—
18	Credit institutions	63.7	*59.2*	*0.7*	—	—	—	—	—	—	—	—	—		—	—
19	Other financial corporations	68.1	*60.3*	*6.5*	—	—	—	—	—	—	—	—	—		6.2	—
20	Non-financial corporations	392.9	*270.3*	*49.9*	2.2	—	*1.5*	(0.9)	*(0.3)*	*(0.4)*	(0.3)	—	*(0.1)*		39.1	0.2
21	Households	235.0	*233.3*	*1.7*	0.2	—	*0.2*	—	—	—	—	—	—		49.3	—
22	At 31 Dec 2020	2,879.9	*2,567.0*	*229.5*	23.0	—	*22.3*	(8.3)	*(2.5)*	*(5.6)*	(8.2)	—	*(8.0)*	(0.8)	1,077.0	7.3

1 Includes reverse repos and settlement accounts.

2 The treatment of financial guarantees received against loan commitments has been revised following recent regulatory guidance. Data for 31 December 2020 has been restated to be on a consistent basis with the current year.

3 We have started reporting Corporate SME exposures in our 31 December disclosures.

Table 33 analyses past due unimpaired and credit-impaired exposures on a regulatory consolidation basis using accounting values.

All amounts past due more than 90 days are considered credit impaired even where regulatory rules deem default as 180 days past due.

Table 33: Amount of past due unimpaired and credit-impaired exposures by geographical region

	Europe	Asia	MENA	North America	Latin America	Total
At 31 Dec 2021	**$bn**	**$bn**	**$bn**	**$bn**	**$bn**	**$bn**
Past due	**3.5**	**5.6**	**3.1**	**2.1**	**1.1**	**15.4**
– personal	**1.8**	**2.3**	**0.3**	**1.2**	**0.6**	**6.2**
– corporate and commercial	**1.7**	**3.0**	**2.8**	**0.8**	**0.5**	**8.8**
– financial	**—**	**0.3**	**—**	**0.1**	**—**	**0.4**
At 31 Dec 2020						
Past due	3.4	5.9	3.7	2.3	1.2	16.5
– personal	2.4	2.7	0.7	1.5	0.6	7.9
– corporate and commercial	1.0	2.8	3.0	0.6	0.5	7.9
– financial	—	0.4	—	0.2	0.1	0.7

Additional disclosures on measures applied in response to the Covid-19 pandemic

The following EBA tables provide information about payment moratoria and forbearance measures to existing loans and public guarantees to new lending in the context of Covid-19.

These temporary additional disclosures follow the PRA's guidelines on the application of the EBA's instructions and definitions to reflect the UK approach to payment deferrals.

In comparison to the disclosures within the *Annual Report and Accounts 2021*, these tables exclude certain schemes such as the interest subsidy in accordance to the PRA's guidelines.

Table 34:Loans and advances subject to legislative and non-legislative moratoria

		Gross carrying amount						Accumulated impairment, accumulated negative changes in fair value due to credit risk							Gross carrying amount
		Total	Performing exposures		Non-performing exposures			Total	Performing exposures			Non-performing exposures			
				of which forborne	*of which stage 2*		*of which forborne*	*Unlikely to pay but not past due or past due ≤ 90 days*			*of which forborne*	*of which stage 2*		*of which forborne*	*Unlikely to pay but not past due or past due ≤ 90 days*	Inflows to non-performing exposures
	At 31 Dec 2021	**$bn**	**$bn**	***$bn***	***$bn***	**$bn**	***$bn***	***$bn***	**$bn**	**$bn**	***$bn***	***$bn***	**$bn**	***$bn***	***$bn***	**$bn**
1	**Loans and advances**	**5.4**	**4.8**	—	***4.0***	**0.6**	**0.1**	***0.5***	**(0.1)**	—	—	—	**(0.1)**	—	***(0.1)***	**0.2**
2	*of which: households*	***1.8***	***1.3***	—	1.1	***0.5***	0.1	***0.5***	***(0.1)***	—	—	—	***(0.1)***	—	***(0.1)***	***0.2***
3	*of which: collateralised by residential immovable property*	***1.1***	***0.8***	—	0.6	***0.3***	0.1	***0.3***	—	—	—	—	—	—	—	***0.1***
4	*of which: non-financial corporations*	***3.6***	***3.5***	—	3.0	***0.1***	—	***0.1***	—	—	—	—	—	—	—	—
5	*of which: SMEs*[1]	***0.6***	***0.6***	—	0.6	—	—	—	—	—	—	—	—	—	—	—
6	*of which: collateralised by commercial immovable property*	***1.4***	***1.3***	—	1.2	***0.1***	—	***0.1***	—	—	—	—	—	—	—	—

1 We have started reporting Corporate SME exposures in our 31 December 2021 disclosures.

Table 35:Loans and advances subject to legislative and non-legislative moratoria by residual maturity

			Gross carrying amount/nominal amount							
						Residual maturity of moratoria				
	At 31 Dec 2021	Number of obligors		*of which: legislative moratoria*	*of which: expired*	≤3 months	>3 months ≤6 months	>6 months ≤9 months	>9 months ≤12 months	>1 year
		000s	$bn	*$bn*	*$bn*	$bn	$bn	$bn	$bn	$bn
1	Loans and advances for which moratorium was offered	498	60.3							
2	Loans and advances subject to moratorium (granted)	492	59.7	*27.7*	*54.3*	2.7	2.3	0.1	—	0.3
3	*of which: households*		*25.5*	17.6	23.7	*1.4*	*0.2*	*0.1*	—	*0.1*
4	*of which: collateralised by residential immovable property*		*21.8*	15.0	20.7	*0.9*	*0.1*	*0.1*	—	—
5	*of which: non-financial corporations*		*34.0*	10.1	30.4	*1.3*	*2.1*	—	—	*0.2*
6	*of which: SMEs*[1]		*5.6*	0.7	5.0	*0.1*	*0.5*	—	—	—
7	*of which: collateralised by commercial immovable property*		*15.9*	6.1	14.5	*0.7*	*0.7*	—	—	—

1 *We have started reporting Corporate SME exposures in our 31 December 2021 disclosures..*

Table 36:Newly originated loans and advances provided under newly applicable public guarantee schemes

		Gross carrying amount		Public guarantees received	Inflows to non-performing exposures
			of which forborne	Maximum amount that can be considered	Gross carrying amount
	At 31 Dec 2021	$bn	*$bn*	$bn	$bn
1	Newly originated loans and advances subject to public guarantee schemes	17.1	—	15.8	0.5
2	*of which: households*	—	*N/A*	*N/A*	*N/A*
3	*of which: Collateralised by residential immovable property*	—	*N/A*	*N/A*	*N/A*
4	*of which: Non-financial corporations*	*17.0*	—	*15.7*	*0.5*
5	*of which: SMEs*[1]	*10.1*	*N/A*	*N/A*	*0.3*
6	*of which: Collateralised by commercial immovable property*	*0.9*	*N/A*	*N/A*	—

1 *We have started reporting Corporate SME exposures in our 31 December 2021 disclosures.*

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 37: Geographical breakdown of exposures (CRB-C)

		Net carrying values[1,2]									
			Of which:				Of which:				
		Europe	United Kingdom	France	Other countries	Asia	Hong Kong	China	Singapore	Australia	Other countries
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
	IRB approach exposure classes										
1	Central governments and central banks	6.9	0.3	—	6.6	211.4	62.1	33.5	30.7	12.9	72.2
2	Institutions	21.8	11.0	1.5	9.3	50.4	7.8	21.6	3.6	1.9	15.5
3	Corporates	317.5	163.3	56.4	97.8	467.6	206.9	94.9	31.9	27.4	106.5
4	Retail	272.2	237.9	27.7	6.6	276.0	217.9	5.5	15.8	22.5	14.3
6	**Total IRB approach**	618.4	412.5	85.6	120.3	1,005.4	494.7	155.5	82.0	64.7	208.5
	Standardised approach exposure classes									—	
7	Central governments and central banks	333.2	227.7	76.0	29.5	0.6	0.1	0.1	—	0.1	0.3
8	Regional governments or local authorities	2.6	—	—	2.6	—	—	—	—	—	—
9	Public sector entities	15.2	—	5.1	10.1	0.1	—	—	—	—	0.1
10	Multilateral development banks	—	—	—	—	—	—	—	—	—	—
11	International organisations	—	—	—	—	—	—	—	—	—	—
12	Institutions	0.1	—	—	0.1	0.1	—	0.1	—	—	—
13	Corporates	14.9	2.5	2.8	9.6	51.1	32.5	5.5	4.9	0.7	7.5
14	Retail	4.5	2.9	0.3	1.3	47.5	17.4	5.0	8.1	1.5	15.5
15	Secured by mortgages on immovable property	7.3	1.5	1.2	4.6	17.8	3.3	9.7	0.4	0.1	4.3
16	Exposures in default	0.5	—	0.1	0.4	0.5	0.3	—	—	—	0.2
17	Items associated with particularly high risk	2.4	1.5	0.1	0.8	—	—	—	—	—	—
20	Collective investment undertakings ('CIU')	0.2	0.2	—	—	—	—	—	—	—	—
21	Equity exposures	1.5	0.8	0.5	0.2	14.5	1.6	12.8	—	—	0.1
22	Other exposures	3.8	3.4	0.2	0.2	7.1	4.4	1.4	—	—	1.3
23	**Total standardised approach**	386.2	240.5	86.3	59.4	139.3	59.6	34.6	13.4	2.4	29.3
24	**Total at 31 Dec 2021**	1,004.6	653.0	171.9	179.7	1,144.7	554.3	190.1	95.4	67.1	237.8

Table 37: Geographical breakdown of exposures (CRB-C)

		Net carrying values[1,2]							
				Of which:					
		MENA	North America	United States of America	Canada	Other countries	Latin America	Other	Total
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
	IRB approach exposure classes								
1	Central governments and central banks	26.2	176.6	148.3	28.3	—	8.5	11.7	441.3
2	Institutions	5.6	9.1	1.9	7.2	—	0.5	—	87.4
3	Corporates	51.8	210.7	146.7	58.6	5.4	5.0	—	1,052.6
4	Retail	4.2	63.3	29.1	31.0	3.2	0.5	—	616.2
6	**Total IRB approach**	87.8	459.7	326.0	125.1	8.6	14.5	11.7	2,197.5
	Standardised approach exposure classes								
7	Central governments and central banks	1.5	2.1	1.9	0.2	—	0.9	—	338.3
8	Regional governments or local authorities	6.5	0.2	0.2	—	—	0.6	—	9.9
9	Public sector entities	—	—	—	—	—	—	—	15.3
10	Multilateral development banks	—	—	—	—	—	—	—	—
11	International organisations	—	—	—	—	—	—	1.0	1.0
12	Institutions	0.7	—	—	—	—	—	—	0.9
13	Corporates	41.9	7.5	5.4	0.8	1.3	21.1	—	136.5
14	Retail	7.6	4.1	1.6	2.1	0.4	9.3	—	73.0
15	Secured by mortgages on immovable property	3.8	1.6	0.3	0.1	1.2	4.7	—	35.2
16	Exposures in default	2.0	0.4	0.2	—	0.2	0.7	—	4.1
17	Items associated with particularly high risk	0.1	1.1	0.7	—	0.4	0.1	—	3.7
20	Collective investment undertakings ('CIU')	—	—	—	—	—	—	—	0.2
21	Equity exposures	0.1	1.1	1.1	—	—	0.1	—	17.3
22	Other exposures	0.7	0.5	0.2	0.3	—	0.4	—	12.5
23	**Total standardised approach**	64.9	18.6	11.6	3.5	3.5	37.9	1.0	647.9
24	**Total at 31 Dec 2021**	152.7	478.3	337.6	128.6	12.1	52.4	12.7	2,845.4

Table 37: Geographical breakdown of exposures (CRB-C) (continued)

		Net carrying values[1,2]									
			Of which:				*Of which:*				
		Europe	*United Kingdom*	*France*	*Other countries*	Asia	*Hong Kong*	*China*	*Singapore*	*Australia*	*Other countries*
		$bn	*$bn*	*$bn*	*$bn*	$bn	*$bn*	*$bn*	*$bn*	*$bn*	*$bn*
	IRB approach exposure classes										
1	Central governments and central banks	8.1	*0.3*	*—*	*7.8*	229.1	*77.4*	*36.3*	*28.5*	*14.9*	*72.0*
2	Institutions	22.6	*11.6*	*1.7*	*9.3*	39.7	*4.6*	*17.2*	*2.6*	*3.4*	*11.9*
3	Corporates	337.5	*176.9*	*55.4*	*105.2*	449.3	*210.7*	*84.9*	*30.2*	*26.6*	*96.9*
4	Retail	268.5	*231.8*	*30.1*	*6.6*	267.3	*210.6*	*6.2*	*14.5*	*21.2*	*14.8*
6	Total IRB approach	636.7	*420.6*	*87.2*	*128.9*	985.4	*503.3*	*144.6*	*75.8*	*66.1*	*195.6*
	Standardised approach exposure classes										
7	Central governments and central banks	287.0	*179.1*	*73.6*	*34.3*	0.8	*0.2*	*0.1*	*—*	*0.1*	*0.4*
8	Regional governments or local authorities	3.7	*—*	*—*	*3.7*	—	*—*	*—*	*—*	*—*	*—*
9	Public sector entities	17.9	*—*	*5.5*	*12.4*	—	*—*	*—*	*—*	*—*	*—*
10	Multilateral development banks	—	*—*	*—*	*—*	—	*—*	*—*	*—*	*—*	*—*
11	International organisations	—	*—*	*—*	*—*	—	*—*	*—*	*—*	*—*	*—*
12	Institutions	0.2	*0.1*	*—*	*0.1*	—	*—*	*—*	*—*	*—*	*—*
13	Corporates	16.2	*2.6*	*3.7*	*9.9*	44.6	*27.6*	*4.1*	*4.6*	*2.3*	*6.0*
14	Retail	4.7	*2.8*	*0.4*	*1.5*	49.4	*14.9*	*5.3*	*7.9*	*1.7*	*19.6*
15	Secured by mortgages on immovable property	7.8	*1.6*	*1.1*	*5.1*	17.2	*3.5*	*8.8*	*0.6*	*0.1*	*4.2*
16	Exposures in default	0.6	*0.1*	*0.1*	*0.4*	0.4	*0.2*	*—*	*—*	*—*	*0.2*
17	Items associated with particularly high risk	3.4	*1.4*	*0.7*	*1.3*	—	*—*	*—*	*—*	*—*	*—*
20	Collective investment undertakings ('CIU')	0.4	*0.4*	*—*	*—*	—	*—*	*—*	*—*	*—*	*—*
21	Equity exposures	1.5	*0.8*	*0.5*	*0.2*	14.9	*2.1*	*12.6*	*0.1*	*—*	*0.1*
22	Other exposures	3.6	*3.1*	*0.3*	*0.2*	7.2	*5.1*	*0.9*	*—*	*—*	*1.2*
23	Total standardised approach	347.0	*192.0*	*85.9*	*69.1*	134.5	*53.6*	*31.8*	*13.2*	*4.2*	*31.7*
24	Total at 31 Dec 2020	983.7	*612.6*	*173.1*	*198.0*	1,119.9	*556.9*	*176.4*	*89.0*	*70.3*	*227.3*

Table 37: Geographical breakdown of exposures (CRB-C) (continued)

		Net carrying values[1,2]							
				Of which:					
		MENA	North America	*United States of America*	*Canada*	*Other countries*	Latin America	Other	Total
		$bn	$bn	*$bn*	*$bn*	*$bn*	$bn	$bn	$bn
	IRB approach exposure classes								
1	Central governments and central banks	23.7	146.3	*111.3*	*35.0*	*—*	9.2	16.8	433.2
2	Institutions	5.4	11.2	*3.0*	*8.2*	*—*	0.6	—	79.5
3	Corporates	50.3	212.3	*151.9*	*54.5*	*5.9*	6.6	—	1,056.0
4	Retail	4.2	59.4	*28.3*	*27.5*	*3.6*	0.2	—	599.6
6	Total IRB approach	83.6	429.2	*294.5*	*125.2*	*9.5*	16.6	16.8	2,168.3
	Standardised approach exposure classes								
7	Central governments and central banks	2.3	1.7	*1.6*	*0.1*	*—*	1.3	—	293.1
8	Regional governments or local authorities	6.1	—	*—*	*—*	*—*	0.7	—	10.5
9	Public sector entities	—	—	*—*	*—*	*—*	0.1	—	18.0
10	Multilateral development banks	—	—	*—*	*—*	*—*	—	—	—
11	International organisations	—	—	*—*	*—*	*—*	—	2.3	2.3
12	Institutions	0.6	—	*—*	*—*	*—*	—	—	0.8
13	Corporates	41.2	8.7	*6.3*	*0.8*	*1.6*	21.9	—	132.6
14	Retail	7.8	4.7	*2.2*	*2.1*	*0.4*	7.8	—	74.4
15	Secured by mortgages on immovable property	3.9	1.5	*0.4*	*0.1*	*1.0*	3.8	—	34.2
16	Exposures in default	1.6	0.5	*0.2*	*—*	*0.3*	0.6	—	3.7
17	Items associated with particularly high risk	0.1	1.5	*0.8*	*—*	*0.7*	0.1	—	5.1
20	Collective investment undertakings ('CIU')	—	—	*—*	*—*	*—*	—	—	0.4
21	Equity exposures	0.1	1.1	*1.1*	*—*	*—*	0.2	—	17.8
22	Other exposures	0.8	0.6	*0.5*	*0.1*	*—*	0.4	—	12.6
23	Total standardised approach	64.5	20.3	*13.1*	*3.2*	*4.0*	36.9	2.3	605.5
24	Total at 31 Dec 2020	148.1	449.5	*307.6*	*128.4*	*13.5*	53.5	19.1	2,773.8

1 Amounts shown by geographical region and country/territory in this table are based on the country/territory of residence of the counterparty.
2 Securitisation positions and non-credit obligation assets are not included in this table.

Table 38: Concentration of exposures by industry or counterparty types[1] (CRB-D)

	Net carrying values[1]	Agriculture	Mining/oil extraction	Manufac-turing	Utilities	Water supply	Construction	Whole-sale & retail trade	Trans-portation & storage	Accom-modation & food services	Infor-mation & communi-cation	Financial & insurance
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
1	Central governments and central banks	—	—	0.1	0.5	—	—	0.2	—	—	—	199.0
2	Institutions	—	0.4	0.2	0.5	—	0.1	0.1	1.2	—	—	81.8
3	Corporates	8.7	29.6	217.9	33.1	2.8	37.7	179.0	49.1	24.3	16.7	119.8
4	Retail	0.6	—	1.2	—	—	2.0	3.1	0.7	1.0	0.3	8.4
6	**Total IRB approach**	**9.3**	**30.0**	**219.4**	**34.1**	**2.8**	**39.8**	**182.4**	**51.0**	**25.3**	**17.0**	**409.0**
7	Central governments and central banks	—	—	—	—	—	—	—	—	—	—	313.3
8	Regional governments or local authorities	—	—	—	—	—	—	—	—	—	—	0.4
9	Public sector entities	—	—	0.1	—	—	—	—	—	—	—	12.6
10	Multilateral development banks	—	—	—	—	—	—	—	—	—	—	—
11	International organisations	—	—	—	—	—	—	—	—	—	—	0.2
12	Institutions	—	—	—	—	—	—	—	—	—	—	0.9
13	Corporates	0.9	3.5	18.2	2.3	0.3	4.0	17.7	2.5	2.6	1.5	23.8
14	Retail	0.8	—	0.8	—	—	0.1	0.6	0.1	0.1	—	0.1
15	Secured by mortgages on immovable property	—	—	—	—	—	0.1	0.1	—	0.3	—	—
16	Exposures in default	—	—	0.3	—	—	0.1	0.3	0.1	0.2	—	0.1
17	Items associated with particularly high risk	—	—	0.2	—	—	—	—	—	—	—	3.3
20	Collective investment undertakings ('CIU')	—	—	—	—	—	—	—	—	—	—	0.2
21	Equity exposures	—	—	—	—	—	—	—	—	—	—	17.2
22	Other exposures	—	—	—	—	—	—	—	—	—	—	10.9
23	**Total STD approach**	**1.7**	**3.5**	**19.6**	**2.3**	**0.3**	**4.3**	**18.7**	**2.7**	**3.2**	**1.5**	**383.0**
24	**Total at 31 Dec 2021**	**11.0**	**33.5**	**239.0**	**36.4**	**3.1**	**44.1**	**201.1**	**53.7**	**28.5**	**18.5**	**792.0**

	Net carrying values[1]	Real estate	Professional activities	Adminis-trative services	Public admin & defence	Education	Human health & social work	Arts & enter-tainment	Other services	Personal	Extra-territorial bodies	Total
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
1	Central governments and central banks	—	—	—	235.2	—	0.1	—	—	—	6.2	441.3
2	Institutions	—	0.1	0.1	2.6	0.2	0.1	—	—	—	—	87.4
3	Corporates	173.4	29.1	98.5	0.8	3.2	8.9	6.7	13.1	0.2	—	1,052.6
4	Retail	1.9	0.7	23.2	—	0.3	0.6	0.5	0.9	570.8	—	616.2
6	**Total IRB approach**	**175.3**	**29.9**	**121.8**	**238.6**	**3.7**	**9.7**	**7.2**	**14.0**	**571.0**	**6.2**	**2,197.5**
7	Central governments and central banks[3]	—	—	—	24.2	—	0.2	—	—	—	0.6	338.3
8	Regional governments or local authorities	—	—	—	9.1	—	0.4	—	—	—	—	9.9
9	Public sector entities	—	—	—	2.6	—	—	—	—	—	—	15.3
10	Multilateral development banks	—	—	—	—	—	—	—	—	—	—	—
11	International organisations	—	—	—	0.2	—	—	—	—	—	0.6	1.0
12	Institutions	—	—	—	—	—	—	—	—	—	—	0.9
13	Corporates	11.1	1.1	42.0	—	0.2	0.6	0.4	1.1	2.7	—	136.5
14	Retail	0.2	0.1	0.2	—	—	0.1	0.1	0.1	69.6	—	73.0
15	Secured by mortgages on immovable property	1.4	—	0.3	—	—	—	—	—	33.0	—	35.2
16	Exposures in default	0.4	—	1.4	—	—	—	—	0.1	1.1	—	4.1
17	Items associated with particularly high risk	0.2	—	—	—	—	—	—	—	—	—	3.7
20	Collective investment undertakings	—	—	—	—	—	—	—	—	—	—	0.2
21	Equity exposures	—	—	0.1	—	—	—	—	—	—	—	17.3
22	Other exposures	—	—	0.3	1.3	—	—	—	—	—	—	12.5
23	**Total STD approach**	**13.3**	**1.2**	**44.3**	**37.4**	**0.2**	**1.3**	**0.5**	**1.3**	**106.4**	**1.2**	**647.9**
24	**Total at 31 Dec 2021**	**188.6**	**31.1**	**166.1**	**276.0**	**3.9**	**11.0**	**7.7**	**15.3**	**677.4**	**7.4**	**2,845.4**

Table 38: Concentration of exposures by industry or counterparty types[1] (CRB-D) (continued)

	Net carrying values[1]	Agriculture	Mining/oil extraction	Manufac-turing	Utilities	Water supply	Construction	Wholesale & retail trade	Trans-portation & storage	Accom-modation & food services	Infor-mation & commun-ication	Financial & insurance
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
1	Central governments and central banks	—	—	0.1	0.5	—	—	0.2	—	—	—	220.8
2	Institutions	—	0.5	0.3	0.3	—	0.2	—	0.8	—	—	74.6
3	Corporates	8.3	34.7	229.0	31.8	3.0	37.2	172.7	45.9	27.3	17.3	114.0
4	Retail	0.6	—	1.8	—	—	2.8	5.2	0.7	1.0	0.2	7.0
6	Total IRB approach	8.9	35.2	231.2	32.6	3.0	40.2	178.1	47.4	28.3	17.5	416.4
7	Central governments and central banks	—	—	—	—	—	—	—	—	—	—	237.9
8	Regional governments or local authorities	—	—	—	—	—	—	—	—	—	—	0.1
9	Public sector entities	—	—	0.1	—	—	—	—	—	—	—	13.7
10	Multilateral development	—	—	—	—	—	—	—	—	—	—	—
11	International	—	—	—	—	—	—	—	—	—	—	0.5
12	Institutions	—	—	—	—	—	—	—	—	—	—	0.8
13	Corporates	0.8	4.0	18.5	3.0	0.2	4.4	18.2	2.4	2.6	1.3	11.8
14	Retail	0.6	—	0.8	—	—	0.1	0.6	0.1	0.1	—	0.1
15	Secured by mortgages on immovable property	—	—	—	—	—	0.2	0.1	—	0.4	—	0.1
16	Exposures in default	—	—	0.3	—	—	0.2	0.1	0.1	0.1	0.1	0.1
17	Items associated with particularly high risk	—	—	0.1	—	—	—	—	—	—	—	4.6
20	Collective investment undertakings	—	—	—	—	—	—	—	—	—	—	0.4
21	Equity exposures	—	—	—	—	—	—	—	—	—	—	17.7
22	Other exposures	—	—	—	—	—	—	—	—	—	—	12.0
23	Total STD approach	1.4	4.0	19.8	3.0	0.2	4.9	19.0	2.6	3.2	1.4	299.8
24	Total at 31 Dec 2020	10.3	39.2	251.0	35.6	3.2	45.1	197.1	50.0	31.5	18.9	716.2

	Net carrying values[1]	Real estate	Professional activities	Adminis-trative services	Public admin & defence	Education	Human health & social work	Arts & entertainment	Other services	Personal	Extra-territorial bodies	Total
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
1	Central governments and central banks[2]	—	—	—	203.5	—	0.4	—	—	—	7.7	433.2
2	Institutions	—	0.1	0.1	2.3	0.2	0.1	—	—	—	—	79.5
3	Corporates	175.6	30.0	96.8	1.5	3.5	6.8	7.7	12.4	0.5	—	1,056.0
4	Retail	0.9	—	19.4	—	0.2	0.6	0.5	0.8	557.9	—	599.6
6	Total IRB approach[2]	176.5	30.1	116.3	207.3	3.9	7.9	8.2	13.2	558.4	7.7	2,168.3
7	Central governments and central banks[2]	—	—	—	54.9	—	—	—	0.2	—	0.1	293.1
8	Regional governments or local authorities	—	—	—	10.4	—	—	—	—	—	—	10.5
9	Public sector entities[2]	—	—	—	3.7	—	—	0.4	—	—	0.1	18.0
10	Multilateral development banks	—	—	—	—	—	—	—	—	—	—	—
11	International	—	—	—	0.2	—	—	—	—	—	1.6	2.3
12	Institutions	—	—	—	—	—	—	—	—	—	—	0.8
13	Corporates	10.3	1.6	47.7	0.7	0.2	0.8	0.3	1.2	2.6	—	132.6
14	Retail	0.1	0.1	0.3	—	—	0.1	—	0.1	71.3	—	74.4
15	Secured by mortgages on immovable property	1.4	—	0.1	—	—	—	—	—	31.9	—	34.2
16	Exposures in default	0.3	—	0.9	—	—	—	0.1	0.1	1.3	—	3.7
17	Items associated with particularly high risk	0.4	—	—	—	—	—	—	—	—	—	5.1
20	Collective investment undertakings	—	—	—	—	—	—	—	—	—	—	0.4
21	Equity exposures	—	—	0.1	—	—	—	—	—	—	—	17.8
22	Other exposures	—	—	0.6	—	—	—	—	—	—	—	12.6
23	Total STD approach	12.5	1.7	49.7	69.9	0.2	0.9	0.8	1.6	107.1	1.8	605.5
24	Total at 31 Dec 2020	189.0	31.8	166.0	277.2	4.1	8.8	9.0	14.8	665.5	9.5	2,773.8

1 Securitisation positions and non-credit obligation assets are not included in this table.
2 The industry classifications of this disclosure have been revised. Data for 31 December 2020 has been restated to be on a consistent basis with the current year

Table 39: Maturity of on-balance sheet exposures (CRB-E)

		Net carrying values[1]					
		On demand	Less than 1 year	Between 1 and 5 years	More than 5 years	Undated	Total
		$bn	$bn	$bn	$bn	$bn	$bn
	IRB approach exposure classes						
1	Central governments and central banks	**45.7**	**228.7**	**118.9**	**45.2**	**—**	**438.5**
2	Institutions	**14.1**	**36.1**	**19.5**	**1.2**	**—**	**70.9**
3	Corporates	**39.4**	**202.2**	**209.2**	**48.2**	**—**	**499.0**
4	Retail	**19.7**	**33.3**	**41.4**	**345.0**	**—**	**439.4**
6	**Total IRB approach**	**118.9**	**500.3**	**389.0**	**439.6**	**—**	**1,447.8**
	Standardised approach exposure classes						
7	Central governments and central banks	**267.0**	**37.9**	**12.4**	**15.8**	**4.3**	**337.4**
8	Regional governments or local authorities	**0.7**	**0.4**	**6.4**	**1.7**	**0.5**	**9.7**
9	Public sector entities	**—**	**2.8**	**8.0**	**2.9**	**—**	**13.7**
10	Multilateral development banks	**—**	**—**	**—**	**—**	**—**	**—**
11	International organisations	**—**	**0.1**	**0.8**	**0.1**	**—**	**1.0**
12	Institutions	**0.1**	**0.2**	**0.6**	**—**	**—**	**0.9**
13	Corporates	**3.4**	**27.5**	**29.1**	**6.0**	**—**	**66.0**
14	Retail	**6.4**	**1.2**	**6.6**	**5.4**	**—**	**19.6**
15	Secured by mortgages on immovable property	**—**	**3.0**	**2.0**	**29.3**	**—**	**34.3**
16	Exposures in default	**0.2**	**0.9**	**1.6**	**0.9**	**—**	**3.6**
17	Items associated with particularly high risk	**—**	**0.1**	**0.9**	**0.1**	**1.4**	**2.5**
20	Collective investment undertakings ('CIU')	**—**	**—**	**—**	**—**	**0.2**	**0.2**
21	Equity exposures	**—**	**—**	**—**	**—**	**17.3**	**17.3**
22	Other exposures	**—**	**1.8**	**—**	**0.4**	**9.9**	**12.1**
23	**Total standardised approach**	**277.8**	**75.9**	**68.4**	**62.6**	**33.6**	**518.3**
24	**Total at 31 Dec 2021**	**396.7**	**576.2**	**457.4**	**502.2**	**33.6**	**1,966.1**
	IRB approach exposure classes						
1	Central governments and central banks	55.1	201.2	122.1	51.7	—	430.1
2	Institutions	13.1	32.0	18.4	1.5	—	65.0
3	Corporates	46.0	181.2	223.8	56.3	—	507.3
4	Retail	19.0	33.5	41.1	328.6	—	422.2
6	Total IRB approach	133.2	447.9	405.4	438.1	—	1,424.6
	Standardised approach exposure classes						
7	Central governments and central banks	188.9	59.3	16.4	22.3	4.4	291.3
8	Regional governments or local authorities	0.7	0.7	6.5	2.0	—	9.9
9	Public sector entities	—	3.3	9.2	4.1	—	16.6
10	Multilateral development banks	—	—	—	—	—	—
11	International organisations	—	0.4	1.4	0.5	—	2.3
12	Institutions	0.2	0.5	0.1	—	—	0.8
13	Corporates	3.1	26.2	28.6	6.7	—	64.6
14	Retail	6.2	1.2	6.4	4.6	—	18.4
15	Secured by mortgages on immovable property	—	1.6	7.1	24.2	—	32.9
16	Exposures in default	0.3	0.7	1.2	0.9	—	3.1
17	Items associated with particularly high risk	—	0.2	0.7	0.1	1.8	2.8
20	Collective investment undertakings ('CIU')	—	—	—	—	0.4	0.4
21	Equity exposures	—	—	—	—	17.8	17.8
22	Other exposures	—	1.5	—	0.5	9.8	11.8
23	Total standardised approach	199.4	95.6	77.6	65.9	34.2	472.7
24	Total at 31 Dec 2020	332.6	543.5	483.0	504.0	34.2	1,897.3

1 *Securitisation positions and non-credit obligation assets are not included in this table.*

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 169 and 181, respectively, of the Annual Report and Accounts 2021.

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 175 of the Annual Report and Accounts 2021.

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, the customer accounts are treated as 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 govern 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 at intervals of up to three years, or more frequently as the need arises; for example, where market conditions are subject to significant change. 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 provider of guarantees 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, in the case of individually assessed exposures, are determined by reference to regionally approved internal risk parameters based on the nature of the exposure. 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 IRB advanced approach, recognition may be through PD or LGD.
- Eligible financial collateral under the IRB advanced approach is recognised in LGD models. Under the IRB foundation 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 IRB foundation, base regulatory LGDs are adjusted depending on the value and type of the asset taken as collateral relative to the exposure. The types of eligible mitigant recognised under the IRB foundation approach are more limited.

Table 42 sets out, for IRB exposures, the exposure value and the effective value of credit risk mitigation expressed as the exposure value covered by the credit risk mitigant. IRB credit risk mitigation reductions of EAD were immaterial at 31 December 2021.

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 40: Credit risk mitigation techniques – overview (CR3)

		Exposures unsecured: carrying amount[1]	Exposures secured: carrying amount	Exposures secured by collateral[1]	Exposures secured by financial guarantees	Exposures secured by credit derivatives
		$bn	$bn	$bn	$bn	$bn
1	Loans	**811.3**	**740.3**	**607.1**	**133.1**	**0.1**
2	Debt securities	**341.7**	**36.1**	**27.5**	**8.6**	**—**
3	**Total at 31 Dec 2021**	**1,153.0**	**776.4**	**634.6**	**141.7**	**0.1**
4	*of which: defaulted*	***5.6***	***7.8***	***6.5***	***1.3***	**—**
1	Loans	719.3	725.0	593.4	131.4	0.2
2	Debt securities	380.2	37.0	29.7	7.3	—
3	Total at 31 Dec 2020	1,099.5	762.0	623.1	138.7	0.2
4	*of which: defaulted*	*7.6*	*6.4*	*5.5*	*0.9*	—

Table 41: 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
		$bn	$bn	$bn	$bn	$bn	%
	Asset classes[1]						
1	Central governments or central banks	**337.5**	**0.8**	**356.8**	**1.4**	**11.0**	**3**
2	Regional governments or local authorities	**9.7**	**0.3**	**10.8**	**0.1**	**3.1**	**28**
3	Public sector entities	**13.7**	**1.6**	**13.8**	**0.5**	**0.1**	**—**
4	Multilateral development banks	**—**	**—**	**—**	**—**	**—**	**—**
5	International organisations	**1.0**	**—**	**1.0**	**—**	**—**	**—**
6	Institutions	**0.9**	**—**	**1.0**	**—**	**0.7**	**66**
7	Corporates	**66.2**	**70.6**	**58.9**	**8.2**	**61.6**	**92**
8	Retail	**19.8**	**53.4**	**19.1**	**0.4**	**14.2**	**73**
9	Secured by mortgage on immovable property	**34.3**	**0.8**	**34.4**	**0.2**	**12.8**	**37**
10	Exposures in default	**4.0**	**0.5**	**3.9**	**0.2**	**5.1**	**124**
11	Higher-risk categories	**2.5**	**1.2**	**2.4**	**0.6**	**4.6**	**150**
14	Collective investment undertakings	**0.2**	**—**	**0.2**	**—**	**0.2**	**100**
15	Equity	**17.3**	**—**	**17.3**	**—**	**38.8**	**225**
16	Other items	**12.1**	**0.4**	**12.1**	**0.4**	**8.9**	**71**
17	**Total at 31 Dec 2021**	**519.2**	**129.6**	**531.7**	**12.0**	**161.1**	**30**
1	Central governments or central banks	291.1	1.9	312.0	2.2	11.1	4
2	Regional governments or local authorities	9.9	0.6	10.3	0.2	1.9	18
3	Public sector entities	16.6	1.4	16.5	0.6	0.1	—
4	Multilateral development banks	—	—	—	—	—	—
5	International organisations	2.3	—	2.3	—	—	—
6	Institutions	0.8	—	0.9	—	0.6	65
7	Corporates	64.9	68.0	56.7	8.1	60.2	93
8	Retail	18.8	56.0	17.9	0.5	13.5	73
9	Secured by mortgage on immovable property	32.9	1.3	32.9	0.4	12.3	37
10	Exposures in default	3.7	0.6	3.7	0.2	4.5	115
11	Higher-risk categories	2.8	2.3	2.7	1.2	5.9	150
14	Collective investment undertakings	0.4	—	0.4	—	0.4	100
15	Equity	17.8	—	17.8	—	39.5	221
16	Other items	11.8	0.8	11.8	0.8	9.2	73
17	Total at 31 Dec 2020	473.8	132.9	485.9	14.2	159.2	32

1 Securitisation positions are not included in this table.

Table 42: Credit risk mitigation techniques – IRB and Standardised

	At 31 Dec 2021					At 31 Dec 2020				
	Exposures unsecured: carrying amount	Exposures secured: carrying amount	Secured by: collateral	Secured by: financial guarantees	Secured by: credit derivatives	Exposures unsecured: carrying amount	Exposures secured: carrying amount	Secured by: collateral	Secured by: financial guarantees	Secured by: credit derivatives
	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
Exposures under the IRB approach[1]										
Central governments and central banks	413.0	28.3	26.4	1.9	—	401.0	32.2	30.1	2.1	—
Institutions	78.9	8.3	5.9	2.3	0.1	73.0	6.5	4.4	2.0	0.1
Corporates	579.6	473.0	290.1	162.9	20.0	600.0	456.0	300.2	133.2	22.6
Retail	169.0	447.2	403.6	43.6	—	174.7	424.9	381.7	43.2	—
Securitisation positions	7.8	—	—	—	—	6.3	—	—	—	—
Total	1,248.3	956.8	726.0	210.7	20.1	1,255.0	919.6	716.4	180.5	22.7
Exposures under the STD approach[1]										
Central governments and central banks[2]	333.2	0.8	0.5	0.3	—	285.7	2.9	0.5	2.4	—
Institutions	0.9	—	—	—	—	0.8	—	—	—	—
Corporates	95.7	40.8	29.0	11.8	—	96.1	36.5	26.2	10.3	—
Retail	70.4	2.6	2.5	0.1	—	72.7	1.7	1.0	0.7	—
Secured by mortgages on immovable property	—	35.2	35.2	—	—	—	34.2	34.2	—	—
Exposures in default	2.9	1.2	1.1	0.1	—	3.2	0.5	0.4	0.1	—
Items associated with particularly high risk[3]	1.4	0.1	—	0.1	—	1.8	0.1	—	0.1	—
Regional governments or local authorities	9.4	—	—	—	—	10.4	0.1	0.1	—	—
Public sector entities	8.2	7.1	0.2	6.9	—	13.6	4.4	—	4.4	—
International organisations[4]	1.0	—	—	—	—	2.2	0.1	—	0.1	—
Securitisation positions	25.8	—	—	—	—	28.2	—	—	—	—
Total	548.9	87.8	68.5	19.3	—	514.7	80.5	62.4	18.1	—

1 *This table includes both on- and off-balance sheet exposures.*
2 *Deferred tax assets are excluded from exposure.*
3 *Equities are excluded from exposure.*
4 *We have started reporting International organisation exposure in this table.*

Table 43: IRB – Effect on RWA of credit derivatives used as CRM techniques (CR7)

		At 31 Dec			
		2021		2020	
		Pre-credit derivatives RWAs	Actual RWAs	Pre-credit derivatives RWAs	Actual RWAs
		$bn	$bn	$bn	$bn
1	**Exposures under FIRB**	92.1	91.6	104.3	103.5
2	Central governments and central banks	0.1	0.1	0.1	0.1
3	Institutions	0.1	0.1	0.2	0.2
4	Corporates – SME[1]	8.4	8.4	—	—
6	Corporates – other	83.5	83.0	104.0	103.2
7	**Exposures under AIRB**	419.8	419.1	420.0	419.0
8	Central governments and central banks	44.7	44.7	44.4	44.4
9	Institutions	12.6	12.6	11.6	11.6
10	Corporates – SME[1]	14.9	14.9	—	—
11	Corporates – specialised lending	26.2	26.2	25.1	25.1
12	Corporates – other	220.9	220.2	239.9	238.9
13	Retail – Secured by real estate SMEs	0.5	0.5	0.6	0.6
14	Retail – Secured by real estate non-SMEs	53.5	53.5	49.8	49.8
15	Retail – Qualifying revolving	16.0	16.0	17.5	17.5
16	Retail – Other SMEs	3.1	3.1	3.7	3.7
17	Retail – Other non-SMEs	11.4	11.4	12.0	12.0
19	Other non-credit obligation assets	16.0	16.0	15.4	15.4
20	**Total**	511.9	510.7	524.3	522.5

1 *We have started reporting Corporate SME exposures in our 31 December 2021 disclosures.*

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 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 European Economic Area ('EEA') states 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.

The following table 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 53.

Table 44: Standardised approach – exposures by asset class and risk weight (CR5)

	Risk weight ('RW%')	0% $bn	2% $bn	20% $bn	35% $bn	50% $bn	70% $bn	75% $bn	100% $bn	150% $bn	250% $bn	Deducted $bn	Exposure amount (post-CCF and CRM) $bn	*Of which unrated*[2] $bn
	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***
4	Multilateral development banks	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	***—***
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 mortgage 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	Higher-risk categories	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**3.0**	**—**	**—**	**3.0**	***3.0***
14	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	Central governments or central banks	309.7	—	—	—	—	—	—	0.1	—	4.4	—	314.2	*4.4*
2	Regional governments or local authorities	3.8	—	5.9	—	0.3	—	—	0.5	—	—	—	10.5	*1.0*
3	Public sector entities	16.9	—	0.2	—	—	—	—	—	—	—	—	17.1	*4.4*
4	Multilateral development banks	—	—	—	—	—	—	—	—	—	—	—	—	*—*
5	International organisations	2.3	—	—	—	—	—	—	—	—	—	—	2.3	*—*
6	Institutions	—	—	0.1	—	0.5	—	—	0.3	—	—	—	0.9	*0.3*
7	Corporates	—	—	4.1	0.2	1.6	0.4	—	57.1	1.4	—	—	64.8	*55.4*
8	Retail	—	—	—	—	—	—	18.4	—	—	—	—	18.4	*18.4*
9	Secured by mortgage on immovable property	—	—	—	31.0	1.4	—	—	0.9	—	—	—	33.3	*33.3*
10	Exposures in default	—	—	—	—	—	—	—	2.7	1.2	—	—	3.9	*3.9*
11	Higher-risk categories	—	—	—	—	—	—	—	—	3.9	—	—	3.9	*3.9*
14	Collective investment undertakings	—	—	—	—	—	—	—	0.4	—	—	—	0.4	*0.4*
15	Equity	—	—	—	—	—	—	—	3.4	—	14.4	—	17.8	*17.8*
16	Other items	0.1	—	4.2	—	—	—	—	8.3	—	—	—	12.6	*12.6*
17	Total at 31 Dec 2020	332.8	—	14.5	31.2	3.8	0.4	18.4	73.7	6.5	18.8	—	500.1	*155.8*

1 *Securitisation positions are not included in this table.*
2 *The basis of preparation of 'unrated' column of this disclosure have been revised. Data for 31 December 2020 has been restated to be on a consistent basis with the current year*

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.

Refer to Tables 74 and 76 in Appendix I for further information on our wholesale and retail IRB models.

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 2021, 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.

At 31 December 2021, 69% of the Group's exposures were treated under AIRB, 8% under FIRB and 23% under the standardised approach.

Refer to Table 75 in Appendix I for further detail on our IRB models including PD, LGD, RWA and exposure by country/territory.

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.

Table 77 in Appendix I sets out for IRB credit exposures the EL, CRA balances and actual loss experience reflected in the charges for CRAs.

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 and master-scale CRR. The CRR is then reviewed by a credit approver who, taking into account information such as the most recent events and market data, makes the final decision on the rating. The rating assigned reflects 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.

Relationship managers may 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 assigned at an obligor level, which means that separate exposures to the same obligor are generally subject to a single, consistent rating. Unfunded credit risk mitigants, such as guarantees, may also influence the final assignment of a CRR to an obligor. The effect of unfunded risk mitigants is considered for IRB and standardised approaches in Table 42.

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

Under the IRB approach, obligors are grouped into grades that have similar PD or anticipated default frequency. The anticipated default frequency may be estimated using all relevant information at the relevant date (point-in-time ('PIT') rating system) or be free of the effects of the credit cycle (through the cycle ('TTC') rating system).

We generally utilise a hybrid approach of PIT and TTC. That is, while models are calibrated to long-run default rates, obligor ratings are reviewed annually, or more frequently if necessary, to reflect 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, 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.

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 2021, 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 45 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 used.

See page 28 for information on our response to the Covid-19 pandemic.

Table 45: 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	44.8	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.	8	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.	8	EAD must be at least equal to the current utilisation of the balance at account level
Banking institutions	Institutions	12.7	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	306.5	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 46: IRB models – estimated and actual values (wholesale)[1]

	PD[2]		LGD[3]		EAD[4]	
	Estimated	Actuals	Estimated	Actuals	Estimated	Actuals
	%	%	%	%	%	%
2021						
– Sovereigns model[5]	**3.63**	**—**	**—**	**—**	**—**	**—**
– Banks model	**3.03**	**—**	**—**	**—**	**—**	**—**
– Corporates models[6]	**1.76**	**1.02**	**37.13**	**28.83**	**0.59**	**0.53**
2020						
– Sovereigns model[5]	1.99	0.92	45.00	—	0.06	0.06
– Banks model	1.30	0.33	82.88	—	—	—
– Corporates models[6]	1.49	1.11	26.66	24.49	0.71	0.61
2019						
– Sovereigns model[5]	2.01	—	—	—	—	—
– Banks model	1.09	—	—	—	—	—
– Corporates models[6]	1.53	1.05	33.23	25.37	0.42	0.31

1 Data represents an annual view as of 30 September.
2 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.
3 Estimated and actual LGD represent defaulted populations. Average LGD values are EAD-weighted.
4 Expressed as a percentage of total EAD, which includes all defaulted and non-defaulted exposures for the relevant population.
5 The estimated PD excludes inactive sovereign obligors.
6 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.

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 47 sets out the key characteristics of significant retail credit risk models that drive the capital calculation, consistent with those shown in the previous year. 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 $52.4bn represent 62% of the total retail IRB RWA.

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.

Table 47: 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	8.19	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	0.69	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	2.60	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	4.34	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

Table 47: 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
UK business banking	Retail – other SME	2.67	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
Hong Kong HSBC personal residential mortgages[2]	Retail – secured by mortgages on immovable property non-SME	14.94	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 personal residential mortgages	Retail – secured by mortgages on immovable property non-SME	9.18	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	3.79	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 losses. Downturn LGD derived using data from the period with the highest default rate.	>10	
			EAD	1	Statistical model that derives a credit utilisation which is used to estimate EAD.	>10	EAD must at least be equal to current balance
Hong Kong HSBC personal instalment loans	Retail – other non-SME	1.10	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	4.88	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 48 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. For both our HSBC and First Direct branded residential mortgages, estimates and actual values for PD remained low and stable in 2021. For both portfolios, LGD estimates and actuals have decreased since previous year, primarily due to accounts moving to lower LGD bands. HSBC Personal loans LGD estimates have increased, whilst the actuals have decreased from previous year. This is due to accounts being in later delinquencies following the temporary pause in issuance of default notices for retail accounts, which recommenced during 2021.

The Hong Kong estimated LGD values include required stressed factors to reflect downturn conditions. The LGD models for our Hong Kong HSBC and Hang Seng residential mortgage portfolios use a recovery outcome period of 24 months starting at the date of default. For HSBC personal residential mortgages, LGD estimates have decreased since last year due to model limitations which are being addressed through model redevelopment. 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 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 2021, in line with portfolio expectations.

Table 48: IRB models – estimated and actual values (retail)[1]

	PD		LGD		EAD	
2021	**Estimated %**	**Actuals %**	**Estimated %**	**Actuals %**	**Estimated %**	**Actuals %**
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	**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 personal residential mortgage	**0.59**	**0.04**	**0.08**	**1.60**	**0.03**	**0.03**
– Hang Seng personal residential mortgage	**0.37**	**0.13**	**2.67**	**0.83**	**0.14**	**0.14**
– HSBC credit card	**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						
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	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 personal residential mortgage	0.59	0.04	2.89	1.32	0.05	0.05
– Hang Seng personal residential mortgage	0.38	0.12	1.98	0.73	0.12	0.12
– HSBC credit card	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						
US – HSBC personal first lien residential mortgage	1.27	0.46	49.62	21.62	0.38	0.37

Table 48: IRB models – estimated and actual values (retail)[1]

2019	PD Estimated %	PD Actuals %	LGD Estimated %	LGD Actuals %	EAD Estimated %	EAD Actuals %
UK						
– HSBC residential mortgage	0.33	0.29	9.17	0.32	0.29	0.28
– FD residential mortgages	0.42	0.34	7.42	1.85	0.93	0.74
– HSBC credit card	1.06	1.05	91.29	88.58	1.51	1.48
– HSBC personal loans	2.54	2.19	83.61	61.79	2.26	2.10
– Business Banking (Retail SME)	2.95	2.92	78.23	55.48	2.54	2.31
Hong Kong						
– HSBC personal residential mortgage	0.60	0.03	1.58	1.21	0.02	0.02
– Hang Seng personal residential mortgage	0.37	0.10	4.52	1.03	0.07	0.07
– HSBC credit card	0.53	0.20	89.06	78.37	0.38	0.40
– HSBC personal instalment loans	2.13	1.31	88.92	84.70	1.06	0.92
US						
US – HSBC personal first lien residential mortgage	1.54	0.54	51.01	18.24	0.30	0.29

1 *Data represents an annual view, analysed at 30 September.*

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

Further information is available on page 209 of the Annual Report and Accounts 2021.

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 49 and 50 below validate the reliability of PD calculations by comparing the PD used in IRB calculations with actual default experience. In Table 50, 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.

See page 28 for information on our response to the Covid-19 pandemic.

Table 49: Wholesale IRB exposure – back-testing of probability of default (PD) per portfolio[1 2] (CR9)

A-IRB PD range	**Number of obligors** 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 (%)**
2021						
Sovereigns[4]						
0.00 to <0.15	**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**	**–**	**–**	***5.90***	**6.45**	**0.74**
10.00 to <100.00	**16**	**–**	**–**	***68.48***	**70.94**	**–**
Corporates						
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**

Table 49: Wholesale IRB exposure – back-testing of probability of default (PD) per portfolio[1 2] (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 (%)**
2021						
Corporates						
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**

Table 49: Wholesale IRB exposure – back-testing of probability of default (PD) per portfolio[1 2] (CR9) (continued)

	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 (%)
2020						
Sovereigns[4]						
0.00 to <0.15	55	—	—	0.02	—	—
0.15 to <0.25	6	—	—	0.22	—	—
0.25 to <0.50	12	—	—	0.37	—	—
0.50 to <0.75	3	—	—	0.63	0.01	—
0.75 to <2.50	15	—	—	1.41	0.01	—
2.5 to <10.00	13	—	—	7.51	0.05	—
10.00 to <100.00	5	1	20.00	25.87	0.26	0.07
Banks						
0.00 to <0.15	287	—	—	0.04	—	—
0.15 to <0.25	71	—	—	0.22	—	—
0.25 to <0.50	49	—	—	0.37	—	—
0.50 to <0.75	50	—	—	0.63	0.01	—
0.75 to <2.50	91	—	—	1.08	0.01	—
2.5 to <10.00	42	2	4.76	3.58	0.05	0.01
10.00 to <100.00	24	—	—	13.53	0.17	0.03
Corporates						
0.00 to <0.15	13,636	20	0.15	0.08	—	—
0.15 to <0.25	12,946	15	0.12	0.22	—	—
0.25 to <0.50	13,247	42	0.32	0.37	—	—
0.50 to <0.75	12,377	37	0.30	0.63	0.01	—
0.75 to <2.50	33,868	300	0.89	1.31	0.01	0.01
2.5 to <10.00	13,109	445	3.39	4.21	0.04	0.03
10.00 to <100.00	1,734	261	15.05	15.83	0.17	0.14

1 *Data represents an annual view as of 30 September.*
2 *Prior period comparatives have been restated following the early adoption of the new CR9 template for wholesale exposures. 2020 data is presented on a total IRB basis.*
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.*

Table 50: Retail IRB exposure – back-testing of probability of default (PD) per portfolio[1] (CR9)

PD range	Weighted average PD	Arithmetic average PD by obligors	Number of obligors: End of previous year[2]	Number of obligors: End of the year	Defaulted obligors in the year	*of which: new defaulted obligors in the year*	Average historical annual default rate
2021							
Retail – Secured by real estate non-SME							
0.00 to <0.15	**0.06**	**0.06**	**770,206**	**765,461**	**336**	***3***	**0.04**
0.15 to <0.25	**0.19**	**0.19**	**91,243**	**103,352**	**60**	***1***	**0.10**
0.25 to <0.50	**0.34**	**0.34**	**84,521**	**85,503**	**122**	***2***	**0.16**
0.50 to <0.75	**0.59**	**0.59**	**27,322**	**28,753**	**77**	***1***	**0.22**
0.75 to <2.50	**1.34**	**1.38**	**55,130**	**58,665**	**222**	***5***	**0.37**
2.50 to <10.00	**4.42**	**4.35**	**15,003**	**14,594**	**288**	***—***	**1.63**
10.00 to <100.00	**26.56**	**24.29**	**6,338**	**4,065**	**910**	***8***	**18.12**
Retail – qualifying revolving							
0.00 to <0.15	**0.06**	**0.06**	**3,473,874**	**3,388,099**	**1,947**	***47***	**0.05**
0.15 to <0.25	**0.19**	**0.19**	**855,523**	**821,912**	**969**	***11***	**0.10**
0.25 to <0.50	**0.36**	**0.36**	**724,123**	**698,888**	**1,469**	***27***	**0.19**
0.50 to <0.75	**0.61**	**0.61**	**320,490**	**314,653**	**1,348**	***18***	**0.37**
0.75 to <2.50	**1.33**	**1.30**	**710,420**	**720,707**	**6,282**	***67***	**0.80**
2.50 to <10.00	**4.64**	**4.53**	**167,785**	**160,393**	**6,583**	***63***	**3.58**
10.00 to <100.00	**33.06**	**32.60**	**45,242**	**37,153**	**15,576**	***60***	**24.96**
Retail – other non-SME							
0.00 to <0.15	**0.07**	**0.07**	**1,034**	**935**	**—**	***—***	**0.11**
0.15 to <0.25	**0.24**	**0.24**	**126,624**	**69,241**	**212**	***—***	**0.17**
0.25 to <0.50	**0.42**	**0.45**	**10,967**	**13,420**	**26**	***7***	**0.28**
0.50 to <0.75	**0.58**	**0.58**	**80,274**	**129,481**	**362**	***49***	**0.53**
0.75 to <2.50	**1.36**	**1.36**	**228,276**	**190,692**	**2,059**	***61***	**1.14**
2.50 to <10.00	**4.78**	**4.87**	**89,974**	**60,756**	**3,222**	***18***	**4.11**
10.00 to <100.00	**36.76**	**37.24**	**26,489**	**14,197**	**7,044**	***1***	**31.29**
Retail – other SME							
0.00 to <0.15	**0.11**	**0.10**	**63,303**	**60,260**	**55**	***1***	**0.05**
0.15 to <0.25	**0.21**	**0.20**	**39,750**	**37,773**	**111**	***1***	**0.13**
0.25 to <0.50	**0.37**	**0.37**	**111,853**	**106,697**	**749**	***—***	**0.37**
0.50 to <0.75	**0.61**	**0.61**	**95,116**	**90,453**	**1,101**	***3***	**0.62**
0.75 to <2.50	**1.52**	**1.40**	**261,510**	**257,941**	**4,957**	***34***	**1.33**
2.50 to <10.00	**5.12**	**4.83**	**143,297**	**140,737**	**8,319**	***123***	**4.18**
10.00 to <100.00	**19.66**	**21.10**	**45,668**	**42,355**	**8,758**	***26***	**15.35**

Table 50: Retail IRB exposure – back-testing of probability of default (PD) per portfolio[1] (CR9) (continued)

			Number of obligors				
PD range	Weighted average PD	Arithmetic average PD by obligors	End of previous year[2]	End of the year	Defaulted obligors in the year	*of which: new defaulted obligors in the year*	Average historical annual default rate
2020							
Retail – Secured by real estate non-SME							
0.00 to <0.15	0.06	0.06	745,923	780,799	329	*4*	0.04
0.15 to <0.25	0.19	0.19	85,507	88,969	88	*4*	0.10
0.25 to <0.50	0.34	0.34	77,798	77,778	158	*2*	0.17
0.50 to <0.75	0.59	0.59	25,684	24,764	57	*—*	0.21
0.75 to <2.50	1.31	1.38	57,308	57,710	247	*5*	0.40
2.50 to <10.00	4.17	4.21	17,100	14,957	382	*2*	1.94
10.00 to <100.00	25.02	22.33	6,034	4,000	1,215	*18*	17.58
Retail – qualifying revolving							
0.00 to <0.15	0.06	0.07	3,343,613	3,337,320	2,007	*65*	0.05
0.15 to <0.25	0.19	0.19	826,150	844,072	997	*49*	0.10
0.25 to <0.50	0.36	0.36	730,721	754,545	1,815	*52*	0.20
0.50 to <0.75	0.61	0.62	348,279	350,203	1,630	*27*	0.36
0.75 to <2.50	1.35	1.32	738,705	781,923	8,278	*176*	0.84
2.50 to <10.00	4.57	4.40	206,266	199,402	9,182	*289*	3.44
10.00 to <100.00	33.11	32.31	63,725	36,518	20,994	*33*	24.57
Retail – other non-SME							
0.00 to <0.15	0.07	0.13	1,070	7,706	9	*9*	0.15
0.15 to <0.25	0.17	0.17	107,089	79,291	234	*33*	0.16
0.25 to <0.50	0.43	0.43	52,301	103,703	348	*165*	0.30
0.50 to <0.75	0.61	0.62	87,990	101,962	683	*141*	0.58
0.75 to <2.50	1.36	1.36	218,614	184,832	3,195	*400*	1.24
2.50 to <10.00	4.47	4.60	108,740	72,834	4,820	*148*	4.11
10.00 to <100.00	36.23	36.69	23,584	11,738	7,171	*21*	33.60
Retail – other SME							
0.00 to <0.15	0.11	0.10	68,389	66,942	43	*1*	0.05
0.15 to <0.25	0.21	0.20	44,216	43,367	66	*1*	0.12
0.25 to <0.50	0.37	0.37	122,285	121,495	476	*6*	0.32
0.50 to <0.75	0.61	0.61	106,310	106,048	611	*7*	0.53
0.75 to <2.50	1.53	1.37	244,412	246,669	3,100	*57*	1.24
2.50 to <10.00	4.77	4.68	145,115	157,113	5,656	*137*	3.90
10.00 to <100.00	20.55	22.64	47,976	57,117	9,358	*30*	16.65

1 Data represents an annual view, analysed at 30 September.

2 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.

Counterparty credit risk

Counterparty credit risk management

Counterparty credit risk ('CCR') arises for derivatives 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 settlement.CCR arises primarily from our wholesale global businesses.

Four approaches may be used under CRD IV to calculate exposure values for CCR: mark-to-market, original exposure, standardised and Internal Model Method ('IMM'). Exposure values calculated under these approaches are used to determine RWAs. Across the Group, we use the mark-to-market and IMM approaches with migration to SA-CCR planned from Jan-22.

Under the mark-to-market approach, the EAD is calculated as current exposure plus regulatory add-ons. We use this approach for all products 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'.

Alpha (set to a default value of 1.4) accounts for several portfolio features that increase 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, 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 conservative asset class add-ons, in addition to daily monitoring of credit limit utilisation.

The potential future exposure ('PFE') measures used for CCR management are calibrated to the 95th percentile. The measures consider volatility, trade maturity and the counterparty legal documentation covering netting and collateral.

Limits for CCR exposures 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.

Table 51: Analysis of counterparty credit risk exposure by approach (excluding centrally cleared exposures)[1] (CCR1)

		Replacement cost	Potential future exposure	Effective expected positive exposure	Multiplier	EAD post-CRM	RWAs
		$bn	$bn	$bn	$bn	$bn	$bn
1	Mark-to-market	**6.5**	**19.7**	**—**	**—**	**26.2**	**10.1**
4	Internal Model Method	**—**	**—**	**27.9**	**1.4**	**39.0**	**12.6**
6	– *of which: derivatives and long settlement transactions*	**—**	**—**	***27.9***	***1.4***	***39.0***	***12.6***
9	Financial collateral comprehensive method (for SFTs)	**—**	**—**	**—**	**—**	**63.3**	**9.6**
11	**Total at 31 Dec 2021**	**6.5**	**19.7**	**27.9**	**1.4**	**128.5**	**32.3**
1	Mark to market	11.5	20.3	—	—	31.8	13.0
4	Internal Model Method	—	—	35.3	1.4	49.4	17.4
6	– *of which: derivatives and long settlement transactions*	—	—	*35.3*	*1.4*	*49.4*	*17.4*
9	Financial collateral comprehensive method (for SFTs)	—	—	—	—	52.5	8.3
11	Total at 31 Dec 2020	11.5	20.3	35.3	1.4	133.7	38.7

1 *As the Group does not use the original exposure method, notional values are not reported.*

Credit valuation adjustment

Credit valuation adjustments ('CVA') represent the risk of loss as a result of adverse changes to the credit quality of counterparties in derivative transactions. Where we have both specific risk VaR approval and IMM approval for a product, the CVA VaR approach has been used to calculate the CVA capital charge.

Where we do not hold both approvals, the standardised approach has been applied. Certain counterparty exposures are exempt from CVA, such as non-financial counterparties and sovereigns.

Table 52: Credit valuation adjustment (CVA) capital charge (CCR2)

		At 31 Dec 2021		At 31 Dec 2020	
		EAD post-CRM	**RWAs**	EAD post-CRM	RWAs
		$bn	**$bn**	$bn	$bn
1	Total portfolios subject to the Advanced CVA capital charge	**20.6**	**1.6**	21.3	2.4
2	– VaR component (including the 3 × multiplier)		**0.2**		0.4
3	– stressed VaR component (including the 3 × multiplier)		**1.4**		2.0
4	All portfolios subject to the Standardised CVA capital charge	**11.5**	**0.8**	13.4	0.7
5	**Total subject to the CVA capital charge**	**32.1**	**2.4**	34.7	3.1

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 50. Information on exposures under the IRB approach can be found in Table 83 of Appendix I.

Table 53: Standardised approach – CCR exposures by regulatory portfolio and risk weights (CCR3)

	Risk weight	0%	10%	20%	50%	75%	100%	150%	Others	Total credit exposure	*of which: unrated*
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	*$bn*
1	Central governments and central banks	**8.1**	**—**	**0.1**	**—**	**—**	**—**	**—**	**—**	**8.2**	**—**
2	Regional government or local authorities	**1.9**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**1.9**	**—**
6	Institutions	**—**	**—**	**—**	**—**	**—**	**0.1**	**—**	**—**	**0.1**	***0.1***
7	Corporates	**—**	**—**	**—**	**—**	**—**	**1.0**	**—**	**—**	**1.0**	***0.9***
	Total at 31 Dec 2021	**10.0**		**0.1**	**—**	**—**	**1.1**	**—**	**—**	**11.2**	***1.0***
1	Central governments and central banks	7.9	—	0.1	—	—	—	—	—	8.0	—
2	Regional government or local authorities	2.7	—	—	—	—		—	—	2.7	—
6	Institutions	—		—	0.1	—	0.1	—	—	0.2	*0.1*
7	Corporates	—	—		—	—	1.8	—	—	1.8	*1.6*
	Total at 31 Dec 2020	10.6	—	0.1	0.1	—	1.9	—	—	12.7	*1.7*

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. Approximately 95% 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 378 of the Annual Report and Accounts 2021.

Table 54: Impact of netting and collateral held on exposure values (CCR5-A)

		Gross positive fair value or net carrying amount	Netting benefits	Netted current credit exposure	Collateral held	Net credit exposure
		$bn	$bn	$bn	$bn	$bn
1	Derivatives	**462.4**	**334.0**	**128.4**	**46.8**	**81.6**
2	SFTs	**851.9**	**—**	**851.9**	**790.6**	**61.3**
4	**Total at 31 Dec 2021**	**1,314.3**	**334.0**	**980.3**	**837.4**	**142.9**
1	Derivatives	602.5	442.6	159.9	60.8	99.1
2	SFTs	821.5	—	821.5	771.4	50.1
4	Total at 31 Dec 2020	1,424.0	442.6	981.4	832.2	149.2

Table 55: Composition of collateral for CCR exposure (CCR5-B)

		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	Unsegregated	Segregated	Unsegregated		
		$bn	$bn	$bn	$bn	$bn	$bn
1	Cash – domestic currency	**—**	**17.3**	**—**	**19.0**	**83.0**	**107.7**
2	Cash – other currencies	**—**	**61.6**	**—**	**50.8**	**243.2**	**355.9**
3	Domestic sovereign debt	**—**	**5.6**	**0.7**	**5.4**	**101.0**	**91.3**
4	Other sovereign debt	**—**	**12.4**	**1.2**	**13.5**	**304.2**	**231.2**
5	Government agency debt	**—**	**0.1**	**—**	**—**	**3.6**	**3.4**
6	Corporate bonds	**—**	**1.7**	**0.3**	**0.9**	**57.0**	**14.8**
7	Equity securities	**—**	**0.6**	**—**	**—**	**40.6**	**47.7**
8	Other collateral	**—**	**0.7**	**2.5**	**1.2**	**1.5**	**—**
9	**Total at 31 Dec 2021**	**—**	**100.0**	**4.7**	**90.8**	**834.1**	**852.0**
1	Cash – domestic currency	—	7.8	—	31.1	66.4	91.9
2	Cash – other currencies	—	58.8	—	76.6	238.5	364.3
3	Domestic sovereign debt	—	7.6	1.2	5.6	84.3	75.4
4	Other sovereign debt	—	7.0	1.8	11.4	330.7	232.2
5	Government agency debt	—	0.2	—	—	2.7	0.2
6	Corporate bonds	—	2.0	0.6	1.1	46.9	13.1
7	Equity securities	—	0.2	—	—	42.5	44.4
8	Other collateral	—	0.3	2.3	0.9	1.7	—
9	Total at 31 Dec 2020	—	83.9	5.9	126.7	813.7	821.5

Table 56 shows the credit derivative exposures that HSBC holds, split between those amounts due to 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 2021.

Table 56: Credit derivatives exposures (CCR6)

	At 31 Dec			
	2021		2020	
	Protection bought	**Protection sold**	Protection bought	Protection sold
	$bn	**$bn**	$bn	$bn
Notionals				
Credit derivative products used for own credit portfolio				
– Index credit default swaps	**7.0**	**3.4**	6.2	1.8
Total notionals used for own credit portfolio	**7.0**	**3.4**	6.2	1.8
Credit derivative products used for intermediation[1]				
– Index credit default swaps	**91.0**	**80.0**	129.3	111.8
– Total return swaps	**3.6**	**5.7**	6.1	14.0
Total notionals used for intermediation	**94.6**	**85.7**	135.4	125.8
Total credit derivative notionals	**101.6**	**89.1**	141.6	127.6
Fair values				
– Positive fair value (asset)	**0.9**	**1.2**	0.6	2.0
– Negative fair value (liability)	**(1.8)**	**(1.3)**	(2.3)	(1.4)

1 *This is where we act as an intermediary for our clients, enabling them to take a position in the underlying securities. This does not increase risk for 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 57: Exposures to central counterparties (CCR8)

		At 31 Dec 2021		At 31 Dec 2020	
		EAD post-CRM	**RWAs**	EAD post-CRM	RWAs
		$bn	**$bn**	$bn	$bn
1	Exposures to QCCPs (total)	**24.3**	**1.2**	27.2	1.0
2	Exposures for trades at QCCPs (excluding initial margin and default fund contributions)	**13.5**	**0.3**	11.2	0.2
3	– OTC derivatives	**2.8**	**0.1**	3.4	0.1
4	– exchange-traded derivatives	**7.5**	**0.1**	4.4	0.1
5	– securities financing transactions	**3.2**	**0.1**	3.4	0.1
7	Segregated initial margin	**4.7**	**—**	5.9	—
8	Non-segregated initial margin	**6.1**	**0.1**	10.1	0.2
9	Pre-funded default fund contributions	**—**	**0.8**	—	0.6

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 2021, 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 $0.1bn (2020: $0.4bn) and for a two-notch downgrade was $0.3bn (2020: $0.6bn).

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 in with the new 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.

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	2,190	168	29
HBEU	Metrix Portfolio Distribution Plc	Corporate loans	Dec-19	Dec-26	2,253	109	48
HBUK	Neon Portfolio Distribution DAC	Corporate loans	Dec-19	Dec-26	3,081	236	71

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

HSBC as originator

We are originator in three securitisation programmes outstanding as on 31 December 2021, details of which are given in the table above.

We use SPEs or CLN 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 a unhedged holding of at least 5% in each reference obligation. None of these transactions are categorised as Simple Transparent and Standardised (STS) as per securitisation framework.

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 2021.

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

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 2021.

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 2021*.*

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 18 of this document.

Analysis of securitisation exposures

Our involvement in securitisation activities reflects the following:

- $7.5bn positions held as synthetic transactions (2020: $7.2bn);
- 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 (2020: $0.2bn), which relates to assets within SPEs that are consolidated for regulatory purposes; and
- total exposures include off-balance sheet exposure of $12.6bn (2020: $11.4bn), 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 363 of the Annual Report and Accounts 2021*.*

Table 58: Securitisation exposure – movement in the year

	Total at 1 Jan	Movement in year			Total at 31 Dec
		As originator	As sponsor	As investor	
	$bn	$bn	$bn	$bn	$bn
Aggregate amount of securitisation exposures					
Residential mortgages	**8.5**	**—**	**(0.3)**	**(1.7)**	**6.5**
Commercial mortgages	**4.1**	**—**	**—**	**0.1**	**4.2**
Credit Cards	**2.2**	**—**	**—**	**(0.3)**	**1.9**
Leasing	**3.4**	**—**	**(1.8)**	**—**	**1.6**
Loans to corporates or SMEs	**8.3**	**1.3**	**—**	**1.4**	**11.0**
Consumer loans	**7.4**	**—**	**(0.5)**	**0.9**	**7.8**
Trade receivables	**4.1**	**—**	**(0.6)**	**(0.1)**	**3.4**
Other assets	**0.3**	**—**	**—**	**0.5**	**0.8**
Re-securitisations	**0.0**	**—**	**0.0**	**—**	**—**
2021	**38.3**	**1.3**	**(3.2)**	**0.8**	**37.2**

Table 59: Securitisation – asset values and impairments

	2021			2020		
	Underlying assets[1]		Securitisation exposures impairment	Underlying assets[1]		Securitisation exposures impairment
	Total[3]	Impaired and past due		Total[3]	Impaired and past due	
	$bn	$bn	$bn	$bn	$bn	$bn
As originator	**8.0**	**—**	**—**	10.8	—	—
– loans to corporates and SMEs	8.0	—	—	10.8	—	—
– re-securitisations[2]	—	—	—		—	—
As sponsor	**8.2**	**0.1**	**—**	11.4	0.1	—
– residential mortgages	2.2	—	—	2.6	—	—
– commercial mortgages	0.1	—	—	0.1	—	—
– leasing	1.4	—	—	3.2	—	—
– consumer loans	1.9	0.1	—	2.3	0.1	—
– trade receivables	2.4	—	—	3.0	—	—
– re-securitisations[2]	—	—	—	—	—	—
– other assets	0.2	—	—	0.2	—	—
At 31 Dec	**16.2**	**0.1**	**—**	22.2	0.1	—

1 *Securitisation exposures may exceed the underlying asset values when HSBC provides liquidity facilities while also acting as derivative counterparty and a note holder in the SPE.*
2 *The amount of underlying assets reported for re-securitisations denotes the value of collateral within the re-securitisation vehicles.*
3 *As originator and sponsor, all associated underlying assets are held in the non-trading book. These assets are all underlying to traditional securitisations with the exception of 'loans to corporates and SMEs', which is underlying to a synthetic securitisations.*

Table 60: Securitisation exposures in the non-trading book (SEC1)

		Bank acts as originator			Bank acts as sponsor			Bank acts as investor		
		Traditional	Synthetic	Sub-total	Traditional	Synthetic	Sub-total	Traditional	Synthetic	Sub-total
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
1	**Retail (total)**	**—**	**—**	**—**	**6.5**	**—**	**6.5**	**10.9**	**—**	**10.9**
2	– residential mortgage	—	—	—	2.2	—	2.2	2.9	—	2.9
3	– credit card	—	—	—	—	—	—	1.9	—	1.9
4	– other retail exposures	—	—	—	4.3	—	4.3	6.1	—	6.1
6	**Wholesale (total)**	**—**	**7.5**	**7.5**	**1.7**	**—**	**1.7**	**7.0**	**—**	**7.0**
7	– loans to corporates	—	7.5	7.5	—	—	—	3.4	—	3.4
8	– commercial mortgage	—	—	—	0.1	—	0.1	3.2	—	3.2
9	– lease and receivables	—	—	—	1.4	—	1.4	0.2	—	0.2
10	– other wholesale	—	—	—	0.2	—	0.2	0.2	—	0.2
	Total at 31 Dec 2021	**—**	**7.5**	**7.5**	**8.2**	**—**	**8.2**	**17.9**	**—**	**17.9**
1	Retail (total)	—	—	—	7.9	—	7.9	11.9	—	11.9
2	– residential mortgage	—	—	—	2.6	—	2.6	4.2	—	4.2
3	– credit card	—	—	—	—	—	—	2.1	—	2.1
4	– other retail exposures	—	—	—	5.3	—	5.3	5.6	—	5.6
6	Wholesale (total)	—	6.2	6.2	3.5	—	3.5	5.1	—	5.1
7	– loans to corporates	—	6.2	6.2	0.1	—	0.1	1.9	—	1.9
8	– commercial mortgage	—	—	—	0.1	—	0.1	2.9	—	2.9
9	– lease and receivables	—	—	—	3.2	—	3.2	0.2	—	0.2
10	– other wholesale	—	—	—	0.1	—	0.1	0.1	—	0.1
	Total at 31 Dec 2020	—	6.2	6.2	11.4	—	11.4	17.0	—	17.0

Table 61: Securitisation exposures in the trading book (SEC2)

		At					
		31 Dec 2021			31 Dec 2020		
		Bank acts as investor[1]			Bank acts as investor[1]		
		Traditional	Synthetic	Sub-total	Traditional	Synthetic	Sub-total
		$bn	$bn	$bn	$bn	$bn	$bn
1	**Retail (total)**	**2.2**	**—**	**2.2**	2.5	—	2.5
2	– residential mortgage	1.4	—	1.4	1.8	—	1.8
3	– credit card	—	—	—	0.1	—	0.1
4	– other retail exposures	0.8	—	0.8	0.6	—	0.6
6	**Wholesale (total)**	**1.4**	**—**	**1.4**	1.2	—	1.2
8	– commercial mortgage	0.9	—	0.9	1.1	—	1.1
10	– other wholesale	0.5	—	0.5	0.1	—	0.1
	Total (all portfolios)	**3.6**	**—**	**3.6**	3.7	—	3.7

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

Table 62 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 62: Securitisation exposures in the non-trading book and associated capital requirements – bank acting as originator or sponsor (SEC3)

		Exposure values (by risk weight bands)					Exposure values (by regulatory approach)				
		≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to 1,250% RW	1,250% RW	SEC-IRBA	SEC-ERBA	SEC IAA	SEC-SA	1,250%
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
2	**Traditional securitisation**	**5.0**	**2.8**	**0.3**	**0.1**	**—**	**—**	**1.2**	**6.7**	**0.3**	**—**
3	Securitisation	**5.0**	**2.8**	**0.3**	**0.1**	**—**	**—**	**1.2**	**6.7**	**0.3**	**—**
4	– retail underlying	**3.6**	**2.6**	**0.3**	**—**	**—**	**—**	**1.1**	**5.3**	**0.1**	**—**
5	– wholesale	**1.4**	**0.2**	**—**	**0.1**	**—**	**—**	**0.1**	**1.4**	**0.2**	**—**
9	**Synthetic securitisation**	**4.4**	**3.1**	**—**	**—**	**—**	**7.5**	**—**	**—**	**—**	**—**
10	Securitisation	**4.4**	**3.1**	**—**	**—**	**—**	**7.5**	**—**	**—**	**—**	**—**
12	– wholesale	**4.4**	**3.1**	**—**	**—**	**—**	**7.5**	**—**	**—**	**—**	**—**
1	**Total at 31 Dec 2021**	**9.4**	**5.9**	**0.3**	**0.1**	**—**	**7.5**	**1.2**	**6.7**	**0.3**	**—**
2	Traditional securitisation	7.3	3.4	0.5	0.2	—	—	1.4	9.6	0.4	—
3	Securitisation	7.3	3.4	0.5	0.2	—	—	1.4	9.6	0.4	—
4	– retail underlying	4.6	2.7	0.5	0.1	—	—	1.3	6.4	0.2	—
5	– wholesale	2.7	0.7	—	0.1	—	—	0.1	3.2	0.2	—
9	Synthetic securitisation	3.0	3.2	—	—	—	6.2				
10	Securitisation	3.0	3.2	—	—	—	6.2				
12	– wholesale	3.0	3.2	—	—	—	6.2	—	—	—	—
1	Total at 31 Dec 2020	10.3	6.6	0.5	0.2	—	6.2	1.4	9.6	0.4	—

		RWAs (by regulatory approach)					Capital charge after cap				
		SEC-IRBA	SEC-ERBA	SEC IAA	SEC-SA	1,250%	SEC-IRBA	SEC-ERBA	SEC IAA	SEC-SA	1,250%
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
2	**Traditional securitisation**	**—**	**0.7**	**1.3**	**0.1**	**—**	**—**	**0.1**	**0.1**	**—**	**—**
3	Securitisation	**—**	**0.7**	**1.3**	**0.1**	**—**	**—**	**0.1**	**0.1**	**—**	**—**
4	– retail underlying	**—**	**0.5**	**1.1**	**0.1**	**—**	**—**	**0.1**	**0.1**	**—**	**—**
5	– wholesale	**—**	**0.2**	**0.2**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
9	**Synthetic securitisation**	**1.5**	**—**	**—**	**—**	**0.4**	**0.1**	**—**	**—**	**—**	**—**
10	Securitisation	**1.5**	**—**	**—**	**—**	**0.4**	**0.1**	**—**	**—**	**—**	**—**
12	– wholesale	**1.5**	**—**	**—**	**—**	**0.4**	**0.1**	**—**	**—**	**—**	**—**
1	**Total at 31 Dec 2021**	**1.5**	**0.7**	**1.3**	**0.1**	**0.4**	**0.1**	**0.1**	**0.1**	**—**	**—**
3	Securitisation	—	0.8	1.9	0.2	—	—	0.1	0.2	—	—
4	– retail underlying	—	0.6	1.3	0.1	—	—	0.1	0.2	—	—
5	– wholesale	—	0.2	0.6	0.1	—	—	—	—	—	—
9	Synthetic securitisation	1.7	—	—	—	0.3	0.2	—	—	—	—
10	Securitisation	1.7	—	—	—	0.3	0.2	—	—	—	—
12	– wholesale	1.7	—	—	—	0.3	0.2	—	—	—	—
1	Total at 31 Dec 2020	1.7	0.8	1.9	0.2	0.3	0.2	0.1	0.2	—	—

Table 63 presents the Group's exposure in the non-trading book and associated regulatory capital requirements where the Group acts as an investor.

Table 63: 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 1,250% RW	1,250% RW	SEC-IRBA	SEC-ERBA	SEC IAA	SEC-SA	1,250%
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
2	**Traditional securitisation**	**12.6**	**2.7**	**2.5**	**0.1**	**—**	**0.3**	**2.4**	**—**	**15.2**	**—**
3	Securitisation	**12.6**	**2.7**	**2.5**	**0.1**	**—**	**0.3**	**2.4**	**—**	**15.2**	**—**
4	– retail underlying	**9.1**	**1.2**	**0.5**	**0.1**	**—**	**—**	**0.4**	**—**	**10.5**	**—**
5	– wholesale	**3.5**	**1.5**	**2.0**	**—**	**—**	**0.3**	**2.0**	**—**	**4.7**	**—**
1	**Total at 31 Dec 2021**	**12.6**	**2.7**	**2.5**	**0.1**	**—**	**0.3**	**2.4**	**—**	**15.2**	**—**
2	Traditional securitisation	12.8	1.1	2.6	0.5	—	0.1	3.3	—	13.6	—
3	Securitisation	12.8	1.1	2.6	0.5	—	0.1	3.3	—	13.6	—
4	– retail underlying	9.7	0.9	0.9	0.4	—	—	1.4	—	10.5	—
5	– wholesale	3.1	0.2	1.7	0.1	—	0.1	1.9	—	3.1	—
1	Total at 31 Dec 2020	12.8	1.1	2.6	0.5	—	0.1	3.3	—	13.6	—

		RWAs (by regulatory approach)					Capital charge after cap				
		SEC-IRBA	SEC-ERBA	SEC IAA	SEC-SA	1,250%	SEC-IRBA	SEC-ERBA	SEC IAA	SEC-SA	1,250%
		$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn	$bn
2	**Traditional securitisation**	**—**	**2.0**	**—**	**2.8**	**—**	**—**	**0.2**	**—**	**0.2**	**—**
3	Securitisation	**—**	**2.0**	**—**	**2.8**	**—**	**—**	**0.2**	**—**	**0.2**	**—**
4	– retail underlying	**—**	**0.2**	**—**	**2.0**	**—**	**—**	**—**	**—**	**0.1**	**—**
5	– wholesale	**—**	**1.8**	**—**	**0.8**	**—**	**—**	**0.1**	**—**	**0.1**	**—**
1	**Total at 31 Dec 2021**	**—**	**2.0**	**—**	**2.8**	**—**	**—**	**0.2**	**—**	**0.2**	**—**
2	Traditional securitisation	—	2.8	—	2.5	—	—	0.2	—	0.2	—
3	Securitisation	—	2.8	—	2.5	—	—	0.2	—	0.2	—
4	– retail underlying	—	1.1	—	2.0	—	—	0.1	—	0.2	—
5	– wholesale	—	1.7	—	0.5	—	—	0.1	—	—	—
1	Total at 31 Dec 2020	—	2.8	—	2.5	—	—	0.2	—	0.2	—

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 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 change in the accounting value of assets and liabilities held outside of the trading book, due to movements in FX rates. 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 a discussion on hedging risk and monitoring the continuing effectiveness of hedges, refer to page 203 of the Annual Report and Accounts 2021.

The tables below reflect the components of capital requirement under the standardised approach, Table 64 ,and the internal model approach, Table 65 ,for market risk.

Table 64: Market risk under standardised approach (MR1)

		At 31 Dec		
		2021	2020	**2021**
		RWAs	RWAs	**Capital requirements**
		$bn	$bn	**$bn**
	Outright products			
1	Interest rate risk (general and specific)	**1.4**	1.7	**0.1**
2	Equity risk (general and specific)	**0.1**	0.1	**—**
3	Foreign exchange risk	**10.8**	5.2	**0.9**
4	Commodity risk	**—**	0.1	**—**
	Options			
5	Simplified approach	**—**	0.1	**—**
6	Delta-plus method	**—**	0.1	**—**
7	Scenario approach	**—**	—	**—**
8	**Securitisation**	**1.0**	1.3	**0.1**
9	**Total**	**13.3**	8.6	**1.1**

Market risk RWAs under the standardised approach saw an $8.4bn increase on our adoption of a Pillar 1 approach to the capitalisation of structural foreign exchange risk, following confirmation from the PRA. This was partly offset by enhancements to foreign exchange risk calculations.

Table 65: Market risk under IMA (MR2-A)

		2021		2020	
		RWAs	**Capital required**	RWAs	Capital required
		$bn	**$bn**	$bn	$bn
1	**VaR (higher of values a and b)**	**5.2**	**0.4**	5.4	0.4
(a)	Previous day's VaR		**0.1**		0.1
(b)	Average daily VaR[1]		**0.4**		0.4
2	**Stressed VaR (higher of values a and b)**	**9.6**	**0.8**	6.3	0.5
(a)	Latest SVaR		**0.1**		0.1
(b)	Average SVaR[1]		**0.8**		0.5
3	**Incremental risk charge (higher of values a and b)**	**3.2**	**0.3**	6.1	0.5
(a)	Most recent IRC value		**0.1**		0.5
(b)	Average IRC value[1]		**0.3**		0.5
5	**Other**	**1.6**	**0.1**	2.1	0.2
6	**Total at 31 Dec**	**19.6**	**1.6**	19.9	1.6

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

Under the IMA approach, the increase in SVaR is largely due to higher exposures at risk. Increased risk mitigation was the main cause of the fall 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 a discussion on market risk governance refer to page 203 of the Annual Report and Accounts 2021.

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 capitalized 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.

We use the past two years as the historical data set in our VaR model and the scenarios are updated 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.
- 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 actual number of profits or losses in excess of VaR over this period can therefore be used to gauge how well the models are performing. We consider enhanced internal monitoring of a VaR model if more than five profit exceptions or more than five loss exceptions occur in a 250-day period.

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 2021, the Group experienced two loss back-testing exceptions against hypothetical profit and loss and two loss back-testing exceptions against actual profit and loss. These exceptions comprised:

- a loss back-testing exception against hypothetical profit and loss in March, mainly driven by the effect of lower volatility in

the equity markets and by the increase in some emerging markets foreign exchange forward rates volatilities;

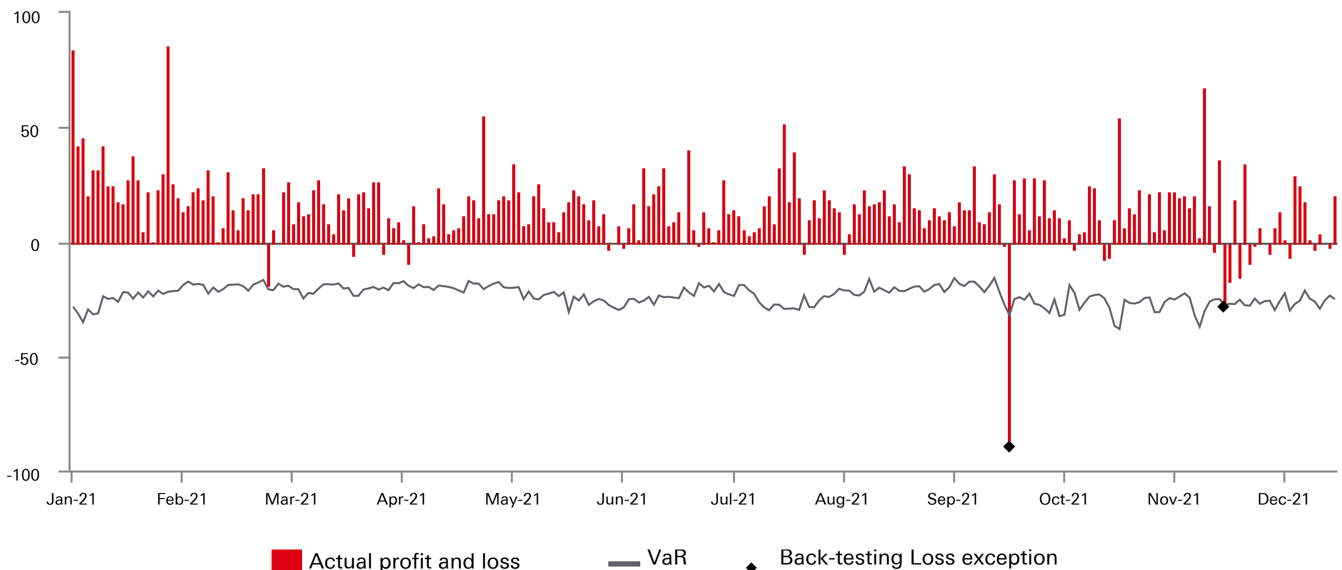
- a loss exception against actual profit and loss in September, attributable to the payment of novation fees under our RWA optimisation programme; and
- a loss back-testing exception against both hypothetical and actual profit and loss in late November, due to a number of relatively small losses spread across credit spread, equity and interest rates asset classes.

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

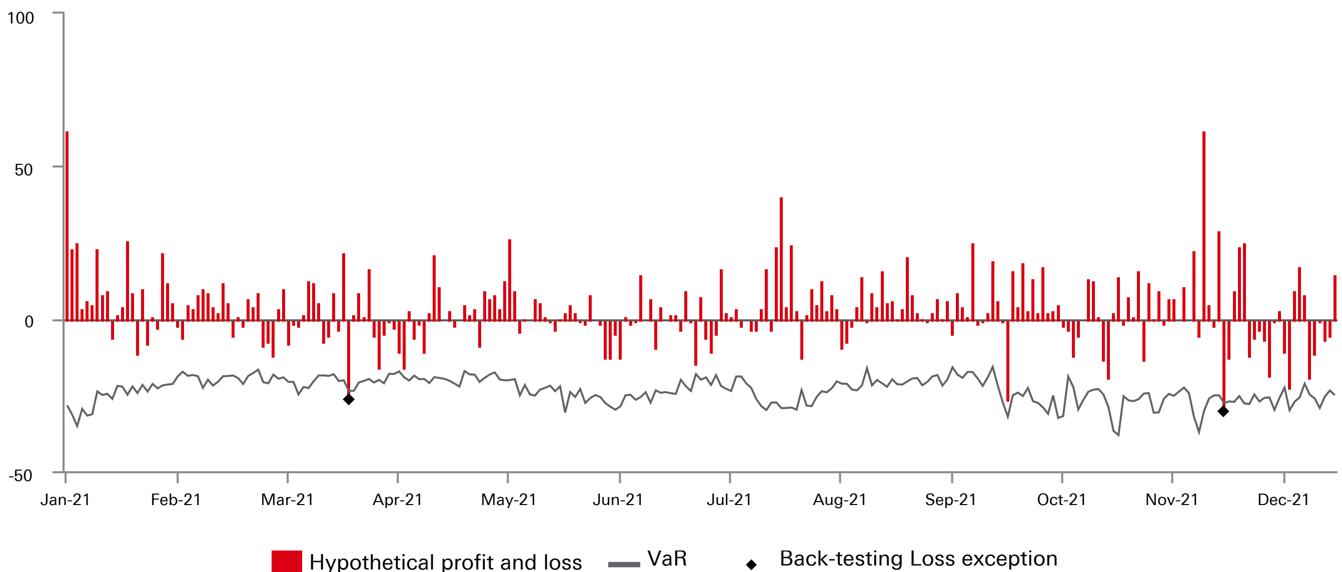
The following graphs show a one-year history for VaR back-testing exceptions against both actual and hypothetical profit and loss.

Comparison of VaR estimates with gains/losses

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 2021, we ran stress scenarios focusing on the economic and financial impact of the Covid-19 pandemic, in addition to specific scenarios for a worsening of the energy supply crisis and on negotiations around the U.S. debt ceiling 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 66: IMA values for trading portfolios (MR3)

		At 31 Dec	
		2021	2020
		$m	$m
VaR (10 day 99%)			
1	Maximum value	**176.2**	195.7
2	Average value	**133.6**	158.5
3	Minimum value	**105.6**	137.1
4	Period end	**134.6**	155.4
Stressed VaR (10 day 99%)			
5	Maximum value	**306.4**	252.5
6	Average value	**258.7**	187.2
7	Minimum value	**204.4**	154.8
8	Period end	**214.2**	169.1
Incremental risk charge (99.9%)			
9	Maximum value	**394.5**	576.9
10	Average value	**283.4**	500.5
11	Minimum value	**140.0**	395.4
12	Period end	**141.3**	476.8

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 2021*, which shows a fully diversified view used for internal risk management.

The reduction in Trading VaR compared to 2020 was driven primarily by larger diversification benefits across asset classes and gains from exposures to equity risks and interest rate risks. VaR remained within a relatively narrow range for most of 2021, whilst it was more volatile during 2H21 mainly due to changes in the contributions from equity and foreign exchange risks.

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 2021 as follows:
  - between April 2017 and April 2018 from January 2021;
  - between November 2007 and November 2008 from April 2021;

– between November 2007 and October 2008 from December 2021

- 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.

The increase in stressed VaR was mainly due to a reduction in offsetting gains from the foreign exchange business and larger potential losses from fixed income activities across G10 countries and emerging markets. Stressed VaR peaked before potential losses from foreign exchange risks where managed down during the year.

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 utilizes factors related to sector and rating of issuers.

IRC followed a downward trend during 2021. The reduction resulted primarily from the Rates business reducing our sovereign exposures to India, China and some Latin American countries, together with hedging activity during the first half of the year.

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 67: Prudential valuation adjustments (PV1)

	Equity	Interest rates	FX	Credit	Commodities	Total	*Of which: in the trading book*	*Of which: in the banking book*
	$m	$m	$m	$m	$m	$m	*$m*	*$m*
Closeout uncertainty	**267**	**346**	**45**	**142**	**3**	**803**	***512***	***291***
– of which:								
Mid-market value	***175***	***143***	***16***	***48***	***2***	***384***	**228**	**156**
Closeout cost	***28***	***47***	***7***	***8***	***1***	***91***	**78**	**13**
Concentration	***64***	***156***	***22***	***86***	**—**	***328***	**206**	**122**
Early termination	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
Model risk	**52**	**16**	**4**	**8**	**—**	**80**	***79***	***1***
Operational risk	**21**	**36**	**2**	**9**	**—**	**68**	***51***	***17***
Investing and funding costs	**—**	**3**	**—**	**1**	**—**	**4**	***4***	**—**
Unearned credit spreads	**4**	**186**	**3**	**32**	**—**	**225**	***225***	**—**
Future administrative costs	**—**	**7**	**—**	**6**	**—**	**13**	***11***	***2***
Other	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
Total adjustment at 31 Dec 2021	**344**	**594**	**54**	**198**	**3**	**1,193**	***882***	***311***
Closeout uncertainty	237	266	69	146	3	721	*548*	*173*
– of which:								
Mid-market value	*127*	*92*	*12*	*35*	*2*	*268*	194	74
Closeout cost	*21*	*54*	*10*	*6*	*1*	*92*	84	8
Concentration	*89*	*120*	*47*	*105*	—	*361*	270	91
Early termination	—	—	—	3	—	3	*3*	—
Model risk	25	18	6	4	—	53	*53*	—
Operational risk	23	48	4	11	—	86	*74*	*12*
Investing and funding costs	—	27	—	—	—	27	*27*	—
Unearned credit spreads	—	204	1	25	—	230	*230*	—
Future administrative costs	—	7	—	6	—	13	*13*	—
Other	—	—	—	—	—	—	—	—
Total adjustment at 31 Dec 2020	285	570	80	195	3	1,133	*948*	*185*

The net PVA charge increased by $60m compared to 2020 as a result of:

- a $262m increase due to the end of a higher diversification benefit temporarily allowed by regulators in 2020 reverting from 66% to 50% in 2021; offset by
- a $202m decrease in other additional valuation adjustments, mainly due to portfolio de-risking which drove the overall CVA exposure down and the introduction of a new funding curve marking methodology, as well as a reduction in underlying exposures and improvement in credit and liquidity conditions.

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 non-collateralised derivatives.

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

All 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 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 at both a Group and individual entity 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 changes in interest rate. The Group and operating entities are monitoring EVE sensitivities as a percentage of capital resources and this is calculated quarterly.

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. This is assessed over 1 year and 5 years and is calculated on a quarterly basis.

Active management of IRRBB

IRRBB that can be hedged with marketable securities is transferred, in accordance with Global Treasury's transfer pricing rules, to Markets Treasury to manage within market risk limits. IRRBB which cannot be managed with marketable instruments is managed between Global Treasury and the Global Businesses generating the interest rate risk. 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 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). 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's) 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 not limited to treatment of NMD's, shocks, scenarios and flooring.

Interest rate risk that can be economically hedged may be 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.

The average repricing maturity for non-maturity deposits ('NMDs') in the fourth quarter of 2021 was four months. The longest repricing maturity for non-maturity deposits ('NMDs') in the fourth quarter of 2021 was 240 months for a legacy portfolio that is being disposed of. Besides this portfolio the longest repricing maturity does not exceed 10 years across the Group.

As of 31 December 2021, the maximum decline in EVE is the parallel shock down which would lead to a 2.23% 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 decrease projected NII of $8,278m.

As a new disclosure for 2021, 31 December 2020 data is unavailable in the below table. Further details on our IRRBB and the net interest income sensitivity may be found on page 200 and page 202 of the Annual Report and Accounts 2021.

Table 68:Quantitative information on IRRBB

		ΔEVE		ΔNII		Tier 1 capital	
		31 Dec 2021	31 Dec 2020	31 Dec 2021	31 Dec 2020	31 Dec 2021	31 Dec 2020
		$m	$m	$m	$m	$m	$m
10	Parallel shock up	**(3,218)**	**N/A**	**12,379**	**N/A**		
20	Parallel shock down	**(3,492)**	**N/A**	**(8,278)**	**N/A**		
30	Steepener shock	**337**	**N/A**				
40	Flattener shock	**(3,165)**	**N/A**				
50	Short rates shock up	**(2,707)**	**N/A**				
60	Short rates shock down	**46**	**N/A**				
70	Maximum	**(3,492)**	**N/A**	**(8,278)**	**N/A**		
80	Tier 1 capital					**156,292**	**N/A**

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, failure to manage third parties, building unavailability, failure to protect people and place from physical malevolent acts, business interruption and incident risk, workplace safety, 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 capital requirements

Operational risk is part of non-financial risk. Table 69 reports our operational risk capital requirements by region and global business. Table 70 provides further details of the overall calculation. We currently use the standardised approach in determining our operational risk capital requirement

Table 69: Operational risk RWAs

	31 Dec 2021		31 Dec 2020	
	RWAs	Capital required	RWAs	Capital required
	$bn	$bn	$bn	$bn
By global business	**88.9**	**7.1**	94.3	7.5
– Wealth and Personal Banking,	**32.5**	**2.6**	34.6	2.7
– Commercial Banking	**25.9**	**2.1**	26.6	2.1
– Global Banking and Markets	**30.6**	**2.4**	32.4	2.6
– Corporate Centre	**(0.1)**	**0.0**	0.7	0.1
By geographical region	**88.9**	**7.1**	94.3	7.5
– Europe	**23.4**	**1.9**	25.9	2.1
– Asia	**43.0**	**3.4**	45.3	3.6
– Middle East and North Africa	**6.0**	**0.5**	6.2	0.5
– North America	**11.2**	**0.9**	11.7	0.9
– Latin America	**5.3**	**0.4**	5.2	0.4

Table 70:Operational risk own funds requirements and risk-weighted exposure amounts (OR1)

		a	b	c	d	e
			Relevant indicator		Own funds requirements	Risk exposure amount
		2019	2020	2021		
	Banking activities	$bn	$bn	$bn	$bn	$bn
2	Banking activities subject to standardised (TSA) / alternative standardised (ASA) approaches				7.1	88.9
3	Subject to TSA:					
	Corporate Finance	1.0	1.2	1.3		
	Trading and Sales	6.4	7.6	6.0		
	Retail Brokerage	0.0	0.0	0.0		
	Commercial Banking	21.7	19.4	18.4		
	Retail Banking	18.8	16.6	15.6		
	Payment and Settlement	1.7	1.2	1.6		
	Agency Services	0.9	1.1	1.2		
	Asset Managemnet	2.2	2.0	2.3		

Organisation and responsibilities

Responsibility for managing non-financial risk lies with our people. During 2021, we remained focused on strengthening our approach to managing non-financial risk. The RMF sets out our approach to governance and risk appetite and sets the principals for our management of non-financial risks and associated controls.

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.

In 2021 we continued to develop the Operational and Resilience Risk sub-function, which provides robust non-financial risk steward oversight of the management of risk by the Group businesses, functions and legal entities.The sub-function helps the business grow safely and ensures governance and management of Operational and Resilience Risk through the delivery and embedding of effective frameworks and policies, and continuous oversight and assurance of risks, controls, events and impacts . 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 HSBC Non-Financial Risk profile, including elements of the RMF which supports non-financial risk management.

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 risk and control management of risks, ensuring the organisation is protected against emerging risks in the most effective way, and monitoring levels 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.

Activity to strengthen the first and second lines of defence continued to be a key focus in 2021. 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.

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 a top down, forward-looking assessment of risks to help determine whether they are being effectively managed within our risk appetite or whether further management action is required. 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 follows up 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

Continuity of business operations during Covid-19 pandemic

As a result of the Covid-19 pandemic, we successfully implemented business continuity responses and continued to maintain the majority of service level agreements. We did not experience any major impacts to the supply chain for our third party service providers due to Covid-19. The risk of damage or theft to our physical assets or criminal injury to our colleagues remains unchanged and no significant incidents have impacted our buildings or people.

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. Further details on Treasury Risk Management can be found in page 13

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 European Commission Delegated Regulation (EU) 2015/61.

In 2021, we implemented a revised approach to the application of the requirements under the European Commission Delegated Regulation (EU) 2015/61. This revised approach was used to assess the limitations in the transferability of entity liquidity around the Group and resulted in an adjustment of $163bn to LCR HQLA and $9bn to LCR inflows. This reflected an increase in the adjustment of $62bn compared with the approach used for the disclosure in the *Annual Report and Accounts 2020*. The change in methodology was designed to better incorporate local regulatory restrictions on the transferability of liquidity.

Net stable funding ratio

We use NSFR or other appropriate metric as a basis for ensuring operating entities raise sufficient stable funding to support their business activities. The NSFR or other appropriate metric requires institutions to maintain a minimum amount of stable funding based on assumptions of asset liquidity. From 1 January 2022, we started managing funding risk based on the PRA's NSFR rules.

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.

For details on our approach to manage Liquidity Risk, please refer Treasury Risk management section page 13

More details on the concentration of funding and liquidity sources may be found on page 197 of the Annual Report and Accounts 2021.

Table 71:Level and components of HSBC Group consolidated liquidity coverage ratio (LIQ1)

	Quarter ended 31 Dec 2021		Quarter ended 30 Sep 2021		Quarter ended 30 Jun 2021		Quarter ended 31 Mar 2021	
	Total unweighted value	Total weighted value	Total unweighted value	Total weighted value	Total unweighted value	Total weighted value	Total unweighted 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')		689,493		684,264		680,715		662,404
Cash outflows								
Retail deposits and small business funding	891,723	89,932	879,170	88,326	865,322	86,793	840,319	84,323
– *of which:*								
stable deposits	*394,486*	*19,724*	*390,657*	*19,533*	*384,413*	*19,221*	*371,379*	*18,569*
less stable deposits	*497,237*	*70,208*	*488,513*	*68,793*	*480,909*	*67,572*	*468,940*	*65,754*
Unsecured wholesale funding	844,605	381,828	830,167	376,778	813,842	372,776	786,747	362,279
– operational deposits (all counterparties) and deposits in networks of cooperative banks	266,895	65,387	260,059	63,724	250,526	61,382	240,588	58,935
– non-operational deposits (all counterparties)	565,941	304,672	558,367	301,313	550,617	298,695	532,603	289,788
– unsecured debt	11,769	11,769	11,741	11,741	12,699	12,699	13,556	13,556
Secured wholesale funding		12,979		13,042		12,330		12,357
Additional requirements	351,069	114,315	350,552	112,305	348,806	111,731	337,210	108,398
– outflows related to derivative exposures and other collateral requirements	55,702	52,691	55,750	53,196	57,226	55,479	57,364	56,331
– outflows related to loss of funding on debt products	–	–	–	–	–	–	–	–
– credit and liquidity facilities	295,367	61,624	294,802	59,109	291,580	56,252	279,846	52,067
Other contractual funding obligations	89,510	47,521	89,262	49,955	86,976	48,749	84,869	47,068
Other contingent funding obligations	619,653	15,984	610,749	15,401	603,012	14,843	596,557	14,133
Total cash outflows		662,559		655,807		647,222		628,558
Cash inflows								
Secured lending transactions (including reverse repos)	282,144	38,395	281,561	37,697	284,022	35,384	290,266	34,368
Inflows from fully performing exposures	117,797	85,668	119,251	86,438	117,949	84,983	113,119	80,660
Other cash inflows	98,419	42,953	103,071	45,218	113,411	50,964	119,701	54,637
(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	498,360	167,016	503,883	169,353	515,382	171,331	523,086	169,665
Fully exempt inflows	–	–	–	–	–	–	–	–
Inflows Subject to 90% Cap	–	–	–	–	–	–	–	–
Inflows Subject to 75% Cap	498,360	167,016	503,883	169,353	515,382	171,331	523,086	169,665
Liquidity coverage ratio (Adjusted value)								
Liquidity Buffer		689,493		684,264		680,715		662,404
Total net cash outflows		495,543		486,454		475,891		458,893
Liquidity coverage ratio (%)		139.1 %		140.7 %		143.0 %		144.3 %

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 $476bn at 31 December 2021 (2020: $447bn). The fair value of any such collateral actually sold or repledged was $272bn (2020: $247bn).

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 $183bn (2020: $200bn) of unencumbered collateral available to support potential future funding and collateral needs at 31 December 2021.

Further information on collateral obligations under derivative contracts in the event of downgrade is provided on page 64. For further details on risks to liquidity, see page 190 onwards of the Annual Report and Accounts 2021.

Table 72: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	–	–	–	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	–	–	–	–	–	–	–	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	29,874	–	59,848	139,982
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**

Table 72: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	—	—	—	303	304,093	26	—	59	304,481
Items in the course of collection from other banks	—	—	—	—	—	—	—	4,094	4,094
Hong Kong Government certificates of indebtedness	—	—	—	—	—	—	—	40,420	40,420
Trading assets	—	—	68,971	2,134	127,033	9,464	22,277	2,111	231,990
– treasury and other eligible bills	—	—	5,533	1,715	15,555	1,232	—	—	24,035
– debt securities	—	—	37,338	419	61,180	3,275	—	634	102,846
– equity securities	—	—	26,100	—	50,298	1,245	—	—	77,643
– loans and advances to banks	—	—	—	—	—	1,230	5,739	1,273	8,242
– loans and advances to customers	—	—	—	—	—	2,482	16,538	204	19,224
Financial assets designated and otherwise mandatorily measured at fair value through profit or loss	—	—	511	—	2,360	1,739	556	40,387	45,553
– treasury and other eligible bills	—	—	—	—	—	—	—	661	661
– debt securities	—	—	—	—	266	203	—	6,638	7,107
– equity securities	—	—	1	—	2,054	(687)	—	32,444	33,812
– loans and advances to banks and customers	—	—	—	—	40	1,748	556	644	2,988
– other assets	—	—	510	—	—	475	—	—	985
Derivatives	—	—	—	—	—	—	307,726	—	307,726
Loans and advances to banks	—	—	65	4,089	4,843	53,169	—	19,450	81,616
Loans and advances to customers	7,845	7,322	6,864	75,734	15,849	890,498	25	33,850	1,037,987
Reverse repurchase agreements – non-trading	—	—	—	—	—	—	230,628	—	230,628
Financial investments	—	182	23,996	25,281	356,527	5,600	—	79,107	490,693
– treasury and other eligible bills	—	182	1,071	4,371	121,726	1,850	—	720	129,920
– debt securities	—	—	22,925	20,910	234,241	2,826	—	77,447	358,349
– equity securities	—	—	—	—	560	924	—	853	2,337
– other instruments	—	—	—	—	—	—	—	87	87
Prepayments, accrued income and other assets	—	14	60,173	156	8,062	29,899	—	58,108	156,412
Current tax assets	—	—	—	—	—	—	—	954	954
Interest in associates and joint ventures	—	—	—	—	36	26,228	—	420	26,684
Goodwill and intangible assets	—	—	—	—	—	—	—	20,443	20,443
Deferred tax	—	—	—	—	—	—	—	4,483	4,483
At 31 Dec 2020	7,845	7,518	160,580	107,697	818,803	1,016,623	561,212	303,886	2,984,164

Other risks

Non-trading book exposures in equities

At 31 December 2021, we had equity investments in the non-trading book of $4.7bn (2020: $5.8bn). These consist of investments held for the purposes shown in Table 73.

We make investments in private equity primarily through managed funds that are subject to limits on the amount of investment. We risk-assess these commitments to ensure that industry and geographical concentrations remain within acceptable levels for the portfolio as a whole, and perform regular reviews to substantiate the valuation of the investments within the portfolio.

Exchange traded investments amounted to $0.1bn (2020: $0.3bn), with the remainder being unlisted. These investments are held at fair value in line with market prices.

On a regulatory consolidation basis, the net realised gain from disposal of equity securities amounted to $0.2bn (2020: $0.4bn). Unrealised gains on FVOCI equities of $0.5bn at 31 December 2021 were fully recognised in CET1.

Details of our accounting policy for equity investments measured at FVOCI and the valuation of financial instruments may be found on page 322 of the Annual Report and Accounts 2021*. A detailed description of the valuation techniques applied to private equity may be found on page 347 of the* Annual Report and Accounts 2021.

Table 73: Non-trading book equity investments

	Fair value through other comprehensive income (FVOCI)	Mandatorily measured at fair value through profit and loss	Total
	$bn	$bn	$bn
Private equity holdings	**–**	**1.3**	**1.3**
Investment to facilitate ongoing business[1]	**1.8**	**1.2**	**3.0**
Other strategic investments	**–**	**0.4**	**0.4**
At 31 Dec 2021	**1.8**	**2.9**	**4.7**
Private equity holdings	–	2.0	2.0
Investment to facilitate ongoing business	2.4	1.0	3.4
Other strategic investments	–	0.4	0.4
At 31 Dec 2020	2.4	3.4	5.8

1 *Includes holdings in government-sponsored enterprises and local stock exchanges.*

Insurance Manufacturing Operations Risk

We sell insurance products worldwide through a range of channels including our branches, 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.

The insurance contracts we sell relate to the underlying needs of our customers, which we can identify from our point-of-sale contacts and customer knowledge. For the products we manufacture, the majority of sales are of 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 through our banking network and direct channels. These arrangements are generally structured with our exclusive strategic partners and earn the Group a combination of commissions, fees and a share of profits.

Insurance products are sold through all global businesses, but predominantly by WPB and CMB through our branches and direct channels worldwide.

The insurance manufacturing subsidiaries are excluded from the regulatory consolidation by excluding their assets, liabilities and post-acquisition reserves, leaving the investment of these insurance subsidiaries to be recorded at cost and deducted from CET1 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 210 of the Annual Report and Accounts 2021.

Climate change risk

There are two main channels of climate risk. The physical risk arising from the increased frequency and severity of weather events, such as hurricanes and floods, or chronic shifts in weather patterns. The transition risk arising from the process of moving to a low-carbon economy, including changes in policy, technology, consumer behaviour and stakeholder perception.

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

Refer to page 56 and 131 of the Annual Report and Accounts 2021 *for further information.*

Appendix I

Additional tables

Credit risk

Table 74 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.

Table 74: Wholesale IRB exposure – by obligor grade

			Central governments and central banks		Institutions		Corporates[2]	
Default risk	CRR	PD range	Average net carrying values[1]	Mapped external rating	Average net carrying values[1]	Mapped external rating	Average net carrying values[1]	Mapped external rating
		%	$bn		$bn		$bn	
Minimal	0.1	0.000 to 0.010	**302.3**	**AAA to AA**	**2.5**	**AAA**	**—**	**—**
	1.1	0.011 to 0.028	**72.8**	**AA- to A+**	**37.8**	**AA+ to AA**	**32.9**	**AAA to AA**
	1.2	0.029 to 0.053	**26.6**	**A to A-**	**15.3**	**AA-**	**59.5**	**AA-**
Low	2.1	0.054 to 0.095	**2.0**	**BBB+**	**9.5**	**A+ to A**	**89.5**	**A+ to A**
	2.2	0.096 to 0.169	**13.0**	**BBB**	**13.2**	**A-**	**115.2**	**A-**
Satisfactory	3.1	0.170 to 0.285	**5.4**	**BBB-**	**3.9**	**BBB+**	**119.5**	**BBB+**
	3.2	0.286 to 0.483	**1.0**	**BBB-**	**1.0**	**BBB**	**101.9**	**BBB**
	3.3	0.484 to 0.740	**5.3**	**BB+/BB**	**1.3**	**BBB-**	**106.0**	**BBB-**
Fair	4.1	0.741 to 1.022	**3.2**	**BB-**	**0.5**	**BB+**	**82.7**	**BB+**
	4.2	1.023 to 1.407	**0.7**	**B+**	**0.4**	**BB**	**59.7**	**BB**
	4.3	1.408 to 1.927	**3.7**	**B+**	**0.2**	**BB-**	**61.3**	**BB-**
Moderate	5.1	1.928 to 2.620	**—**	**B+**	**0.5**	**BB-**	**84.1**	**BB-**
	5.2	2.621 to 3.579	**0.7**	**B**	**0.1**	**B+**	**32.2**	**B+**
	5.3	3.580 to 4.914	**0.4**	**B**	**0.1**	**B**	**29.8**	**B**
Significant	6.1	4.915 to 6.718	**0.1**	**B-**	**—**	**B-**	**14.7**	**B-**
	6.2	6.719 to 8.860	**1.1**	**B-**	**—**	**B-**	**7.8**	**B-**
High	7.1	8.861 to 11.402	**0.1**	**B-**	**—**	**CCC+**	**5.7**	**CCC+**
	7.2	11.403 to 15.000	**0.2**	**CCC+**	**0.1**	**CCC+**	**2.3**	**CCC+**
Special Management	8.1	15.001 to 22.000	**—**	**CCC+**	**—**	**CCC**	**5.3**	**CCC**
	8.2	22.001 to 50.000	**—**	**CCC**	**—**	**CCC- to CC**	**0.7**	**CCC- to CC**
	8.3	50.001 to 99.999	**0.9**	**CCC- to C**	**—**	**C**	**0.6**	**C**
Default	9/10	100.000	**0.1**	**Default**	**—**	**Default**	**7.7**	**Default**
At 31 Dec 2021			**439.6**		**86.4**		**1,019.1**	
Minimal	0.1	0.000 to 0.010	263.4	AAA to AA	2.7	AAA	0.1	—
	1.1	0.011 to 0.028	71.3	AA- to A+	35.1	AA+ to AA	33.5	AAA to AA
	1.2	0.029 to 0.053	25.1	A to A-	14.5	AA-	66.5	AA-
Low	2.1	0.054 to 0.095	5.7	BBB+	10.5	A+ to A	92.1	A+ to A
	2.2	0.096 to 0.169	8.2	BBB	11.9	A-	109.2	A-
Satisfactory	3.1	0.170 to 0.285	4.6	BBB-	3.4	BBB+	122.4	BBB+
	3.2	0.286 to 0.483	1.5	BBB-	1.4	BBB	107.5	BBB
	3.3	0.484 to 0.740	4.4	BB+/BB	1.1	BBB-	107.1	BBB-
Fair	4.1	0.741 to 1.022	2.5	BB-	1.0	BB+	79.2	BB+
	4.2	1.023 to 1.407	0.5	B+	0.3	BB	59.0	BB
	4.3	1.408 to 1.927	2.4	B+	0.3	BB-	52.9	BB-
Moderate	5.1	1.928 to 2.620	1.3	B+	0.3	BB-	86.8	BB-
	5.2	2.621 to 3.579	0.2	B	0.1	B+	28.4	B+
	5.3	3.580 to 4.914	0.3	B	—	B	23.5	B
Significant	6.1	4.915 to 6.718	—	B-	—	B-	15.3	B-
	6.2	6.719 to 8.860	0.3	B-	—	B-	7.5	B-
High	7.1	8.861 to 11.402	0.2	B-	—	CCC+	5.6	CCC+
	7.2	11.403 to 15.000	—	CCC+	0.1	CCC+	1.8	CCC+
Special Management	8.1	15.001 to 22.000	—	CCC+	—	CCC	2.9	CCC
	8.2	22.001 to 50.000	—	CCC	—	CCC- to CC	0.9	CCC- to CC
	8.3	50.001 to 99.999	1.7	CCC- to C	—	C	0.6	C
Default	9/10	100.000	0.1	Default	—	Default	6.0	Default
At 31 Dec 2020			393.7		82.7		1,008.8	

1 Average net carrying value are calculated by aggregating the net carrying values of the last five quarters and dividing by five.
2 Corporates excludes specialised lending exposures subject to supervisory slotting approach.

PD, LGD, RWA and exposure by country/territory

The following Tables 75. a-c analyse the exposure-weighted average PD, exposure-weighted average LGD, RWAs and exposure by location of the lending subsidiary or branch. The tables exclude specialised lending exposures subject to the supervisory slotting approach, securitisation exposures and non-credit obligations. We selected the countries disclosed in this table using thresholds based on the net carrying values of exposures within regions and countries.

Table 75.a: PD, LGD, RWA and exposure by country/territory – wholesale IRB advanced approach

	Wholesale IRB advanced approach							
	All asset classes				Central governments and central banks			
	At 31 Dec 2021				At 31 Dec 2021			
	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs
	%	%	$bn	$bn	%	%	$bn	$bn
Europe	1.23	34.4	139.3	27.8	0.04	44.9	63.0	5.0
UK	0.29	40.2	65.3	7.0	0.02	44.5	51.1	3.3
France	2.31	25.5	60.9	18.4	0.01	45.0	1.9	0.2
Asia	1.24	43.5	619.4	188.7	0.05	44.4	248.1	20.3
Hong Kong	1.36	39.9	322.2	89.7	0.02	43.8	117.3	6.3
Australia	0.76	43.0	30.4	7.6	0.01	45.0	13.3	0.6
Mainland China	0.70	48.3	91.3	34.0	0.02	45.0	30.1	2.1
Singapore	2.02	42.1	50.2	8.6	0.01	44.4	27.1	0.9
Middle East and North Africa	0.49	43.3	28.7	10.3	0.53	43.9	21.8	8.5
North America	0.87	37.5	212.2	62.3	0.01	38.0	97.9	4.5
US	0.80	36.2	144.2	40.0	0.01	38.5	74.3	3.4
Canada	1.09	35.6	64.3	22.0	0.01	36.1	20.9	0.9
Latin America	2.44	44.9	9.2	6.6	2.29	45.0	8.7	6.4

	Wholesale IRB advanced approach							
	Institutions				Corporates			
	At 31 Dec 2021				At 31 Dec 2021			
	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs
	%	%	$bn	$bn	%	%	$bn	$bn
Europe	0.18	30.2	13.2	2.6	2.63	24.5	63.1	20.2
UK	0.14	25.4	9.7	1.8	3.74	23.3	4.5	1.9
France	0.09	44.2	1.0	0.2	2.43	24.5	58.0	18.0
Asia	0.11	46.0	55.0	8.7	2.38	42.7	316.3	159.7
Hong Kong	0.06	41.1	28.5	3.7	2.47	37.1	176.4	79.7
Australia	0.08	37.4	1.5	0.3	1.47	41.8	15.6	6.7
Mainland China	0.05	45.8	12.5	1.7	1.29	51.0	48.7	30.2
Singapore	0.06	40.5	4.0	0.4	5.30	39.3	19.1	7.3
Middle East and North Africa	0.08	45.1	2.6	0.5	0.57	33.0	4.3	1.3
North America	0.06	45.1	4.0	0.6	1.67	37.0	110.3	57.2
US	0.11	45.0	1.0	0.3	1.66	33.7	68.9	36.3
Canada	0.03	25.5	2.1	0.2	1.69	35.9	41.3	20.9
Latin America	0.37	45.0	0.4	0.2	22.43	30.5	0.1	–

Table 75.b: PD, LGD, RWA and exposure by country/territory – wholesale IRB foundation approach

	Wholesale IRB foundation approach							
	All asset classes				Central governments and central banks			
	At 31 Dec 2021				At 31 Dec 2021			
	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs
	%	%	$bn	$bn	%	%	$bn	$bn
Europe	4.04	36.3	143.2	82.5	0.02	45.0	–	–
UK	4.10	34.5	124.8	71.8	–	–	–	–
France	3.95	45.0	0.4	0.4	–	–	–	–
Asia	–	–	–	–	–	–	–	–
Hong Kong	–	–	–	–	–	–	–	–
Australia	–	–	–	–	–	–	–	–
Mainland China	–	–	–	–	–	–	–	–
Singapore	–	–	–	–	–	–	–	–
Middle East and North Africa	4.92	44.2	15.5	9.0	0.04	45.0	0.5	0.1
North America	0.08	45.0	0.2	0.1	–	–	–	–
US	–	–	–	–	–	–	–	–
Canada	–	–	–	–	–	–	–	–
Latin America	–	–	–	–	–	–	–	–

	Wholesale IRB foundation approach							
	Institutions				Corporates			
	At 31 Dec 2021				At 31 Dec 2021			
	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs
	%	%	$bn	$bn	%	%	$bn	$bn
Europe	0.18	45.0	0.1	–	4.05	36.3	143.1	82.5
UK	–	–	–	–	4.10	34.5	124.8	71.8
France	–	–	–	–	3.95	45.0	0.4	0.4
Asia	–	–	–	–	–	–	–	–
Hong Kong	–	–	–	–	–	–	–	–
Australia	–	–	–	–	–	–	–	–
Mainland China	–	–	–	–	–	–	–	–
Singapore	–	–	–	–	–	–	–	–
Middle East and North Africa	0.24	45.0	0.3	0.1	5.17	44.1	14.7	8.8
North America	–	–	–	–	0.08	45.0	0.2	0.1
US	–	–	–	–	–	–	–	–
Canada	–	–	–	–	–	–	–	–
Latin America	–	–	–	–	–	–	–	–

Table 75.c: PD, LGD, RWA and exposure by country/territory – retail IRB approach

	Retail IRB approach											
	All asset classes				Retail secured by mortgages on immovable property non-SME				Retail secured by mortgages on immovable property SME			
	At 31 Dec 2021				At 31 Dec 2021				At 31 Dec 2021			
	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs
	%	%	$bn	$bn	%	%	$bn	$bn	%	%	$bn	$bn
Europe	1.20	26.1	260.0	33.2	0.85	14.7	200.6	15.2	15.68	27.4	0.5	0.3
UK	1.04	28.7	224.7	26.4	0.78	15.4	177.6	10.2	—	—	—	—
France	2.61	11.9	27.9	6.7	1.46	9.3	23.1	5.0	13.44	25.9	0.4	0.3
Asia	0.95	27.5	206.6	40.8	1.02	10.7	139.8	29.9	0.82	10.9	0.5	0.1
Hong Kong	0.70	32.2	159.4	34.8	0.61	10.0	97.4	24.1	0.82	10.9	0.5	0.1
Australia	1.92	10.1	22.8	3.0	1.92	10.1	22.8	3.0	—	—	—	—
Mainland China	—	—	—	—	—	—	—	—	—	—	—	—
Singapore	1.46	14.2	13.1	1.1	1.93	18.8	8.6	0.9	—	—	—	—
Middle East and North Africa	—	—	—	—	—	—	—	—	—	—	—	—
North America	2.14	35.6	52.8	10.5	2.22	30.8	46.0	8.4	0.97	22.0	0.5	0.1
US	4.09	56.1	23.4	7.5	4.78	50.2	18.3	5.9	—	—	—	—
Canada	0.59	19.3	29.3	2.9	0.54	18.0	27.7	2.4	0.97	22.0	0.5	0.1
Latin America	—	—	—	—	—	—	—	—	—	—	—	—

	Retail IRB approach											
	Retail QRRE				Other SME				Other non-SME			
	At 31 Dec 2021				At 31 Dec 2021				At 31 Dec 2021			
	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs	Exposure-weighted average PD	Exposure-weighted average LGD	Exposure value	RWAs
	%	%	$bn	$bn	%	%	$bn	$bn	%	%	$bn	$bn
Europe	1.32	79.6	35.5	7.0	9.87	62.8	4.1	3.0	2.39	38.3	19.3	7.7
UK	1.32	79.6	35.5	7.0	7.20	85.4	2.7	2.7	3.27	72.9	8.9	6.5
France	23.38	67.4	—	—	14.68	22.1	1.5	0.4	3.98	24.8	2.9	1.0
Asia	0.82	96.9	40.1	7.7	0.32	24.9	0.1	—	0.82	11.5	26.1	3.1
Hong Kong	0.82	96.9	40.1	7.7	0.32	24.9	0.1	—	0.88	12.9	21.3	2.9
Australia	—	—	—	—	—	—	—	—	—	—	—	—
Mainland China	—	—	—	—	—	—	—	—	—	—	—	—
Singapore	—	—	—	—	—	—	—	—	0.57	5.5	4.5	0.2
Middle East and North Africa	—	—	—	—	—	—	—	—	—	—	—	—
North America	1.20	93.1	3.4	1.3	2.21	53.2	0.3	0.1	2.07	45.4	2.6	0.6
US	1.12	95.8	3.2	1.2	—	—	—	—	2.38	46.4	1.9	0.4
Canada	2.10	61.2	0.3	0.1	2.21	53.2	0.2	0.1	1.16	42.9	0.6	0.2
Latin America	—	—	—	—	—	—	—	—	—	—	—	—

Table 76: Retail IRB exposure – by internal PD band

	PD range	At 31 Dec 2021	At 31 Dec 2020
		Average net carrying values[1]	Average net carrying values[1]
	%	**$bn**	$bn
Retail SME exposure secured by mortgages on immovable property		**1.5**	1.9
Band 1	0.000 to 0.483	**0.8**	0.8
Band 2	0.484 to 1.022	**0.2**	0.3
Band 3	1.023 to 4.914	**0.4**	0.6
Band 4	4.915 to 8.860	**0.1**	0.2
Band 5	8.861 to 15.000	**—**	—
Band 6	15.001 to 50.000	**—**	—
Band 7	50.001 to 100.000	**—**	—
Retail non-SME exposure secured by mortgages on immovable property		**376.8**	336.5
Band 1	0.000 to 0.483	**322.0**	283.6
Band 2	0.484 to 1.022	**25.2**	25.2
Band 3	1.023 to 4.914	**22.7**	20.1
Band 4	4.915 to 8.860	**1.7**	2.6
Band 5	8.861 to 15.000	**0.7**	0.8
Band 6	15.001 to 50.000	**2.0**	1.9
Band 7	50.001 to 100.000	**2.5**	2.3
Qualifying revolving retail exposure		**141.3**	139.6
Band 1	0.000 to 0.483	**117.1**	112.9
Band 2	0.484 to 1.022	**10.9**	11.7
Band 3	1.023 to 4.914	**11.0**	12.2
Band 4	4.915 to 8.860	**1.2**	1.4
Band 5	8.861 to 15.000	**0.4**	0.6
Band 6	15.001 to 50.000	**0.4**	0.5
Band 7	50.001 to 100.000	**0.3**	0.3
Other retail SME exposure		**14.8**	10.9
Band 1	0.000 to 0.483	**0.5**	1.1
Band 2	0.484 to 1.022	**0.9**	1.0
Band 3	1.023 to 4.914	**8.9**	6.5
Band 4	4.915 to 8.860	**1.6**	1.1
Band 5	8.861 to 15.000	**0.8**	0.4
Band 6	15.001 to 50.000	**1.7**	0.6
Band 7	50.001 to 100.000	**0.4**	0.2
Other retail non-SME exposure		**73.2**	75.7
Band 1	0.000 to 0.483	**48.3**	49.8
Band 2	0.484 to 1.022	**11.3**	12.4
Band 3	1.023 to 4.914	**12.1**	11.6
Band 4	4.915 to 8.860	**0.7**	0.9
Band 5	8.861 to 15.000	**0.2**	0.3
Band 6	15.001 to 50.000	**0.3**	0.4
Band 7	50.001 to 100.000	**0.3**	0.3
Total retail exposure		**607.6**	564.6
Band 1	0.000 to 0.483	**488.7**	448.2
Band 2	0.484 to 1.022	**48.5**	50.6
Band 3	1.023 to 4.914	**55.1**	51.0
Band 4	4.915 to 8.860	**5.3**	6.2
Band 5	8.861 to 15.000	**2.1**	2.1
Band 6	15.001 to 50.000	**4.4**	3.4
Band 7	50.001 to 100.000	**3.5**	3.1

1 Average net carrying values are calculated by aggregating the net carrying values of the last five quarters and dividing by five.

Table 77: IRB expected loss and CRAs – by exposure class

			CRA	
		Expected loss	Balances	Charge for the year
		$bn	$bn	$bn
1	**Total IRB approach**			
2	Central governments and central banks	**0.2**	**—**	**—**
3	Institutions	**—**	**—**	**(0.1)**
4	Corporates	**8.4**	**6.9**	**(0.7)**
5	Retail	**2.2**	**2.0**	**(0.1)**
	– secured by mortgages on immovable property SME	**—**	**—**	**—**
	– secured by mortgages on immovable property non-SME	**0.8**	**0.4**	**—**
	– qualifying revolving retail	**0.7**	**0.9**	**0.1**
	– other SME	**0.3**	**0.3**	**(0.2)**
	– other non-SME	**0.4**	**0.4**	**—**
6	**Total at 31 Dec 2021**	**10.8**	**8.9**	**(0.9)**
1	Total IRB approach			
2	Central governments and central banks	0.8	0.1	—
3	Institutions	—	0.1	0.1
4	Corporates	8.4	7.5	4.6
5	Retail	2.7	3.0	2.3
	– secured by mortgages on immovable property SME	—	—	—
	– secured by mortgages on immovable property non-SME	0.9	0.4	0.3
	– qualifying revolving retail	0.9	1.3	1.0
	– other SME	0.4	0.6	0.3
	– other non-SME	0.5	0.7	0.7
6	Total at 31 Dec 2020	11.9	10.7	7.0
1	Total IRB approach			
2	Central governments and central banks	0.6	0.1	—
3	Institutions	—	—	—
4	Corporates	5.5	4.3	1.0
5	Retail	2.6	2.0	1.1
	– secured by mortgages on immovable property SME	0.1	0.1	—
	– secured by mortgages on immovable property non-SME	0.8	0.2	—
	– qualifying revolving retail	0.9	1.0	0.6
	– other SME	0.4	0.3	0.2
	– other non-SME	0.4	0.4	0.3
6	Total at 31 Dec 2019	8.7	6.4	2.1

Table 78: Credit risk RWAs – by geographical region

	RWAs					
	Europe	Asia	MENA	North America	Latin America	Total
	$bn	$bn	$bn	$bn	$bn	$bn
IRB advanced approach	**70.6**	**239.2**	**10.3**	**76.4**	**6.6**	**403.1**
– central governments and central banks	**5.0**	**20.3**	**8.5**	**4.5**	**6.4**	**44.7**
– institutions	**2.6**	**8.7**	**0.5**	**0.6**	**0.2**	**12.6**
– corporates	**29.8**	**169.4**	**1.3**	**60.8**	**—**	**261.3**
– total retail	**33.2**	**40.8**	**—**	**10.5**	**—**	**84.5**
IRB securitisation positions	**1.5**	**—**	**—**	**0.4**	**—**	**1.9**
IRB non-credit obligation assets	**4.8**	**6.8**	**0.7**	**2.3**	**1.4**	**16.0**
IRB foundation approach	**82.5**	**—**	**9.0**	**0.1**	**—**	**91.6**
– central governments and central banks	**—**	**—**	**0.1**	**—**	**—**	**0.1**
– institutions	**—**	**—**	**0.1**	**—**	**—**	**0.1**
– corporates	**82.5**	**—**	**8.8**	**0.1**	**—**	**91.4**
Standardised approach	**34.3**	**72.1**	**30.6**	**11.4**	**19.6**	**168.0**
– central governments and central banks	**4.6**	**1.5**	**0.4**	**3.3**	**1.2**	**11.0**
– regional governments or local authorities	**0.2**	**—**	**1.8**	**0.5**	**0.6**	**3.1**
– public sector entities	**—**	**—**	**—**	**0.1**	**—**	**0.1**
– institutions	**0.1**	**0.2**	**0.4**	**—**	**—**	**0.7**
– corporates	**9.0**	**18.1**	**19.9**	**3.3**	**11.3**	**61.6**
– retail	**1.7**	**4.9**	**3.4**	**0.7**	**3.5**	**14.2**
– secured by mortgages on immovable property	**3.4**	**6.1**	**1.3**	**0.4**	**1.6**	**12.8**
– exposures in default	**0.6**	**0.6**	**2.7**	**0.4**	**0.8**	**5.1**
– items associated with particularly high risk	**4.0**	**—**	**—**	**0.5**	**0.1**	**4.6**
– securitisation positions	**4.7**	**1.0**	**—**	**1.1**	**0.1**	**6.9**
– claims in the form of CIU	**0.2**	**—**	**—**	**—**	**—**	**0.2**
– equity	**2.8**	**34.8**	**0.1**	**0.9**	**0.2**	**38.8**
– other items	**3.0**	**4.9**	**0.6**	**0.2**	**0.2**	**8.9**
Total at 31 Dec 2021	**193.7**	**318.1**	**50.6**	**90.6**	**27.6**	**680.6**

	Europe	Asia	MENA	North America	Latin America	Total
IRB advanced approach	73.8	231.8	9.6	82.0	6.4	403.6
– central governments and central banks	5.7	20.0	7.9	4.7	6.1	44.4
– institutions	3.0	7.0	0.6	0.8	0.2	11.6
– corporates	30.6	167.4	1.1	64.8	0.1	264.0
– total retail	34.5	37.4	—	11.7	—	83.6
IRB securitisation positions	2.0	—	—	—	—	2.0
IRB non-credit obligation assets	5.0	6.5	0.7	2.1	1.1	15.4
IRB foundation approach	93.9	—	9.5	0.1	—	103.5
– central governments and central banks	—	—	0.1	—	—	0.1
– institutions	—	—	0.2	—	—	0.2
– corporates	93.9	—	9.2	0.1	—	103.2
Standardised approach	36.5	69.0	30.4	11.9	19.6	167.4
– central governments and central banks	3.7	1.7	0.9	3.5	1.3	11.1
– regional governments or local authorities	—	—	1.3	—	0.6	1.9
– public sector entities	—	—	—	0.1	—	0.1
– institutions	—	—	—	—	—	—
– corporates	—	—	—	—	—	—
– retail	0.2	0.1	0.2	—	0.1	0.6
– secured by mortgages on immovable property	9.8	14.8	20.4	3.4	11.8	60.2
– exposures in default	1.6	4.8	3.3	0.9	2.9	13.5
– items associated with particularly high risk	3.3	5.7	1.5	0.5	1.3	12.3
– securitisation positions	0.8	0.4	1.9	0.5	0.9	4.5
– claims in the form of CIU	5.3	—	0.1	0.4	0.1	5.9
– equity	5.7	1.2	—	1.1	0.2	8.2
– other items	3.0	4.9	0.7	0.4	0.2	9.2
Total at 31 Dec 2020	211.2	307.3	50.2	96.1	27.1	691.9

Table 79: Standardised exposure – by credit quality step

	At 31 Dec 2021			At 31 Dec 2020		
	Original exposure[1]	**Exposure value**	**RWAs^**	Original exposure[1]	Exposure value	RWAs^
	$bn	**$bn**	**$bn**	$bn	$bn	$bn
Central governments and central banks						
Credit quality step 1[2]	**329.9**	**347.8**		284.4	303.3	
Credit quality step 2[2]	**3.5**	**3.5**		3.5	3.5	
Credit quality step 3[2]	**0.1**	**2.1**		0.0	2.3	
Credit quality step 4[2]	**0.4**	**0.4**		0.7	0.7	
Credit quality step 5	**—**	**—**		—	—	
Credit quality step unrated	**4.5**	**4.4**		4.5	4.4	
	338.4	**358.2**	**11.0**	293.1	314.2	11.1
Institutions						
Credit quality step 1	**0.0**	**0.1**		0.1	0.1	
Credit quality step 2	**0.5**	**0.4**		0.1	0.1	
Credit quality step 3	**—**	**0.1**		—	—	
Credit quality step 4	**—**	**—**		0.3	0.3	
Credit quality step 5	**0.1**	**0.1**		0.1	0.1	
Credit quality step unrated	**0.3**	**0.3**		0.2	0.3	
	0.9	**1.0**	**0.7**	0.8	0.9	0.6
Corporates						
Credit quality step 1	**1.3**	**4.3**		1.7	4.1	
Credit quality step 2	**4.5**	**3.3**		2.8	1.8	
Credit quality step 3	**1.8**	**1.4**		2.3	1.6	
Credit quality step 4	**2.1**	**1.3**		1.9	1.2	
Credit quality step 5	**0.3**	**0.1**		0.6	0.5	
Credit quality step 6	**0.2**	**0.2**		0.4	0.2	
Credit quality step unrated	**126.4**	**56.5**		123.6	55.4	
	136.6	**67.1**	**61.6**	133.3	64.8	60.2

1 *Figures presented on an 'obligor basis'.*
2 *The basis of preparation of this disclosure have been revised. Data for 31 December 2020 has been restated to be on a consistent basis with the current year*
^ *Figures have been prepared on an IFRS 9 transitional basis.*

Table 80: Specialised lending on slotting approach (CR10)

Regulatory categories	Remaining maturity	On-balance sheet amount $bn	Off-balance sheet amount $bn	Risk weight %	Exposure amount $bn	RWAs $bn	Expected loss $bn
Category 1 – Strong	Less than 2.5 years	**12.3**	**2.0**	**50**	**13.3**	**6.4**	**—**
	Equal to or more than 2.5 years	**10.1**	**1.2**	**70**	**10.6**	**7.4**	**0.1**
Category 2 – Good	Less than 2.5 years	**6.2**	**0.9**	**70**	**6.6**	**4.5**	**—**
	Equal to or more than 2.5 years	**2.3**	**0.4**	**90**	**2.5**	**2.2**	**—**
Category 3 – Satisfactory	Less than 2.5 years	**1.3**	**0.1**	**115**	**1.4**	**1.6**	**—**
	Equal to or more than 2.5 years	**0.3**	**0.1**	**115**	**0.4**	**0.4**	**—**
Category 4 – Weak	Less than 2.5 years	**0.1**	**—**	**250**	**0.1**	**0.3**	**—**
	Equal to or more than 2.5 years	**—**	**—**	**250**	**—**	**0.1**	**—**
Category 5 – Default	Less than 2.5 years	**0.4**	**—**	**—**	**0.6**	**—**	**0.4**
	Equal to or more than 2.5 years	**—**	**—**	**—**	**—**	**—**	**—**
Total at 31 Dec 2021	Less than 2.5 years	**20.3**	**3.0**		**22.0**	**12.8**	**0.4**
	Equal to or more than 2.5 years	**12.7**	**1.7**		**13.5**	**10.1**	**0.1**
Category 1 – Strong	Less than 2.5 years	15.6	1.8	50	16.2	8.1	—
	Equal to or more than 2.5 years	8.3	1.2	70	8.9	6.2	0.1
Category 2 – Good	Less than 2.5 years	5.6	0.9	70	5.9	4.1	—
	Equal to or more than 2.5 years	2.2	0.3	90	2.2	2.0	—
Category 3 – Satisfactory	Less than 2.5 years	0.4	—	115	0.4	0.5	—
	Equal to or more than 2.5 years	0.3	—	115	0.3	0.3	—
Category 4 – Weak	Less than 2.5 years	0.1	—	250	0.1	0.2	—
	Equal to or more than 2.5 years	—	—	250	—	—	—
Category 5 – Default	Less than 2.5 years	0.5	—	—	0.7	—	0.4
	Equal to or more than 2.5 years	0.1	—	—	0.1	—	—
Total at 31 Dec 2020	Less than 2.5 years	22.2	2.7		23.3	12.9	0.4
	Equal to or more than 2.5 years	10.9	1.5		11.5	8.5	0.1

Table 81: IRB – Credit risk exposures by portfolio and PD range (CR6)

PD scale	Original on-balance sheet gross exposure $bn	Off-balance sheet exposures pre-CCF $bn	Average CCF %	EAD post-CRM and post-CCF $bn	Average PD %	Number of obligors	Average LGD %	Average maturity years	RWAs^ $bn	RWA density %	Expected loss $bn	Value adjustments and provisions^ $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	38.4	1.70	1.3	177	–	
100.00 (Default)	–	–	–	–	–	–	–	–	–	–	–	
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	–	0.0
AIRB – Corporate – Specialised Lending (excluding Slotting)[1]												
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[3]												
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[2,4]	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 81: IRB – Credit risk exposures by portfolio and PD range (CR6) (continued)

PD scale	Original on-balance sheet gross exposure	Off-balance sheet exposures pre-CCF	Average CCF	EAD post-CRM and post-CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWAs^	RWA density	Expected loss	Value adjustments and provisions^
	$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 81: IRB – Credit risk exposures by portfolio and PD range (CR6) (continued)

PD scale	Original on-balance sheet gross exposure $bn	Off-balance sheet exposures pre-CCF $bn	Average CCF %	EAD post-CRM and post-CCF $bn	Average PD %	Number of obligors	Average LGD %	Average maturity years	RWAs^ $bn	RWA density %	Expected loss $bn	Value adjustments and provisions^ $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	–	
0.15 to <0.25	–	–	–	–	–	–	–	–	–	–	–	
0.25 to <0.50	–	–	–	–	–	–	–	–	–	–	–	
0.50 to <0.75	–	–	–	–	–	–	–	–	–	–	–	
0.75 to <2.50	–	–	–	–	–	–	–	–	–	–	–	
2.50 to <10.00	–	–	–	–	–	–	–	–	–	–	–	
10.00 to <100.00	–	–	–	–	–	–	–	–	–	–	–	
100.00 (Default)	–	–	–	–	–	–	–	–	–	–	–	
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	–	
0.50 to <0.75	–	–	–	–	–	–	–	–	–	–	–	
0.75 to <2.50	–	–	0.2	–	1.27	3	45.0	0.60	–	79	–	
2.50 to <10.00	–	–	–	–	–	–	–	–	–	–	–	
10.00 to <100.00	–	–	–	–	–	–	–	–	–	–	–	
100.00 (Default)	–	–	–	–	–	–	–	–	–	–	–	
Sub-total	0.4	–	16.8	0.4	0.23	7	45.0	1.80	0.1	40	–	–
FIRB – Corporate SME[3]												
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	
100.00 (Default)	–	–	–	–	–	–	–	–	–	–	–	
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	30.6	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	83.0	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	91.6	58	2.8	2.1

^ *Figures have been prepared on an IFRS 9 transitional basis.*
1 *Slotting exposures are disclosed in Table 80: Specialised lending on slotting approach (CR10).*
2 *Securitisation positions are not included in this table.*
3 *We have started reporting Corporate SME exposures in our Q4 2021 disclosures*
4 *Non-credit obligation assets are not disclosed in 31 December 2021 disclosures.*

Table 81: IRB – Credit risk exposures by portfolio and PD range (CR6) (continued)

PD scale	Original on-balance sheet gross exposure $bn	Off-balance sheet exposures pre-CCF $bn	Average CCF %	EAD post-CRM and post-CCF $bn	Average PD %	Number of obligors	Average LGD %	Average maturity years	RWAs^ $bn	RWA density %	Expected loss $bn	Value adjustments and provisions $bn
AIRB – Central government and central banks												
0.00 to <0.15	406.2	2.6	42.4	407.5	0.02	410	42.6	1.80	26.8	7	—	
0.15 to <0.25	6.6	—	44.7	6.6	0.22	15	44.8	3.10	3.6	55	—	
0.25 to <0.50	0.6	—	43.8	0.6	0.37	9	45.0	1.80	0.3	56	—	
0.50 to <0.75	5.5	0.2	55.6	5.7	0.63	74	44.5	1.30	3.7	65	—	
0.75 to <2.50	7.5	—	51.7	7.4	1.29	33	42.3	1.20	6.2	83	—	
2.50 to <10.00	1.5	0.1	30.0	1.2	3.89	14	41.3	1.60	1.4	116	—	
10.00 to <100.00	2.1	0.2	11.8	1.9	71.52	3	43.2	1.10	2.4	126	0.7	
100.00 (Default)	0.2	—	—	0.2	100.00	1	45.0	1.30	—	—	0.1	
Sub-total	430.2	3.1	42.8	431.1	0.43	559	42.7	1.80	44.4	10	0.8	0.1
AIRB – Institutions												
0.00 to <0.15	59.7	11.4	29.7	63.7	0.05	4,011	36.6	1.30	8.3	13	—	
0.15 to <0.25	1.4	1.3	36.2	2.4	0.22	304	45.0	1.10	1.0	41	—	
0.25 to <0.50	0.7	0.4	29.6	0.8	0.37	129	42.2	0.80	0.4	48	—	
0.50 to <0.75	1.1	0.4	65.4	1.4	0.63	128	44.6	1.20	1.1	75	—	
0.75 to <2.50	1.4	0.6	31.8	1.0	1.13	167	31.7	2.10	0.7	76	—	
2.50 to <10.00	0.1	0.1	19.2	0.1	3.71	31	44.2	0.50	0.1	119	—	
10.00 to <100.00	—	0.1	49.3	0.1	15.33	19	14.0	1.30	—	63	—	
100.00 (Default)	—	—	39.8	—	100.00	3	49.0	1.00	—	50	—	
Sub-total	64.4	14.3	31.5	69.5	0.15	4,792	37.0	1.30	11.6	17	—	0.1
AIRB – Corporate – Specialised Lending (excluding Slotting)[2]												
0.00 to <0.15	1.7	0.6	54.6	1.8	0.09	41	18.8	3.10	0.2	12	—	
0.15 to <0.25	1.6	0.7	42.3	1.9	0.22	45	27.4	3.60	0.6	31	—	
0.25 to <0.50	1.4	1.4	38.3	1.8	0.37	36	20.6	3.60	0.6	33	—	
0.50 to <0.75	0.3	0.7	46.2	0.7	0.63	19	31.2	3.00	0.3	53	—	
0.75 to <2.50	2.0	0.9	42.6	2.0	1.38	49	25.5	3.40	1.3	62	—	
2.50 to <10.00	0.3	—	78.3	0.3	4.58	11	23.5	3.80	0.2	75	—	
10.00 to <100.00	0.3	—	94.6	0.3	31.15	7	20.1	2.70	0.3	106	—	
100.00 (Default)	0.3	0.1	60.5	0.3	100.00	12	14.7	4.10	0.2	64	0.1	
Sub-total	7.9	4.4	44.3	9.1	5.36	220	23.3	3.40	3.7	41	0.1	0.1
AIRB – Corporate – Other												
0.00 to <0.15	74.7	136.5	32.7	154.8	0.08	6,469	40.8	2.10	32.4	21	0.1	
0.15 to <0.25	29.7	51.9	31.4	51.7	0.22	4,575	42.5	1.70	20.1	39	—	
0.25 to <0.50	28.3	37.9	29.9	44.8	0.37	4,798	38.6	1.80	20.8	46	0.1	
0.50 to <0.75	43.8	39.7	30.6	55.3	0.63	6,454	37.0	1.70	31.6	57	0.1	
0.75 to <2.50	123.3	101.4	28.5	118.0	1.35	29,867	35.6	1.80	87.8	75	0.6	
2.50 to <10.00	33.6	29.0	30.1	31.1	4.33	9,409	36.1	2.00	33.9	109	0.5	
10.00 to <100.00	6.2	4.0	33.8	6.1	18.25	1,304	29.2	2.30	8.3	135	0.3	
100.00 (Default)	5.2	0.6	23.7	5.4	100.00	1,124	41.5	1.70	4.0	74	2.8	
Sub-total	344.8	401.0	31.0	467.2	2.18	64,000	38.5	1.90	238.9	51	4.5	3.9
Wholesale AIRB – Total at 31 Dec 2020[1,3]	847.3	422.8	31.2	976.9	1.29	69,571	40.1	1.80	298.6	31	5.4	4.2

Table 81: IRB – Credit risk exposures by portfolio and PD range (CR6) (continued)

PD scale	Original on-balance sheet gross exposure $bn	Off-balance sheet exposures pre-CCF $bn	Average CCF %	EAD post-CRM and post-CCF $bn	Average PD %	Number of obligors	Average LGD %	Average maturity years	RWAs^ $bn	RWA density %	Expected loss $bn	Value adjustments and provisions $bn
AIRB – Secured by mortgages on immovable property SME												
0.00 to <0.15	0.3	—	100.0	0.3	0.06	928	12.0	—	—	5	—	
0.15 to <0.25	—	—	47.7	—	0.18	90	19.9	—	—	8	—	
0.25 to <0.50	0.4	—	47.4	0.3	0.38	2,111	18.9	—	—	10	—	
0.50 to <0.75	0.1	—	85.1	0.1	0.57	255	21.0	—	—	17	—	
0.75 to <2.50	0.2	—	67.0	0.2	1.45	818	21.9	—	0.1	34	—	
2.50 to <10.00	0.4	—	67.8	0.4	4.73	1,532	24.6	—	0.3	65	—	
10.00 to <100.00	—	—	32.0	0.1	15.74	465	31.4	—	0.1	133	—	
100.00 (Default)	0.1	—	100.0	0.1	100.00	948	40.1	—	0.1	134	—	
Sub-total	1.5	—	73.9	1.5	7.28	7,147	21.0	—	0.6	37	—	—
AIRB – Secured by mortgages on immovable property non-SME												
0.00 to <0.15	213.6	12.4	86.5	228.4	0.07	704,597	15.5	—	18.0	8	—	
0.15 to <0.25	44.7	2.2	92.5	46.7	0.20	219,781	16.0	—	6.5	14	—	
0.25 to <0.50	36.9	3.0	44.5	38.3	0.35	215,008	16.4	—	6.9	18	—	
0.50 to <0.75	15.7	0.7	73.7	16.3	0.57	89,486	15.2	—	3.3	20	—	
0.75 to <2.50	25.0	1.2	73.6	25.9	1.33	164,852	13.4	—	7.1	27	0.1	
2.50 to <10.00	6.7	0.2	84.0	6.9	4.56	41,967	11.3	—	2.4	35	—	
10.00 to <100.00	3.3	0.1	101.7	3.4	24.75	25,632	17.1	—	3.4	100	0.1	
100.00 (Default)	2.7	—	24.7	2.7	100.00	26,249	23.3	—	2.2	82	0.7	
Sub-total	348.6	19.8	79.4	368.6	1.27	1,487,572	15.5	—	49.8	14	0.9	0.4
AIRB – Qualifying revolving retail exposures												
0.00 to <0.15	5.4	79.1	50.5	45.3	0.06	10,693,104	89.0	—	1.8	4	—	
0.15 to <0.25	1.2	16.4	49.6	9.2	0.20	3,506,564	93.1	—	1.2	13	—	
0.25 to <0.50	2.2	14.5	43.6	8.4	0.35	2,371,363	90.8	—	1.5	18	—	
0.50 to <0.75	2.3	5.1	51.3	4.9	0.59	939,613	87.8	—	1.3	27	—	
0.75 to <2.50	4.7	7.9	46.8	8.4	1.40	1,937,102	86.7	—	4.1	49	0.1	
2.50 to <10.00	2.7	1.6	68.6	3.9	4.87	968,333	84.0	—	4.3	111	0.2	
10.00 to <100.00	0.8	0.3	67.0	1.0	30.64	333,268	82.6	—	2.5	240	0.3	
100.00 (Default)	0.4	—	49.3	0.4	100.00	125,030	85.9	—	0.8	202	0.3	
Sub-total	19.7	124.9	49.6	81.5	1.38	20,874,377	89.0	—	17.5	21	0.9	1.3
AIRB – Other SME												
0.00 to <0.15	0.1	0.1	70.4	0.1	0.10	58,340	57.2	—	—	12	—	
0.15 to <0.25	—	0.1	50.3	0.1	0.21	38,369	91.4	—	—	31	—	
0.25 to <0.50	0.1	0.3	64.0	0.3	0.38	106,149	76.4	—	0.1	38	—	
0.50 to <0.75	0.2	0.3	84.8	0.4	0.62	86,640	61.8	—	0.2	40	—	
0.75 to <2.50	5.6	1.5	49.3	2.1	1.58	271,860	67.0	—	1.4	70	—	
2.50 to <10.00	3.9	0.8	58.7	1.8	4.96	130,184	44.7	—	1.1	61	—	
10.00 to <100.00	2.0	0.1	49.8	0.3	18.86	79,915	62.4	—	0.4	143	0.1	
100.00 (Default)	0.3	—	35.1	0.3	100.00	20,713	47.9	—	0.5	155	0.3	
Sub-total	12.2	3.2	56.8	5.4	8.89	792,170	58.3	—	3.7	70	0.4	0.6
AIRB – Other non-SME												
0.00 to <0.15	11.0	15.8	10.2	13.1	0.06	664,664	8.3	—	0.3	2	—	
0.15 to <0.25	4.4	2.7	32.6	5.7	0.21	464,914	36.6	—	1.0	18	—	
0.25 to <0.50	8.9	5.7	16.2	10.1	0.36	401,321	14.8	—	1.1	11	—	
0.50 to <0.75	5.5	1.7	20.1	5.9	0.61	225,786	31.6	—	1.6	28	—	
0.75 to <2.50	10.4	2.9	4.6	10.6	1.28	399,998	30.8	—	4.1	39	—	
2.50 to <10.00	2.4	0.8	25.1	2.7	4.23	222,677	56.9	—	2.5	93	0.1	
10.00 to <100.00	0.5	—	17.4	0.5	30.12	94,482	70.6	—	0.8	153	0.1	
100.00 (Default)	0.4	—	49.9	0.4	100.00	46,480	66.9	—	0.6	162	0.3	
Sub-total	43.5	29.6	13.8	49.0	1.76	2,520,322	24.3	—	12.0	25	0.5	0.7
Retail AIRB – Total at 31 Dec 2020	425.5	177.5	47.1	506.0	1.43	25,681,588	28.6	—	83.6	17	2.7	3.0

Table 81: IRB – Credit risk exposures by portfolio and PD range (CR6) (continued)

PD scale	Original on-balance sheet gross exposure $bn	Off-balance sheet exposures pre-CCF $bn	Average CCF %	EAD post-CRM and post-CCF $bn	Average PD %	Number of obligors	Average LGD %	Average maturity years	RWAs^ $bn	RWA density %	Expected loss $bn	Value adjustments and provisions $bn
FIRB – Central government and central banks												
0.00 to <0.15	—	—	75	0.5	0.04	1	45.0	4.60	0.1	29	—	
0.15 to <0.25	—	—	—	—	—	—	—	—	—	—	—	
0.25 to <0.50	—	—	—	—	—	—	—	—	—	—	—	
0.50 to <0.75	—	—	—	—	—	—	—	—	—	—	—	
0.75 to <2.50	—	—	—	—	—	—	—	—	—	—	—	
2.50 to <10.00	—	—	—	—	—	—	—	—	—	—	—	
10.00 to <100.00	—	—	—	—	—	—	—	—	—	—	—	
100.00 (Default)	—	—	—	—	—	—	—	—	—	—	—	
Sub-total	—	—	75	0.5	0.04	1	45.0	4.60	0.1	29	—	—
FIRB – Institutions												
0.00 to <0.15	0.4	—	23.7	0.3	0.03	4	44.9	2.70	0.1	17	—	
0.15 to <0.25	0.3	—	29.7	0.3	0.22	1	45.0	2.40	0.1	48	—	
0.25 to <0.50	—	—	16.8	—	0.37	2	45.0	1.60	—	54	—	
0.50 to <0.75	—	—	—	—	0.63	—	45.0	3.60	—	96	—	
0.75 to <2.50	—	0.2	—	—	—	1	—	—	—	—	—	
2.50 to <10.00	—	—	—	—	—	—	—	—	—	—	—	
10.00 to <100.00	—	—	—	—	—	—	—	—	—	—	—	
100.00 (Default)	—	—	—	—	—	—	—	—	—	—	—	
Sub-total	0.7	0.2	25.5	0.6	0.11	8	44.9	2.60	0.2	30	—	—
FIRB – Corporate – Other												
0.00 to <0.15	24.5	50.6	53.5	52.8	0.09	6,442	39.7	2.10	12.1	23	—	
0.15 to <0.25	14.2	19.1	46.0	23.9	0.22	6,367	33.5	2.00	8.2	34	—	
0.25 to <0.50	15.7	15.2	42.3	20.4	0.37	6,153	35.5	2.00	9.7	48	—	
0.50 to <0.75	12.6	10.3	36.9	16.6	0.63	5,504	30.8	2.00	8.6	52	—	
0.75 to <2.50	38.0	33.9	30.8	44.4	1.41	45,024	37.1	2.10	37.9	85	0.3	
2.50 to <10.00	15.1	8.5	42.4	16.5	4.48	7,769	39.7	2.30	21.5	130	0.3	
10.00 to <100.00	3.4	1.2	28.9	3.4	15.44	1,577	34.7	1.80	5.2	154	0.2	
100.00 (Default)	5.0	1.2	42.3	5.2	100.00	1,971	45.0	1.80	—	—	2.5	
Sub-total	128.5	140.0	43.7	183.2	4.04	80,807	37.1	2.10	103.2	56	3.3	3.2
FIRB – Total at 31 Dec 2020	129.2	140.2	43.7	184.3	4.02	80,816	37.1	2.10	103.5	56	3.3	3.2

1 Securitisation positions are not included in this table
2 Slotting exposures are disclosed in Table 80: Specialised lending on slotting approach (CR10).
3 Non-credit obligation assets are excluded from the Q4 2020, to be consistent with the current period

Counterparty credit risk

Table 82: Counterparty credit risk – RWAs by exposure class, product and geographical region

	RWAs						Capital required
	Europe	Asia	MENA	North America	Latin America	Total	
	$bn	$bn	$bn	$bn	$bn	$bn	$bn
By exposure class							
IRB advanced approach	**7.2**	**9.0**	**0.6**	**2.6**	**1.5**	**20.9**	**1.7**
– central governments and central banks	**0.3**	**1.3**	**0.3**	**0.0**	**1.4**	**3.3**	**0.3**
– institutions	**6.6**	**2.3**	**0.1**	**0.6**	**0.1**	**9.7**	**0.8**
– corporates	**0.3**	**5.4**	**0.2**	**2.0**	**—**	**7.9**	**0.6**
IRB foundation approach	**9.8**	**—**	**0.2**	**—**	**—**	**10.0**	**0.8**
– corporates	**9.8**	**—**	**0.2**	**—**	**—**	**10.0**	**0.8**
Standardised approach	**0.4**	**0.3**	**0.3**	**—**	**0.4**	**1.4**	**0.1**
– central governments and central banks	**—**	**—**	**—**	**—**	**—**	**—**	**—**
– institutions	**—**	**—**	**0.1**	**—**	**—**	**0.1**	**—**
– corporates	**0.4**	**0.3**	**0.2**	**—**	**0.4**	**1.3**	**0.1**
CVA advanced[1]	**1.1**	**0.4**	**—**	**0.1**	**—**	**1.6**	**0.1**
CVA standardised[1]	**0.2**	**—**	**0.3**	**0.2**	**0.1**	**0.8**	**0.1**
CCP standardised	**0.7**	**0.2**	**—**	**0.3**	**—**	**1.2**	**0.1**
At 31 Dec 2021	**19.4**	**9.9**	**1.4**	**3.2**	**2.0**	**35.9**	**2.9**
By product							**—**
Derivatives (OTC and exchange traded derivatives)	**12.5**	**5.7**	**0.7**	**1.8**	**0.5**	**21.2**	**1.7**
SFTs	**4.3**	**2.5**	**0.4**	**0.9**	**1.4**	**9.5**	**0.7**
Other[2]	**0.7**	**1.2**	**—**	**0.1**	**—**	**2.0**	**0.2**
CVA advanced[1]	**1.1**	**0.4**	**—**	**0.1**	**—**	**1.6**	**0.1**
CVA standardised[1]	**0.2**	**—**	**0.3**	**0.2**	**0.1**	**0.8**	**0.1**
CCP default funds[3]	**0.6**	**0.1**	**—**	**0.1**	**—**	**0.8**	**0.1**
At 31 Dec 2021	**19.4**	**9.9**	**1.4**	**3.2**	**2.0**	**35.9**	**2.9**
By exposure class							
IRB advanced approach	8.9	9.5	0.6	4.6	0.6	24.2	1.8
– central governments and central banks	0.3	0.5	0.3	–	0.5	1.6	0.1
– institutions	7.7	2.4	0.1	0.8	0.1	11.1	0.8
– corporates	0.9	6.6	0.2	3.8	—	11.5	0.9
IRB foundation approach	12.1	—	0.3	—	—	12.4	1.0
– corporates	12.1	—	0.3	—	—	12.4	1.0
Standardised approach	0.3	0.5	0.2	0.1	1.0	2.1	0.2
– central governments and central banks	—	—	—	—	—	—	—
– institutions	—	—	—	—	0.1	0.1	—
– corporates	0.3	0.5	0.2	0.1	0.9	2.0	0.2
CVA advanced[1]	1.5	0.6	—	0.3	–	2.4	0.2
CVA standardised[1]	0.2	—	0.3	0.1	0.1	0.7	0.1
CCP standardised	0.7	0.1	—	0.2	—	1.0	0.1
At 31 Dec 2020	23.7	10.7	1.4	5.3	1.7	42.8	3.4
By product							
Derivatives (OTC and exchange traded derivatives)	15.1	7.4	0.8	4.1	1.0	28.4	2.3
SFTs	5.4	1.4	0.3	0.7	0.6	8.4	0.6
Other[2]	1.1	1.2	—	—	—	2.3	0.2
CVA advanced[1]	1.5	0.6	—	0.3	—	2.4	0.2
CVA standardised[1]	0.2	—	0.3	0.1	0.1	0.7	0.1
CCP default funds[3]	0.4	0.1	—	0.1	—	0.6	—
At 31 Dec 2020	23.7	10.7	1.4	5.3	1.7	42.8	3.4

1 *The RWA impact due to the CVA capital charge is calculated based on the exposures under the IRB and standardised approaches. No additional exposures are taken into account.*
2 *Includes free deliveries not deducted from regulatory capital.*
3 *Default fund contributions are cash balances posted to CCPs by all members. These cash balances are not included in the total reported exposure.*

Table 83: IRB – CCR exposures by portfolio and PD scale (CCR4)

PD scale	EAD post-CRM $bn	Average PD %	Number of obligors	Average LGD %	Average maturity years	RWAs $bn	RWA density %
AIRB – Central Government and Central Banks							
0.00 to <0.15	17.7	0.06	94	44.2	0.31	1.4	8
0.15 to <0.25	0.9	0.22	11	43.9	0.16	0.2	25
0.25 to <0.50	—	0.37	6	45.0	2.42	—	75
0.50 to <0.75	—	—	—	—	—	—	—
0.75 to <2.50	0.3	1.61	8	45.0	1.49	0.3	101
2.50 to <10.00	0.8	7.85	3	44.8	1.01	1.4	167
10.00 to <100.00	—	—	—	—	—	—	—
100.00 (Default)	—	—	—	—	—	—	—
Sub-total	19.7	0.42	122	44.2	0.36	3.3	17
AIRB – Institutions							
0.00 to <0.15	44.2	0.07	5,115	44.5	0.81	7.4	17
0.15 to <0.25	2.5	0.22	426	45.0	1.25	1.1	46
0.25 to <0.50	0.5	0.37	84	45.0	1.24	0.3	60
0.50 to <0.75	0.4	0.63	99	44.9	0.91	0.3	73
0.75 to <2.50	0.4	1.41	116	45.1	1.34	0.4	104
2.50 to <10.00	0.1	3.45	26	44.9	3.50	0.1	156
10.00 to <100.00	—	10.00	1	45.0	1.00	—	186
100.00 (Default)	—	—	—	—	—	—	—
Sub-total	48.1	0.10	5,867	44.5	0.84	9.6	20
AIRB – Corporates							
0.00 to <0.15	12.5	0.07	3,686	45.8	1.35	2.4	20
0.15 to <0.25	3.5	0.22	1,242	46.6	1.04	1.3	38
0.25 to <0.50	1.5	0.37	651	46.1	1.15	0.9	57
0.50 to <0.75	0.9	0.63	637	47.5	1.15	0.7	74
0.75 to <2.50	2.1	1.31	1,728	42.8	1.35	1.9	89
2.50 to <10.00	0.4	3.61	301	46.5	1.87	0.6	140
10.00 to <100.00	—	18.50	37	54.2	1.60	0.1	281
100.00 (Default)	—	100.00	16	46.3	0.29	—	—
Sub-total	20.9	0.53	8,298	45.7	1.28	7.9	37
AIRB – Total at 31 Dec 2021	88.7	0.27	14,287	44.7	0.84	20.8	24
FIRB – Corporates							
0.00 to <0.15	18.6	0.07	3,365	44.0	1.47	3.5	19
0.15 to <0.25	4.4	0.22	885	44.9	1.09	1.7	37
0.25 to <0.50	1.4	0.37	544	44.6	1.14	0.7	48
0.50 to <0.75	1.0	0.63	522	45.0	1.14	0.7	73
0.75 to <2.50	2.7	1.37	1,527	45.0	1.69	2.7	102
2.50 to <10.00	0.4	4.23	379	45.0	1.46	0.6	140
10.00 to <100.00	0.1	11.06	37	45.0	1.10	0.1	192
100.00 (Default)	—	100.00	24	45.0	1.00	—	—
FIRB – Total at 31 Dec 2021	28.6	0.42	7,283	44.3	1.40	10.0	35
Total (all portfolios) at 31 Dec 2021	117.3	0.31	21,570	44.6	0.98	30.8	26

Table 83: IRB – CCR exposures by portfolio and PD scale (CCR4) (continued)

PD scale	EAD post-CRM $bn	Average PD %	Number of obligors	Average LGD %	Average maturity years	RWAs $bn	RWA density %
AIRB – Central Government and Central Banks							
0.00 to <0.15	11.5	0.03	89	44.5	0.57	0.6	5
0.15 to <0.25	0.7	0.22	8	45.0	0.05	0.2	24
0.25 to <0.50	0.2	0.37	11	45.0	1.56	0.1	54
0.50 to <0.75	—	0.63	1	45.0	1.00	—	62
0.75 to <2.50	0.3	1.55	10	45.2	2.07	0.3	107
2.50 to <10.00	—	7.85	1	45.0	1.00	—	168
10.00 to <100.00	0.4	73.52	3	44.2	1.09	0.4	129
100.00 (Default)				—			—
Sub-total	13.1	2.05	123	44.5	0.60	1.6	12
AIRB – Institutions							
0.00 to <0.15	43.8	0.07	4,429	44.8	0.95	8.2	19
0.15 to <0.25	4.0	0.22	425	42.6	1.13	1.6	42
0.25 to <0.50	0.7	0.37	94	45.3	1.46	0.4	63
0.50 to <0.75	0.3	0.63	81	43.7	1.25	0.2	77
0.75 to <2.50	0.5	1.24	152	45.1	1.59	0.5	97
2.50 to <10.00	—	6.99	23	44.5	2.50	0.1	177
10.00 to <100.00	—	13.95	6	45.4	3.46	—	233
100.00 (Default)	—	100.00	1	39.5	1.00	—	—
Sub-total	49.3	0.11	5,211	44.6	0.98	11.0	22
AIRB – Corporates							
0.00 to <0.15	13.9	0.07	3,784	44.0	1.71	3.0	21
0.15 to <0.25	4.8	0.22	1,333	46.0	2.07	2.1	43
0.25 to <0.50	1.6	0.37	649	44.0	1.91	0.9	55
0.50 to <0.75	1.6	0.63	672	46.0	2.67	1.1	76
0.75 to <2.50	3.7	1.30	2,035	45.0	1.69	3.7	99
2.50 to <10.00	0.5	3.87	389	47.0	1.67	0.6	129
10.00 to <100.00	0.1	16.23	57	44.0	1.72	0.2	216
100.00 (Default)	—	100.00	17	32.0	4.35	—	—
Sub-total	26.2	0.64	8,936	45.0	1.74	11.6	44
AIRB – Total at 31 Dec 2020	88.6	0.56	14,270	45.0	1.15	24.2	27
FIRB – Corporates							
0.00 to <0.15	21.1	0.08	3,013	44.3	1.52	4.5	21
0.15 to <0.25	4.2	0.22	780	44.9	1.26	1.4	34
0.25 to <0.50	1.2	0.37	528	45.0	1.39	0.7	55
0.50 to <0.75	1.6	0.63	490	44.9	1.17	1.2	75
0.75 to <2.50	3.5	1.48	1,807	45.0	1.54	3.6	104
2.50 to <10.00	0.7	4.11	456	45.0	1.52	0.9	140
10.00 to <100.00	—	11.60	68	45.0	1.46	0.1	196
100.00 (Default)	0.1	100.00	25	45.0	1.44	—	—
FIRB – Total at 31 Dec 2020	32.4	0.64	7,167	44.5	1.47	12.4	38
Total (all portfolios) at 31 Dec 2020	121.0	0.58	21,437	44.6 %	1.24	36.6	30

Appendix II

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 the Regulation (EU) 575/2013. 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 84: Geographical distribution of credit exposures relevant for the calculation of the countercyclical capital buffer

	General credit exposures		Trading book exposures		Securitisation exposures	Own funds requirements					
	SA	IRB	Sum of long/short positions for SA	Internal models	Total Exposure value in the banking book	*of which: General credit exposures*	*of which: Trading book exposures*	*of which: Securitis-ation exposures*	Total	Share of total own funds require-ments	CCyB rate
Country	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**%**	**%**
Australia	1,155	38,205	542	50	1,261	*915*	*16*	*15*	946	1.9	—
Bulgaria	1	14	—	—	—	—	—	—	—	—	0.50
Canada	1,038	69,995	—	10	189	*1,933*	*2*	*2*	1,937	3.8	—
China	27,604	68,642	410	1,015	1,712	*6,314*	*43*	*21*	6,377	12.6	—
Czech Republic	97	879	—	7	—	*46*	*1*	—	47	0.1	0.50
France	4,643	67,765	110	10	2,154	*1,837*	*14*	*33*	1,885	3.7	—
Germany	832	16,350	247	97	735	*673*	*13*	*7*	692	1.4	—
Hong Kong	23,193	366,075	—	415	—	*10,696*	*18*	—	10,713	21.1	1.00
India	3,355	16,954	—	395	916	*1,029*	*17*	*35*	1,081	2.1	—
Indonesia	599	6,505	—	30	—	*430*	*15*	—	445	0.9	—
Luxembourg	1,153	8,052	2	58	20	*346*	*6*	*2*	353	0.7	0.50
Malaysia	2,728	13,332	1	124	—	*688*	*12*	—	700	1.4	—
Mexico	18,953	2,955	—	152	343	*1,248*	*36*	*4*	1,288	2.5	—
Netherlands	1,239	12,989	192	108	982	*477*	*9*	*13*	499	1.0	—
Norway	1	858	—	19	—	*18*	*7*	—	25	0.1	1.00
Saudi Arabia	19,611	2,315	—	54	—	*1,430*	*11*	—	1,441	2.8	—
Singapore	2,309	31,129	—	62	—	*786*	*7*	—	793	1.6	—
Slovakia	19	64	—	—	—	*2*	—	—	3	0.0	1.00
United Arab Emirates	4,625	18,696	—	57	—	*797*	*3*	—	800	1.6	—
United Kingdom	11,460	373,373	1,044	321	13,960	*9,437*	*47*	*379*	9,863	19.4	—
United States	6,779	118,976	166	—	9,708	*4,810*	*4*	*167*	4,981	9.8	—
Other countries	31,757	110,669	928	1,186	1,625	*5,622*	*205*	*24*	5,853	11.5	—
Total	**163,151**	**1,344,792**	**3,642**	**4,170**	**33,605**	***49,534***	***486***	***702***	**50,722**	**100**	

Table 85: Countercyclical capital buffer

	2021
Total Risk Exposure Amount ($m)	838,263
Institution specific countercyclical capital buffer rate	0.2%
Institution specific countercyclical capital buffer requirement ($m)	1,844

Appendix III

Asset encumbrance

Table 86: A – Assets[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*
		$m	$m	$m	$m	$m	$m	$m	$m
01	Assets of the reporting institution	**202,541**	**81,616**			**2,649,634**	***780,202***		
02	Loans on demand	**—**	**—**			**439,012**	***394,191***		
03	Equity instruments	**31,200**	**17,835**	**31,200**	**17,835**	**74,300**	***18,486***	**74,300**	***18,486***
04	Debt securities	**83,979**	**63,781**	**83,883**	**63,708**	**408,757**	***358,442***	**408,879**	***358,549***
	– *of which:*								
05	*covered bonds*	***9***	***5***	***9***	***5***	***5,978***	***5,373***	***5,978***	***5,373***
06	*asset-backed securities*	***—***	***—***	***—***		***4,456***		***4,466***	
07	*issued by general governments*	***68,931***	***53,790***	***68,950***	***53,790***	***232,690***	***209,418***	***232,750***	***209,472***
08	*issued by financial corporations*	***5,225***	***2,438***	***5,225***	***2,438***	***76,151***	***63,119***	***76,172***	***63,119***
09	*issued by non-financial corporations*	***2,517***	***988***	***2,517***	***988***	***11,843***	***6,453***	***11,843***	***6,453***
12	Other assets	**87,362**	**—**			**1,727,565**	***9,083***		

Table 86: B – Collateral received[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*
		$m	$m	$m	$m
130	Collateral received by the reporting institution	**230,816**	**177,300**	**212,568**	**140,057**
140	Loans on demand	**—**		**—**	
150	Equity instruments	**29,098**	**15,971**	**20,344**	**9,496**
160	Debt securities	**201,259**	**161,329**	**192,221**	**130,561**
	– *of which:*				
170	*covered bonds*	***765***	***765***	***14***	***14***
180	*asset-backed securities*	***2,174***	***2***	***502***	***31***
190	*issued by general governments*	***177,123***	***149,340***	***146,158***	***109,065***
200	*issued by financial corporations*	***14,301***	***5,782***	***24,367***	***9,196***
210	*issued by non-financial corporations*	***6,835***	***5,454***	***18,646***	***9,421***
220	Loans and advances other than loans on demand	**—**		**—**	
230	Other collateral received	**459**		**3**	
240	Own debt securities issued other than own covered bonds or ABSs			**—**	
241	Own covered bonds and ABSs issued and not yet pledged			**7,496**	**2,114**
250	Total assets, collateral received and own debt securities issued	**433,357**	**258,916**		

Table 86: C – Encumbered assets/collateral received and associated liabilities[1]

		Matching liabilities, contingent liabilities or securities lent	Assets, collateral received and own debt securities issued other than covered bonds and ABSs encumbered
		$m	$m
010	Carrying amount of selected financial liabilities	**233,672**	**334,961**

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 72

Appendix IV

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.

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
ALCM	Asset, Liability and Capital Management
ALCO	Asset and Liability Management Committee
AT1 capital	Additional tier 1 capital
AVA	Additional value adjustment
B	
BCBS	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
CML1	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. In the income statement, ECL is recorded as a change in expected credit losses and other credit impairment charges. In the balance sheet, ECL is recorded as an allowance for financial instruments to which only the impairment requirements in IFRS 9 are applied
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
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
ILAA	Individual liquidity adequacy assessment
ILR	Inherent Liquidity Risk
IMM[1]	Internal model method
IMR	Independent Model Review
IRB[1]	Internal ratings-based approach
IRC	Incremental risk charge
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
S	
SA/STD[1]	Standardised approach
SA-CCR	Standardised approach for counterparty credit risk
S&P	Standard and Poor's rating agency
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
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 2021* 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 recessions and fluctuations in employment and creditworthy customers beyond those factored into consensus forecasts (including, without limitation, as a result of the Covid-19 pandemic); the Covid-19 pandemic, which may continue to have adverse impacts on our income due to lower lending and transaction volumes, lower wealth and insurance manufacturing revenue, and volatile interest rates in markets where we operate, as well as, more generally, the potential for material adverse impacts on 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 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 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 affect the Group 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, 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, 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 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 following the UK's withdrawal from the EU, which may continue to be characterised by uncertainty, particularly with respect to the regulation of financial services, despite the signing of the Trade and Cooperation Agreement between the UK and the EU; passage of the Hong Kong national security law and restrictions on telecommunications, as well as the US Hong Kong Autonomy Act, which have caused tensions between China, the US and the UK; 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 targets to reduce our financed emissions in the oil and gas and power and utilities 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 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; 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 oil and gas and power and utilities portfolio and the commitments set forth in our thermal coal phase-out 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 124 to 131 of the *Annual Report and Accounts 2021.*

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