

The Hongkong and Shanghai Banking Corporation Limited

**Banking Disclosure Statement at 31 December 2021
(Unaudited)**

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Prefixes contained in the table names, where applicable, represent the reference codes of the standard disclosure templates and tables for the Revised Pillar 3 Framework issued by the Hong Kong Monetary Authority ('HKMA').

Introduction

Purpose

The information contained in this document is for The Hongkong and Shanghai Banking Corporation Limited ('the Bank') and its subsidiaries (together 'the group'). It should be read in conjunction with the group's *Annual Report and Accounts 2021*. The group's *Annual Report and Accounts 2021*, the Banking Disclosure Statement and the Main Features of Regulatory Capital Instruments and Non-capital LAC Debt Instruments document, taken together, comply with both the Banking (Disclosure) Rules ('BDR') made under section 60A of the Banking Ordinance and the Financial Institutions (Resolution) (Loss-absorbing Capacity Requirements – Banking Sector) Rules ('LAC Rules') made under section 19(1) of the Financial Institutions (Resolution) Ordinance ('FIRO').

References to 'HSBC', 'the Group' or 'the HSBC Group' within this document mean HSBC Holdings plc 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'. The abbreviations 'HK\$m' and 'HK\$bn' represent millions and billions (thousands of millions) of Hong Kong dollars respectively.

These banking disclosures are governed by the group's disclosure policy, which has been approved by the Board of Directors. The disclosure policy sets out the governance, control and assurance requirements for publication of the document. While the disclosure statement is not required to be externally audited, the document has been subject to independent review in accordance with the group's policies on disclosure and its financial reporting and governance processes.

Basis of preparation

Except where indicated otherwise, the financial information contained in this Banking Disclosure Statement has been prepared on a consolidated basis. The basis of consolidation for regulatory purposes is different from that for accounting purposes. Information regarding subsidiaries that are not included in the consolidation for regulatory purposes is set out in the 'Basis of consolidation' section in this document.

The information in this document is not audited and does not constitute statutory accounts.

Certain financial information in this document is extracted from the statutory accounts for the year ended 31 December 2021 which has been delivered to the Registrar of Companies and the HKMA. The Auditors expressed an unqualified opinion on those statutory accounts in their report dated 22 February 2022. The Auditor's Report did not include a reference to any matters to which the auditor drew any attention by way of emphasis without qualifying their report; and did not contain a statement under sections 406(2), 407(2) or (3) of the Hong Kong Companies Ordinance (Cap.622). The group's *Annual Report and Accounts 2021*, which include the statutory accounts, can be obtained on request from Communications (Asia), The Hongkong and Shanghai Banking Corporation Limited, 1 Queen's Road Central, Hong Kong, and can be viewed on our website: www.hsbc.com.hk.

The Banking Disclosure Statement

The group's Banking Disclosure Statement at 31 December 2021 comprises Pillar 3 information required under the framework of the Basel Committee on Banking Supervision ('BCBS'). The disclosures are made in accordance with the latest BDR and the LAC Rules issued by the HKMA. According to the BDR and the LAC Rules, disclosure of comparative information is not required unless otherwise specified in the standard disclosure templates. Prior period disclosures can be found in the Regulatory Disclosure section of our website, www.hsbc.com.hk.

The Banking Disclosure Statement includes the majority of the information required under the BDR and the LAC Rules. The Main Features of Regulatory Capital Instruments and Non-capital LAC Debt Instruments are published as a standalone document. The remainder of the disclosure requirements are covered in the group's *Annual Report and Accounts 2021*. All the group's banking disclosures can be found in the Regulatory Disclosure section of our website, www.hsbc.com.hk.

Disclosure requirements covered in the group's <i>Annual Report and Accounts 2021</i> :	References:
• BDR Section 16FJ – LIQA: Liquidity risk management	Pages 55-56
• BDR Section 16J – The group's definition of impaired and renegotiated and the methods adopted for determining impairments	Note 1.2(i)
• BDR Section 29(5) – Net structural foreign currency	Page 55
• BDR Section 44 – Assets used as security	Note 12
• BDR Section 46 – The general disclosure of the major business activities and product lines	Page 10, Note 2 & Note 31
• BDR Section 52 – Corporate governance	Page 3-9

Loss-absorbing Capacity Disclosures

The group's loss-absorbing capacity ('LAC') disclosures are included as part of this Banking Disclosure Statement while the LAC disclosures of HSBC Asia Holdings Limited ('HAHO') will be included as part of the HSBC Group's disclosures which can be found in the Investors section of the Group's website, www.hsbc.com. The location of HAHO's LAC disclosure can be found in the following table:

Location of HAHO's LAC disclosures in 4Q21:
KM2 – Key metrics of the Asian resolution group
• Table 14.ii of the Group's Pillar 3 Disclosures
TLAC1 – TLAC composition
• Table 15 of the Group's Pillar 3 Disclosures
TLAC3 – HSBC Asia Holdings Limited Creditor Ranking
• Table 19 of the Group's Pillar 3 Disclosures
CCA(A) – Main Features of Regulatory Capital Instruments and Non-Capital LAC Debt Instruments
• A standalone document which can be found in: www.hsbc.com/investors/fixed-income-investors/regulatory-capital-securities

Key Metrics

Table 1: KM1 – Key prudential ratios

	a	b	c		d	e
	At					
	31 Dec 2021	30 Sep 2021	30 Jun 2021	31 Mar 2021	31 Dec 2020	
Regulatory capital (HK\$m)¹						
1 Common Equity Tier 1 ('CET1')	484,654	490,668	488,897	496,026	509,452	
2 Tier 1	530,701	536,766	535,060	542,161	555,553	
3 Total capital	590,478	596,090	595,374	601,024	614,545	
Risk-weighted assets ('RWAs') (HK\$m)¹						
4 Total RWAs	3,156,553	3,068,069	3,117,666	3,011,181	2,956,993	
Risk-based regulatory capital ratios (as a percentage of RWA)¹						
5 CET1 ratio (%)	15.4	16.0	15.7	16.5	17.2	
6 Tier 1 ratio (%)	16.8	17.5	17.2	18.0	18.8	
7 Total capital ratio (%)	18.7	19.4	19.1	20.0	20.8	
Additional CET1 buffer requirements (as a percentage of RWA)¹						
8 Capital conservation buffer requirement (%)	2.50	2.50	2.50	2.50	2.50	
9 Countercyclical capital buffer ('CCyB') requirement (%) ²	0.50	0.51	0.52	0.51	0.51	
10 Higher loss absorbency requirements (%) (applicable only to Global systemically important authorised institution ('G-SIBs') or Domestic systemically important authorised institution ('D-SIBs'))	2.50	2.50	2.50	2.50	2.50	
11 Total authorised institution ('AI')-specific CET1 buffer requirements (%)	5.50	5.51	5.52	5.51	5.51	
12 CET1 available after meeting the AI's minimum capital requirements (%)	10.7	11.4	11.1	12.0	12.7	
Basel III leverage ratio³						
13 Total leverage ratio ('LR') exposure measure (HK\$m)	9,192,814	9,154,966	9,068,163	8,895,440	8,705,672	
14 LR (%)	5.8	5.9	5.9	6.1	6.4	
Liquidity Coverage Ratio ('LCR')⁴						
15 Total high quality liquid assets ('HQLA') (HK\$m)	1,911,407	1,866,862	1,950,607	2,021,618	1,982,999	
16 Total net cash outflows (HK\$m)	1,241,508	1,180,720	1,236,236	1,258,857	1,154,822	
17 LCR (%)	154.3	158.3	157.9	160.7	172.1	
Net Stable Funding Ratio ('NSFR')⁵						
18 Total available stable funding (HK\$m)	5,514,833	5,423,463	5,365,697	5,337,445	5,388,197	
19 Total required stable funding (HK\$m)	3,631,003	3,607,383	3,569,865	3,441,318	3,382,462	
20 NSFR (%)	151.9	150.3	150.3	155.1	159.3	

1 The regulatory capital, RWAs, risk-based regulatory capital ratios and additional CET1 buffer requirements above are based on or derived from the information as contained in the 'Capital Adequacy Ratio' return submitted to the HKMA on a consolidated basis under the requirements of section 3C(1) of the Banking (Capital) Rules ('BCR').

2 The jurisdictional CCyB of Hong Kong used in the calculation of the CCyB buffer requirement was 1.0% since 31 March 2020. The jurisdictional CCyB of other countries used in the calculation of the CCyB requirement ranged from 0% to 1% at 31 December 2021.

3 The Basel III leverage ratios are disclosed in accordance with the information contained in the 'Leverage Ratio' return submitted to the HKMA under the requirements specified in Part 1C of the BCR.

4 The LCRs shown are the simple average values of all working days in the reporting periods and are made in accordance with the requirements specified in the 'Liquidity Position' return submitted to the HKMA under rule 11(1) of the Banking (Liquidity) Rules ('BLR').

5 The NSFR disclosures are made in accordance with the information contained in the 'Stable Funding Position' return submitted to the HKMA under the requirements specified in rule 11(1) of the BLR.

Risk management

Our risk management framework

We use a risk management framework across our organisation and across all risk types. It is underpinned by our culture.

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

Further information on our risk management framework is set out on page 14 of the group's 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 17 of the group's Annual Report and Accounts 2021.

Culture

HSBC has long recognised 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 strategy.

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's Risk Committee.

Executive accountability for the ongoing monitoring, assessment and management of the risk environment, and the effectiveness of the risk management framework resides with the group's Chief Risk Officer ('CRO'), supported by the Risk Management Meeting ('RMM').

Day-to-day responsibility for risk management is delegated to senior managers with individual accountability for decision making. All employees 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 reporting and escalation to the RMM.

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 our medium and long-term 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 group's Risk Committee, twice a 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 on page 14 of the group's 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. Our stress testing is supported by dedicated teams and infrastructure.

Our testing programme assesses our capital strength and enhances our resilience to external shocks. It also helps us understand and mitigate risks, and informs our decisions about capital levels. As well as taking part in regulatory driven stress tests, we conduct our own internal stress tests.

The group's stress testing programme is overseen by the group's Risk Committee, and results are reported, where appropriate, to the RMM and the group's Risk Committee.

Further information about stress testing are set out on page 16 of the group's Annual Report and Accounts 2021.

Global Risk and the group's Risk functions

We have a dedicated Global Risk function, headed by the Group CRO, which is responsible for the Group's risk management framework. This includes establishing global policy, monitoring risk profiles, and forward-looking risk identification and management. Global Risk is made up of sub-functions covering financial and non-financial risks. It is independent from the global businesses in order to provide challenge, appropriate oversight and balance in risk/return decisions. The Global Risk function operates in line with the three lines of defence model. Similarly, the group's Risk function, headed by the group's CRO, is independent from the global businesses and responsible for the group's risk management framework.

For further information, see page 16 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 group's Audit Committee has responsibility for oversight of risk management and internal controls over financial reporting, and the group's Risk Committee has responsibility for oversight of risk management and internal controls other than for financial reporting.

The Directors, through the group's Risk Committee and Audit Committee, receive regular updates and confirmation that management has taken, or is taking, the necessary actions to remediate any failings or weaknesses identified through the operation of our framework of controls.

Regulatory reporting processes and controls

The quality of regulatory reporting remains a key priority for management and regulators. We are progressing with a comprehensive programme to strengthen our processes, improve consistency, and enhance controls on various aspects of regulatory reporting.

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 systems development is a key responsibility of the Global Risk function, while the development and operation of risk rating and management systems and processes are ultimately subject to the oversight of the Board.

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 by the Group 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 functions in respect of risk governance and oversight, compliance risks, 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

Global Risk and the group's Risk function manage 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 Internal ratings-based ('IRB') approaches.

The Global Model Risk Committee ('GMRC') along with the Regional Model Risk Committee ('MRC'), are the primary committees responsible for the oversight of Model Risk within HSBC and the group respectively. They serve an important role in providing strategic direction on the management of models and their associated risks to HSBC's and the group's businesses and are an essential element of the governance structure for model risk management. The MRC is supported by model oversight forums ('MOFs') operating within the group which are responsible for model risk management within their functional areas, including wholesale credit risk, market risk, retail risk, and finance. Similarly, the GMRC is supported by MOFs at the global level which are responsible for model risk management within their functional areas.

Models are also subject to an independent validation process and governance oversight by the Model Risk Management team within Global Risk and the group's Risk function. 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 local entities under the governance of their own management, subject to overall Group policy and oversight.

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

Further information is available on page 61 of the group's Annual Report and Accounts 2021.

Linkage to the Annual Report and Accounts 2021

Basis of consolidation

The basis of consolidation for financial accounting purposes is in accordance with Hong Kong Financial Reporting Standards ('HKFRS'), as described in Note 1 of the financial statements in the group's *Annual Report and Accounts 2021*.

The basis of consolidation for regulatory purposes is different from that for accounting purposes. Subsidiaries included in the consolidation for regulatory purposes are specified in a notice from the HKMA in accordance with section 3C(1) of the BCR. Subsidiaries not included in consolidation for regulatory purposes are securities and insurance companies that are authorised and supervised by regulators, and are subject to supervisory arrangements regarding the maintenance of adequate capital to support business activities comparable to those prescribed for authorised institutions under the BCR and the Banking Ordinance. The capital invested by the group in these subsidiaries is deducted from the capital base, subject to threshold, as determined in accordance with Part 3 of the BCR.

For insurance entities, the present value of in-force long-term insurance business asset of HK\$63,765m and the related deferred tax liability are only recognised on consolidation in financial reporting and are therefore not included in the asset or equity positions for the stand-alone entities presented in the below table.

There are no subsidiaries that are included within the regulatory scope of consolidation but not included within the accounting scope of consolidation at 31 December 2021.

For all subsidiaries included in both the accounting and regulatory scope of consolidation, the same consolidation methodology is applied at 31 December 2021.

The group operates subsidiaries in a number of countries and territories where capital is governed by local rules, and there may be restrictions on the transfer of regulatory capital and funds between members of the banking group.

The Bank and its banking subsidiaries maintain regulatory reserves to satisfy the provisions of the Banking Ordinance and local regulatory requirements for prudential supervision purposes. At 31 December 2021, the effect of this requirement is to reduce the amount of reserves which can be distributed to shareholders by HK\$18,587m.

Table 2: List of subsidiaries outside the regulatory scope of consolidation

Principal activities	At 31 Dec 2021		
	Total assets HK\$m	Total equity HK\$m	
HSBC Broking Futures (Hong Kong) Ltd	Futures broking	754	620
HSBC Broking Services (Asia) Ltd and its subsidiaries	Broking services	12,018	3,113
HSBC Corporate Advisory (Malaysia) Sdn Bhd	Financial services	7	5
HSBC Corporate Finance (Hong Kong) Ltd	Financial services	16	14
HSBC Global Asset Management Holdings (Bahamas) Ltd	Asset management	129	128
HSBC Global Asset Management (Hong Kong) Ltd	Asset management	1,187	693
HSBC Asset Management (Japan) Ltd	Asset management	293	133
HSBC Global Asset Management (Singapore) Ltd	Asset management	116	56
HSBC Insurance (Asia-Pacific) Holdings Ltd and its subsidiaries	Insurance	584,882	44,995
HSBC InvestDirect (India) Private Ltd and its subsidiaries	Financial services	993	954
HSBC Investment Funds (Hong Kong) Ltd	Asset management	543	290
HSBC Qianhai Securities Ltd	Securities services	1,619	1,260
HSBC Securities (Japan) Ltd	Broking services	266,993	1,079
HSBC Securities Preparatory (Japan) Ltd	Broking services	237	235
HSBC Securities (Singapore) Pte Ltd	Broking services	143	86
HSBC Securities Brokers (Asia) Ltd	Broking services	3,609	3,555
Hang Seng Insurance Co. Ltd and its subsidiaries	Insurance	184,980	15,727
Hang Seng Investment Management Ltd	Asset management	328	297
Hang Seng Investment Services Ltd	Investment services	9	9
Hang Seng Qianhai Fund Management Co. Ltd	Asset management	307	283
Hang Seng Securities Ltd	Broking services	2,033	703

The approaches used in calculating the group's regulatory capital and RWAs are in accordance with the BCR. The group uses the advanced internal ratings-based ('IRB') approach to calculate its credit risk for the majority of its non-securitisation exposures. For securitisation exposures, the group uses the securitisation internal ratings-based approach ('SEC-IRBA'), securitisation external ratings-based approach ('SEC-ERBA'), securitisation standardised approach ('SEC-SA') or securitisation fall-back approach ('SEC-FBA') to determine credit risk for its banking book securitisation exposures. For counterparty credit risk ('CCR'), the group uses both the standardised (counterparty credit risk) approach ('SA-CCR') and the internal models (counterparty credit risk) ('IMM(CCR)') approach to calculate its default risk exposures for derivatives, and the comprehensive approach for SFTs.

For market risk, the group uses an IMM approach to calculate its general market risk for the risk categories of interest rate and foreign exchange (including gold) exposures, and equity exposures. The group also uses an IMM approach to calculate its market risk in respect of specific risk for interest rate exposures and equity exposures. The group uses the standardised (market risk) ('STM') approach for calculating other market risk positions, as well as trading book securitisation exposures, and the standardised (operational risk) ('STO') approach to calculate its operational risk.

Balance sheet reconciliation

The following table expands the balance sheet under the regulatory scope of consolidation to show separately the capital components that are reported in the 'Composition of regulatory capital disclosures' template in Table 6. The capital components in this table contain a reference that shows how these amounts are included in Table 6.

Table 3: CC2 – Reconciliation of regulatory capital to balance sheet

	a	b	c
	At 31 Dec 2021		
	Balance sheet as in published financial statements	Under regulatory scope of consolidation	Cross-referenced to definition of Capital Components
	HK\$m	HK\$m	
Assets			
Cash and balances at central banks	276,857	276,476	
Items in the course of collection from other banks	21,632	21,632	
Hong Kong Government certificates of indebtedness	332,044	332,044	
Trading assets	777,450	776,673	
<i>of which: significant Loss-absorbing capacity ('LAC') investments eligible as Additional Tier1 ('AT1') capital issued by financial sector entities</i>		26	1
<i>of which: significant LAC investments eligible as Tier 2 capital issued by financial sector entities</i>		8	2
Derivatives	365,167	365,786	
Financial assets designated and otherwise mandatorily measured at fair value through profit or loss	202,399	3,441	
Reverse repurchase agreements – non-trading	803,775	547,930	
Loans and advances to banks	432,247	422,995	
Loans and advances to customers	3,840,939	3,826,698	
<i>of which: impairment allowances eligible for inclusion in Tier 2 capital</i>		(7,128)	3
Financial investments	2,051,575	1,582,939	
Amounts due from Group companies	112,719	374,280	
<i>of which: significant LAC investments eligible as Tier 2 capital issued by financial sector entities</i>		8,017	4
Investments in subsidiaries	–	18,517	
Interests in associates and joint ventures	188,485	184,937	
<i>of which: goodwill</i>		4,044	5
<i>of which: significant LAC investments in financial sector entities exceeding 10% threshold</i>		139,239	6
Goodwill and intangible assets	95,181	28,233	
<i>of which: goodwill</i>		4,889	7
<i>of which: intangible assets</i>		23,344	8
Property, plant and equipment	129,827	122,748	
Deferred tax assets	3,353	3,248	
<i>of which: deferred tax assets net of related tax liabilities</i>		3,353	9
<i>of which: deferred tax liabilities related to goodwill</i>		(91)	10
<i>of which: deferred tax liabilities related to intangible assets</i>		(14)	11
Prepayments, accrued income and other assets	269,743	164,804	
<i>of which: defined benefit pension fund net assets</i>		19	12
Total assets	9,903,393	9,053,381	

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Table 3: CC2 – Reconciliation of regulatory capital to balance sheet (continued)

	a	b	c
	At 31 Dec 2021		
	Balance sheet in published financial statements	Under regulatory scope of consolidation	Cross-referenced to definition of Capital Components
	HK\$m	HK\$m	
Liabilities			
Hong Kong currency notes in circulation	332,044	332,044	
Items in the course of transmission to other banks	25,701	25,701	
Repurchase agreements – non-trading	255,374	255,096	
Deposits by banks	280,310	280,310	
Customer accounts	6,177,182	6,175,450	
Trading liabilities	92,723	92,723	
Derivatives	355,791	356,406	
<i>of which: gains and losses due to changes in own credit risk on fair valued liabilities</i>		(264)	13
Financial liabilities designated at fair value	138,965	103,539	
<i>of which: gains and losses due to changes in own credit risk on fair valued liabilities</i>		70	14
Debt securities in issue	67,364	67,332	
Retirement benefit liabilities	1,890	1,890	
Amounts due to Group companies	356,233	373,072	
<i>of which: qualifying Tier 2 capital instruments</i>		14,972	15
<i>of which: gains and losses due to changes in own credit risk on fair valued liabilities</i>		1,516	16
Accruals and deferred income, other liabilities and provisions	219,206	148,167	
Liabilities under insurance contracts	638,145	–	
Current tax liabilities	2,378	894	
Deferred tax liabilities	32,522	21,593	
<i>of which: deferred tax liabilities related to goodwill</i>		5	17
<i>of which: deferred tax liabilities related to intangible assets</i>		3,284	18
<i>of which: deferred tax liabilities related to defined benefit pension fund net assets</i>		1	19
Subordinated liabilities	4,054	4,054	
<i>of which: portion eligible for Tier 2 capital instruments, subject to phase-out arrangements</i>		3,119	20
Total liabilities	8,979,882	8,238,271	
Equity			
Share capital	172,335	172,335	
<i>of which: portion eligible for inclusion in CET1 capital</i>		170,881	21
<i>of which: revaluation reserve capitalisation issue</i>		1,454	22
Other equity instruments	44,615	44,615	
<i>of which: qualifying AT1 capital instruments</i>		44,615	23
Other reserves	151,804	148,196	24
<i>of which: fair value gains arising from revaluation of land and buildings</i>		63,303	25
<i>of which: cash flow hedging reserves</i>		60	26
<i>of which: valuation adjustment</i>		5	27
Retained earnings	488,055	395,062	28
<i>of which: regulatory reserve for general banking risks</i>		18,587	29
<i>of which: regulatory reserve eligible for inclusion in Tier 2 capital</i>		10,343	30
<i>of which: fair value gains arising from revaluation of land and buildings</i>		4,260	31
<i>of which: valuation adjustment</i>		1,829	32
Total shareholders' equity	856,809	760,208	
Non-controlling interests	66,702	54,902	
<i>of which: portion allowable in CET1 capital</i>		28,730	33
<i>of which: portion allowable in AT1 capital</i>		1,458	34
<i>of which: portion allowable in Tier 2 capital</i>		1,183	35
Total equity	923,511	815,110	
Total liabilities and equity	9,903,393	9,053,381	

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

	a	b	c	d	e	f	g
	Carrying values of items:						
	Carrying values as reported in published financial statements	Carrying values under scope of regulatory consolidation	Subject to credit risk framework	Subject to counterparty credit risk framework	Subject to securitisation framework ¹	Subject to market risk framework	Not subject to capital requirements or subject to deduction from capital
	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
Assets							
Cash and balances at central banks	276,857	276,476	276,476	–	–	–	–
Items in the course of collection from other banks	21,632	21,632	21,632	–	–	–	–
Hong Kong Government certificates of indebtedness	332,044	332,044	332,044	–	–	–	–
Trading assets ²	777,450	776,673	2,565	63,519	–	774,107	–
Derivatives ²	365,167	365,786	–	365,786	–	365,786	–
Financial assets designated and otherwise mandatorily measured at fair value through profit or loss	202,399	3,441	1,330	2,108	–	–	3
Reverse repurchase agreements – non-trading	803,775	547,930	–	547,930	–	–	–
Loans and advances to banks	432,247	422,995	420,849	2,146	–	–	–
Loans and advances to customers	3,840,939	3,826,698	3,788,375	503	37,820	–	–
Financial investments	2,051,575	1,582,939	1,582,405	–	–	–	534
Amounts due from Group companies ²	112,719	374,280	85,565	279,055	–	4,254	9,618
Investments in subsidiaries	–	18,517	–	–	–	–	18,517
Interests in associates and joint ventures	188,485	184,937	62,390	–	–	–	122,547
Goodwill and intangible assets ³	95,181	28,233	–	–	–	–	24,944
Property, plant and equipment	129,827	122,748	122,748	–	–	–	–
Deferred tax assets	3,353	3,248	–	–	–	–	3,248
Prepayments, accrued income and other assets ^{3,4}	269,743	164,804	113,527	36,737	59	–	14,480
Total assets at 31 Dec 2021	9,903,393	9,053,381	6,809,906	1,297,784	37,879	1,144,147	193,891
Liabilities							
Hong Kong currency notes in circulation	332,044	332,044	–	–	–	–	332,044
Items in the course of transmission to other banks	25,701	25,701	–	–	–	–	25,701
Repurchase agreements – non-trading	255,374	255,096	–	255,096	–	–	–
Deposits by banks	280,310	280,310	–	–	–	–	280,310
Customer accounts	6,177,182	6,175,450	–	–	–	–	6,175,450
Trading liabilities ²	92,723	92,723	–	6,703	–	92,723	–
Derivatives ²	355,791	356,406	–	356,406	–	356,406	–
Financial liabilities designated at fair value	138,965	103,539	–	–	–	82,486	21,053
Debt securities in issue	67,364	67,332	–	–	–	–	67,332
Retirement benefit liabilities	1,890	1,890	–	–	–	–	1,890
Amounts due to Group companies ²	356,233	373,072	–	37,462	–	25	335,610
Accruals and deferred income, other liabilities and provisions	219,206	148,167	–	–	–	–	148,167
Liabilities under insurance contracts	638,145	–	–	–	–	–	–
Current tax liabilities	2,378	894	–	–	–	–	894
Deferred tax liabilities	32,522	21,593	–	–	–	–	21,593
Subordinated liabilities	4,054	4,054	–	–	–	–	4,054
Total liabilities at 31 Dec 2021	8,979,882	8,238,271	–	655,667	–	531,640	7,414,098

- ¹ The amounts shown in the column 'subject to securitisation framework' only include non-trading book positions. Trading book securitisation positions are included in the market risk column.
- ² Assets/liabilities arising from derivative contracts held in the regulatory trading book are subject to both market risk and counterparty credit risk because derivative contracts are marked-to-market and there is a risk that the counterparty may not be able to fulfil the contractual obligations. As a result, the amounts shown in column (b) do not equal the sum of columns (c) to (g).
- ³ The assets disclosed in column (g) are net of any associated deferred tax liability.
- ⁴ The difference in the carrying values reported in the financial statements in column (a) and the scope of regulatory consolidation in column (b) mainly represents (i) differences between the financial and regulatory scope of consolidation, and (ii) the amounts of acceptance and endorsements being included as contingencies in accordance with the BCR, whilst for accounting purposes, acceptances and endorsements are recognised on the balance sheet.

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

	a	b	c	d	e
	Items subject to:				
	Total HK\$m	credit risk framework HK\$m	securitisation framework HK\$m	counterparty credit risk framework HK\$m	market risk framework HK\$m
1 Asset carrying value amount under scope of regulatory consolidation (as per template LI1) ¹	8,859,490	6,809,906	37,879	1,297,784	1,144,147
2 Liabilities carrying value amount under regulatory scope of consolidation (as per template LI1) ²	824,173	–	–	655,667	531,640
3 Total net amount under regulatory scope of consolidation	8,035,317	6,809,906	37,879	642,117	612,507
4 Off-balance sheet amounts and potential future exposure for counterparty risk	3,333,719	822,524	–	225,170	–
5 Differences in netting rules	(14,308)	(12,728)	–	(1,580)	–
6 Differences due to financial collateral on standardised approach	(50,857)	(50,857)	–	–	–
7 Differences due to impairments on IRB approach	30,594	30,594	–	–	–
8 Differences due to credit risk mitigation	(377,713)	–	–	(377,713)	–
9 Exposure amounts considered for regulatory purposes at 31 Dec 2021	10,956,752	7,599,439	37,879	487,994	612,507

1 The amount shown in column (a) is equal to column (b) less column (g) in the Total assets row in Table 4.

2 The amount shown in column (a) is equal to column (b) less column (g) in the Total liabilities row in Table 4.

Explanation 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 the securitisation regulatory frameworks include the undrawn portions of committed facilities, various trade finance commitments and guarantees. We apply credit conversion factors ('CCF') to these items and add potential future exposures ('PFE') for counterparty credit risk ('CCR').

Differences in netting rules

Under HKFRS, netting is only permitted if a legal right of set-off exists and the cash flows are intended to be settled on a net basis. Under the BCR, however, netting is applied when there is a valid bilateral netting agreement. As a consequence, we recognise greater netting under the BCR, reflecting the close-out provisions that would take effect in the event of counterparty default rather than just those transactions that are settled net in the normal course of business.

Differences due to financial collateral

Exposure value under the standardised approach is calculated after deducting credit risk mitigation ('CRM'), whereas the accounting value is before such deductions.

Differences due to expected credit loss

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

Differences due to credit risk mitigation

In CCR, differences arise between accounting carrying values and regulatory exposure as a result of the application of CRM 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, administration 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 56 presents further information on the prudent valuation adjustment.

Capital and RWAs

Regulatory capital disclosures

The following table sets out the detailed composition of the group's regulatory capital using the 'Composition of regulatory capital disclosures' template, as specified by the HKMA.

Table 6: CC1 – Composition of regulatory capital

	a	b
	At 31 Dec 2021	
	Component of regulatory capital	Cross-referenced to Table 3
	HK\$m	Source based on reference numbers/ letters of the balance sheet under the regulatory scope of consolidation
CET1 capital: instruments and reserves		
1	170,881	21
2	395,062	28
3	148,196	24
5	28,730	33
6	742,869	
CET1 capital: regulatory deductions		
7	1,834	27+32
8	8,837	5+7+10-17
9	20,046	8+11-18
10	3,353	9
11	60	26
14	(1,322)	-(13+14+16)
15	18	12-19
19	139,239	6
26	86,150	
26a	67,563	25+31
26b	18,587	29
28	258,215	
29	484,654	
AT1 capital: instruments		
30	44,615	23
31	44,615	23
34	1,458	34
36	46,073	
AT1 capital: regulatory deductions		
40	26	1
43	26	
44	46,047	
45	530,701	
Tier 2 capital: instruments and provisions		
46	14,972	15
47	3,119	20
48	1,183	35
50	17,471	30-3
51	36,745	
Tier 2 capital: regulatory deductions		
55	8,025	2+4
56	(31,057)	
56a	(31,057)	(22+25+31)x45%
57	(23,032)	
58	59,777	
59	590,478	
60	3,156,553	

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Table 6: CC1 – Composition of regulatory capital (continued)

		a	b
		At 31 Dec 2021	
		Component of regulatory capital	Cross-referenced to Table 3
		HK\$m	Source based on reference numbers/ letters of the balance sheet under the regulatory scope of consolidation
Capital ratios (as a percentage of RWA)			
61	CET1 capital ratio	15.4%	
62	Tier 1 capital ratio	16.8%	
63	Total capital ratio	18.7%	
64	Institution-specific buffer requirement (capital conservation buffer plus countercyclical capital buffer plus higher loss absorbency requirements)	5.50%	
65	<i>of which: capital conservation buffer requirement</i>	2.50%	
66	<i>of which: bank specific countercyclical capital buffer requirement</i>	0.50%	
67	<i>of which: higher loss absorbency requirement</i>	2.50%	
68	CET1 (as a percentage of RWA) available after meeting minimum capital requirements	10.7%	
Amounts below the thresholds for deduction (before risk weighting)			
72	Insignificant LAC investments in CET1, AT1 and Tier 2 capital instruments issued by, and non-capital LAC liabilities of, financial sector entities that are outside the scope of regulatory consolidation	29,393	
73	Significant LAC investments in CET1 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation	62,389	
Applicable caps on the inclusion of provisions in Tier 2 capital			
76	Provisions eligible for inclusion in Tier 2 in respect of exposures subject to the basic indicator ('BSC') approach, or the standardise (credit risk) ('STC') approach and SEC-ERBA, SEC-SA and SEC-FBA (prior to application of cap)	3,249	
77	Cap on inclusion of provisions in Tier 2 under the BSC approach, or the STC approach, and SEC-ERBA, SEC-SA and SEC-FBA	3,386	
78	Provisions eligible for inclusion in Tier 2 in respect of exposures subject to the IRB approach and SEC-IRBA (prior to application of cap)	14,267	
79	Cap for inclusion of provisions in Tier 2 under the IRB approach and SEC-IRBA	14,222	
Capital instruments subject to phase-out arrangements (only applicable between 1 Jan 2018 and 1 Jan 2022)			
84	Current cap on Tier 2 capital instruments subject to phase-out arrangements	4,558	

Table 6: CC1 – Composition of regulatory capital (continued)

Notes to the template:

		At 31 Dec 2021	
		Hong Kong basis	Basel III basis
		HK\$m	HK\$m
10	Deferred tax assets (net of associated deferred tax liabilities)	3,353	399

Explanation:

As set out in paragraphs 69 and 87 of the Basel III text issued by the Basel Committee (December 2010), Deferred Tax Assets ('DTAs') of the bank to be realised are to be deducted, whereas DTAs which relate to temporary differences may be given limited recognition in CET1 capital (and hence be excluded from deduction from CET1 capital up to the specified threshold). In Hong Kong, an AI is required to deduct all DTAs in full, irrespective of their origin, from CET1 capital. Therefore, the amount to be deducted as reported in row 10 may be greater than that required under Basel III.

The amount reported under the column 'Basel III basis' in this box represents the amount reported in row 10 (i.e. the amount reported under the 'Hong Kong basis') adjusted by reducing the amount of DTAs to be deducted which relate to temporary differences to the extent not in excess of the 10% threshold set for DTAs arising from temporary differences and the aggregate 15% threshold set for Mortgage Servicing Rights ('MSRs'), DTAs arising from temporary differences and significant investments in CET1 capital instruments issued by financial sector entities (excluding those that are loans, facilities or other credit exposures to connected companies) under Basel III.

		At 31 Dec 2021	
		Hong Kong basis	Basel III basis
		HK\$m	HK\$m
19	Significant LAC investments in CET1 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation (amount above 10% threshold)	139,239	137,638

Explanation:

For the purpose of determining the total amount of significant LAC investments in CET1 capital instruments issued by financial sector entities, an AI is required to aggregate any amount of loans, facilities or other credit exposures provided by it to any of its connected companies, where the connected company is a financial sector entity, as if such loans, facilities or other credit exposures were direct holdings, indirect holdings or synthetic holdings of the AI in the capital instruments of the financial sector entity, except where the AI demonstrates to the satisfaction of the HKMA that any such loan was made, any such facility was granted, or any such other credit exposure was incurred, in the ordinary course of the AI's business.

Therefore, the amount to be deducted as reported in row 19 may be greater than that required under Basel III. The amount reported under the column 'Basel III basis' in this box represents the amount reported in row 19 (i.e. the amount reported under the 'Hong Kong basis') adjusted by excluding the aggregate amount of loans, facilities or other credit exposures to the AI's connected companies which were subject to deduction under the Hong Kong approach.

Remarks:

The amount of the 10% threshold is calculated based on the amount of CET1 capital determined in accordance with the deduction methods set out in BCR Schedule 4F. The 15% threshold is referring to paragraph 88 of the Basel III text issued by the Basel Committee (December 2010) and has no effect to the Hong Kong regime.

Table 7: CCA – Capital instruments

		At 31 Dec 2021	
		Total amount	Amount recognised in regulatory capital
			HK\$m
CET1 capital instruments			
	Ordinary shares	HK\$172,335m	170,881
AT1 capital instruments			
	Fixed rate perpetual subordinated loans, callable from 2024	US\$1,100m	8,617
	Fixed rate perpetual subordinated loans, callable from 2024	US\$900m	7,044
	Fixed rate perpetual subordinated loans, callable from 2025	US\$1,000m	7,834
	Fixed rate perpetual subordinated loans, callable from 2025	US\$700m	5,467
	Fixed rate perpetual subordinated loans, callable from 2025	US\$500m	3,905
	Fixed rate perpetual subordinated loans, callable from 2026	US\$900m	7,063
	Fixed rate perpetual subordinated loans, callable from 2027	US\$600m	4,685
Tier 2 capital instruments			
	Primary capital undated floating rate notes	US\$400m	3,119
	Subordinated loan due 2030, callable from 2025	US\$1,000m	8,355
	Subordinated loan due 2030, callable from 2025	US\$180m	1,515
	Subordinated loan due 2031, callable from 2026	US\$600m	5,101

A description of the main features and the full terms and conditions of the group's capital instruments can be found in the Regulatory Disclosures section of our website, www.hsbc.com.hk.

Countercyclical capital buffer ratio

The CCyB is calculated as the weighted average of the applicable CCyB ratios in effect in the jurisdictions in which banks have private sector credit exposures. The group uses country of business as the basis of geographical allocation for the majority of its credit risk and risk country for market risk, which is defined by considering the country of incorporation, location of guarantor, headquarter domicile, distribution of revenue and booking country.

Table 8: CCyB1 – Geographical distribution of credit exposures used in countercyclical capital buffer

		a	c	d	e
		At 31 Dec 2021			
Geographical breakdown by Jurisdiction (J)		Applicable JCCyB ratio in effect	RWAs used in computation of CCyB ratio	AI-specific CCyB ratio	CCyB amount
		%	HK\$m	%	HK\$m
1	Hong Kong ¹	1.00	1,133,200		
2	Bulgaria	0.50	2		
3	Czech Republic	0.50	29		
4	Luxembourg	0.50	3,137		
5	Norway (includes Bouvet Islands, Svalbard and Jan Mayen Islands)	1.00	128		
6	Slovakia	1.00	1		
	Sum²		1,136,497		
	Total³		2,256,683	0.50	15,874

1 The jurisdictional CCyB of Hong Kong used in the calculation of the CCyB buffer requirement was 1.0% since 31 March 2020. The jurisdictional CCyB of other countries used in the calculation of the CCyB requirement ranged from 0% to 1% at 31 December 2021.

2 This represents the sum of RWAs for the private sector credit exposures in jurisdictions with a non-zero countercyclical buffer rate.

3 The total RWAs used in the computation of the CCyB ratio in column (c) represents the total RWAs for the private sector credit exposures in all jurisdictions to which the group is exposed, including jurisdictions with no countercyclical buffer rate or with a countercyclical buffer rate set at zero. The CCyB amount in column (e) represents the group's total RWAs in row 4 of Table 1 of this document multiplied by the group specific CCyB ratio in column (d).

Leverage ratio

The following table shows the leverage ratio, Tier 1 capital and total exposure measure as contained in the 'Leverage Ratio' return submitted to the HKMA under the requirements specified in Part 1C of the BCR.

Table 9: LR2 – Leverage ratio

	a	b	
	31 Dec 2021 HK\$m	30 Sep 2021 HK\$m	
On-balance sheet exposures			
1	On-balance sheet exposures (excluding those arising from derivative contracts and securities financing transactions ('SFTs'), but including collateral)	7,362,689	7,424,702
2	Less: Asset amounts deducted in determining Tier 1 capital	(261,016)	(251,704)
3	Total on-balance sheet exposures (excluding derivative contracts and SFTs)	7,101,673	7,172,998
Exposures arising from derivative contracts			
4	Replacement cost associated with all derivative contracts (where applicable net of eligible cash variation margin and/or with bilateral netting)	86,455	103,906
5	Add-on amounts for potential future exposure ('PFE') associated with all derivative contracts	322,950	308,099
8	Less: Exempted central counterparty ('CCP') leg of client-cleared trade exposures	(6,262)	(6,000)
9	Adjusted effective notional amount of written credit-related derivative contracts	192,731	209,066
10	Less: Adjusted effective notional offsets and add-on deductions for written credit-related derivative contracts	(177,492)	(193,563)
11	Total exposures arising from derivative contracts	418,382	421,508
Exposures arising from SFTs			
12	Gross SFT assets (with no recognition of netting), after adjusting for sale accounting transactions	1,091,156	959,126
13	Less: Netted amounts of cash payables and cash receivables of gross SFT assets	(71,412)	(26,654)
14	CCR exposure for SFT assets	24,566	28,987
16	Total exposures arising from SFTs	1,044,310	961,459
Other off-balance sheet exposures			
17	Off-balance sheet exposure at gross notional amount	3,360,504	3,225,320
18	Less: Adjustments for conversion to credit equivalent amounts	(2,698,983)	(2,596,597)
19	Off-balance sheet items	661,521	628,723
Capital and total exposures			
20	Tier 1 capital	530,701	536,766
20a	Total exposures before adjustments for specific and collective provisions	9,225,886	9,184,688
20b	Adjustments for specific and collective provisions	(33,072)	(29,722)
21	Total exposures after adjustments for specific and collective provisions	9,192,814	9,154,966
Leverage ratio			
22	Leverage ratio (%)	5.8	5.9

Total exposures increased by HK\$37.8bn in the fourth quarter of 2021 primarily due to an increase of HK\$82.8bn in SFTs mainly as a result of higher demand for reverse repo trades, offset by a decrease of HK\$45.5bn in balances with central banks.

Table 10: LR1 – Summary comparison of accounting assets against leverage ratio exposure measure

	a	
	Value under the LR framework	
	31 Dec 2021 HK\$m	
1	Total consolidated assets as per published financial statements	9,903,393
2	Adjustment for investments in banking, financial, insurance or commercial entities that are consolidated for accounting purposes but outside the scope of regulatory consolidation	(793,924)
4	Adjustments for derivative contracts	52,596
5	Adjustment for SFTs (i.e. repos and similar secured lending)	24,566
6	Adjustment for off-balance sheet ('OBS') items (i.e. conversion to credit equivalent amounts of OBS exposures)	661,521
6a	Adjustments for prudent valuation adjustments and specific and collective provisions that are allowed to be excluded from exposure measure	(2,769)
7	Other adjustments	(652,569)
8	Leverage ratio exposure measure	9,192,814

Other adjustments mainly represent the Hong Kong Government certificates of indebtedness and assets deducted in determining Tier 1 capital. These are excluded for deriving the leverage ratio exposure measure in accordance with the HKMA requirements specified in Part 1C of the BCR.

Overview of RWAs and the minimum capital requirements

Table 11: OV1 – Overview of RWAs

	a	b	c
	RWAs ¹	RWAs ¹	Minimum ² capital requirements
	31 Dec 2021 HK\$m	30 Sep 2021 HK\$m	31 Dec 2021 HK\$m
1 Credit risk for non-securitisation exposures	2,215,111	2,155,894	186,657
2 – of which: STC approach	246,808	228,104	19,745
4 – of which: supervisory slotting criteria approach	98,960	83,004	8,392
5 – of which: advanced IRB approach	1,869,343	1,844,786	158,520
6 Counterparty default risk and default fund contributions	101,484	107,021	8,526
7 – of which: SA-CCR approach	38,709	36,942	3,244
8 – of which: IMM (CCR) approach	33,024	35,650	2,783
9 – of which: Others	29,751	34,429	2,499
10 Credit valuation adjustment ('CVA') Risk	41,612	38,817	3,329
11 Equity positions in banking book under the simple risk weight method and the internal models method	26,566	26,203	2,253
15 Settlement risk	405	166	34
16 Securitisation exposures in banking book	8,632	8,438	691
18 – of which: SEC-ERBA including internal assessment approach ('IAA')	4,283	4,871	343
19 – of which: SEC-SA	4,349	3,567	348
20 Market risk	172,790	137,630	13,826
21 – of which: STM approach	2,470	3,095	201
22 – of which: IMM approach	170,320	134,535	13,625
24 Operational risk	337,731	343,751	27,018
25 Amounts below the thresholds for deduction (subject to 250% risk weight ('RW'))	155,973	155,577	13,227
26a Deduction to RWAs	37,959	37,285	3,037
26c – of which: portion of cumulative fair value gains arising from the revaluation of land and buildings which is not included in Tier 2 Capital	37,959	37,285	3,037
27 Total	3,022,345	2,936,212	252,524

1 RWAs in this table are presented before the application of the 1.06 scaling factor, where applicable.

2 Minimum capital requirements represent the Pillar 1 capital charge at 8% of the RWAs after application of the 1.06 scaling factor, where applicable.

Credit risk for non-securitisation exposures

RWAs increased by HK\$59.2bn over the fourth quarter of 2021. Excluding the increase arising from foreign currency translation differences of HK\$6.2bn, the increase of HK\$53.0bn was mainly due to:

- an increase in asset size of HK\$42.6bn largely driven by growth in corporate loans in mainland China and Hong Kong; and
- an increase of HK\$8.3bn from asset quality due to unfavourable credit rating movements in the corporate portfolios.

Market risk

Market risk RWAs increased by HK\$35.2bn mainly due to higher stressed VaR ('SVaR') and risk not in VaR ('RNIV'), which were driven by increase in interest rate trading exposures and the change of the SVaR window during the quarter.

RWA flow statements

RWA flow statement for credit risk

Table 12: CR8 – RWA flow statement of credit risk exposures under IRB approach¹

		a
		HK\$m
1	RWAs as at 30 Sep 2021	1,927,790
2	Asset size	27,741
3	Asset quality	8,291
5	Methodology and policy	(616)
7	Foreign exchange movements	5,097
9	RWAs as at 31 Dec 2021	1,968,303

¹ Credit risk in this table represents the credit risk for non-securitisation exposures excluding counterparty credit risk.

RWAs under the IRB approach increased by HK\$40.5bn over the fourth quarter of 2021. Excluding the increase arising from foreign currency translation differences of HK\$5.1bn, the increase of HK\$35.4bn was mainly due to:

- an increase in asset size of HK\$27.8bn largely driven by growth in corporate loans in mainland China and Hong Kong; and
- an increase of HK\$8.3bn from asset quality due to unfavourable credit rating movements in the corporate portfolios.

RWA flow statement for counterparty credit risk

Table 13: CCR7 – RWA flow statement of default risk exposures under IMM(CCR) approach

		a
		HK\$m
1	RWAs as at 30 Sep 2021	35,650
2	Asset size	(2,972)
3	Credit quality of counterparties	297
7	Foreign exchange movements	49
9	RWAs as at 31 Dec 2021	33,024

RWA flow statement for market risk

Table 14: MR2 – RWA flow statement of market risk exposures under IMM approach

	a	b	c	e	f	
	Value at Risk (‘VaR’) HK\$m	Stressed VaR HK\$m	Incremental Risk Charge (‘IRC’) HK\$m	Other HK\$m	Total RWAs HK\$m	
1	RWAs as at 30 Sep 2021	16,163	41,215	36,572	40,585	134,535
2	Movement in risk levels	1,825	25,878	(2,705)	10,601	35,599
6	Foreign exchange movements	22	57	51	56	186
8	RWAs as at 31 Dec 2021	18,010	67,150	33,918	51,242	170,320

Loss-absorbing Capacity

Table 15: KM2(A) – Key metrics – LAC requirements for material subsidiaries

	a	b	c	d	e
	At				
	31 Dec 2021	30 Sep 2021	30 Jun 2021	31 Mar 2021	31 Dec 2020
Of the group at LAC consolidation group level					
1 Internal loss-absorbing capacity available (HK\$m)	794,544	802,415	793,162	753,000	792,498
2 Risk-weighted amount under the LAC Rules (HK\$m)	3,156,553	3,068,069	3,117,666	3,011,181	2,956,993
3 Internal LAC risk-weighted ratio (%)	25.2	26.2	25.4	25.0	26.8
4 Exposure measure under the LAC Rules (HK\$m)	9,184,770	9,147,311	9,060,385	8,887,602	8,697,936
5 Internal LAC leverage ratio (%)	8.7	8.8	8.8	8.5	9.1
6a Does the subordination exemption in the antepenultimate paragraph of Section 11 of the Financial Stability Board ('FSB') Total Loss-absorbing Capacity ('TLAC') Term Sheet apply? ¹	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
6b Does the subordination exemption in the penultimate paragraph of Section 11 of the FSB TLAC Term Sheet apply? ¹	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
6c If the capped subordination exemption applies, the amount of funding issued that ranks <i>pari passu</i> with excluded liabilities and that is recognised as external loss-absorbing capacity, divided by funding issued that ranks <i>pari passu</i> with excluded liabilities and that would be recognised as external loss-absorbing capacity if no cap was applied (%) ¹	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

1 The subordination exemption in the antepenultimate and penultimate paragraphs of Section 11 of the FSB TLAC Term Sheet do not apply in Hong Kong under the LAC Rules.

Internal LAC available decreased by HK\$7.9bn in the fourth quarter of 2021, from a decrease of HK\$5.6bn in regulatory capital elements, largely due to decreased regulatory profits net of dividend paid, and a decrease of HK\$2.3bn in non-regulatory capital elements.

Table 16: TLAC1(A) – TLAC composition

	a
	At 31 Dec 2021
Regulatory capital elements of internal loss-absorbing capacity and adjustments (HK\$m)	
1 Common Equity Tier 1 ('CET1') capital	484,654
2 Additional tier 1 ('AT1') capital before LAC adjustments	46,047
5 AT1 capital eligible under the LAC Rules	46,047
6 Tier 2 ('T2') capital before LAC adjustments	59,777
8 T2 capital instruments ineligible as internal loss-absorbing capacity as not issued directly or indirectly to, and held directly or indirectly by, the resolution entity or non-HK resolution entity in the material subsidiary's resolution group	3,119
10 T2 capital eligible under the LAC Rules	56,658
11 Internal loss-absorbing capacity arising from regulatory capital	587,359
Non-regulatory capital elements of internal loss-absorbing capacity (HK\$m)	
12 Internal non-capital LAC debt instruments issued directly or indirectly to, and held indirectly or indirectly by, the resolution entity or non-HK resolution entity in the material subsidiary's resolution group	207,205
17 Internal loss-absorbing capacity arising from non-capital LAC debt instruments before adjustments	207,205
Non-regulatory capital elements of internal loss-absorbing capacity: adjustments (HK\$m)	
18 Internal loss-absorbing capacity before deductions	794,564
19 Deductions of exposures between the material subsidiary's LAC consolidation group and group companies outside that group that correspond to non-capital items eligible for internal loss-absorbing capacity	20
22 Internal loss-absorbing capacity after deductions	794,544
Risk-weighted amount and exposure measure under the LAC Rules for internal loss-absorbing capacity purposes (HK\$m)	
23 Risk-weighted amount under the LAC Rules	3,156,553
24 Exposure measure under the LAC Rules	9,184,770
Internal LAC ratios and buffers (%)	
25 Internal LAC risk-weighted ratio	25.2%
26 Internal LAC leverage ratio	8.7%
27 CET1 capital (as a percentage of RWA under the BCR) available after meeting the LAC consolidation group's minimum capital and LAC requirements	9.2%
28 Institution-specific buffer requirement (capital conservation buffer plus countercyclical capital buffer requirements plus higher loss absorbency requirement, expressed as a percentage of RWA under the BCR)	5.50%
29 of which: capital conservation buffer requirement	2.50%
30 of which: institution-specific countercyclical capital buffer requirement	0.50%
31 of which: higher loss absorbency requirement	2.50%

Table 17: TLAC2 – The Hongkong and Shanghai Banking Corporation Limited creditor ranking

		Creditor ranking (HK\$m)					Sum of 1 to 5
		1 (most junior)	2	3	4	5 (most senior)	
1	Is the resolution entity or a non-HK resolution entity the creditor/investor? (yes or no)	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	172,335	44,451	3,119	13,881	198,734	432,520
5	Total capital and liabilities less excluded liabilities	172,335	44,451	3,119	13,881	198,734	432,520
6	– of row 5 that are eligible as internal loss-absorbing capacity	172,335	44,451	–	13,881	198,734	429,401
7	– of row 6 with 1 year ≤ residual maturity < 2 years	–	–	–	–	21,446	21,446
8	– of row 6 with 2 years ≤ residual maturity < 5 years	–	–	–	–	63,195	63,195
9	– of row 6 with 5 years ≤ residual maturity < 10 years	–	–	–	13,881	75,100	88,981
10	– of row 6 with residual maturity ≥ 10 years, but excluding perpetual securities	–	–	–	–	38,993	38,993
11	– of row 6 that are perpetual securities	172,335	44,451	–	–	–	216,786

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.

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 global 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 Retail Banking and Wealth Management Risk are the constituent parts of the group's Risk functions that support the group's CRO in overseeing credit risks. Their major duties comprise undertaking independent review 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 system programmes, oversee portfolio management and report on risk matters to senior executive management and to regulators.

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

The credit responsibilities of the group's Risk function are described on page 29 of the group's Annual Report and Accounts 2021.

Within the group, the credit risk functions comprise a network of credit risk management offices reporting within their respective local wholesale and retail credit risk functions, which in turn report to their relevant risk functions at Group level. They fulfil an essential role as independent risk control units distinct from global business line management in 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 CROs 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 group's and, as appropriate, the global credit risk function.

Credit risk management

Our exposures to credit risk arise from a wide range of customers 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 'Credit risk under internal ratings-based approach' on pages 26 to 28.

A fundamental principle of our policy and approach is that analytical risk rating systems and scorecards are 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. 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 global 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 35 for more information.

Credit risk models governance

All new or materially changed IRB capital models require regulatory approval, as set out in more detail on page 26. Throughout HSBC, such models fall directly under the remit of the functional MOFs, operating in line with HSBC's model risk policy, and under the oversight of the GMRC and the group's Model Risk Committee.

Global Model Risk Management 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 function which is separate from our Risk Analytics functions that are responsible for the development of models.

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

Credit quality

We are a universal bank with a conservative approach to credit risk. This is reflected in our credit risk profile being diversified across a number of asset classes and geographies with a credit quality profile mainly concentrated in the higher quality bands.

Credit quality of assets

Credit quality of exposures

Tables 18 to 22 present information on the credit quality of exposures by exposure category, geographical location, industry and residual maturity on a regulatory consolidation basis. For further details on the credit quality of IRB and STC exposures, refer to Tables 34 to 36 and 38 respectively.

The loans covered in these tables are generally referred to as any on-balance sheet exposures included as credit risk for non-securitisation exposures, covering exposures to customers, banks, sovereigns and others. Cash items and non-financial assets are excluded.

Table 18: CR1 – Credit quality of exposures

	a	b	c	d	e	f	g	
	Gross carrying amounts of			Of which: Expected Credit Loss ('ECL') accounting provisions ¹ for credit losses on STC approach exposures		Of which: ECL accounting provisions for credit losses on IRB approach exposures		
	Defaulted exposures	Non-defaulted exposures	Allowances/impairments	Allocated in regulatory category of specific provisions	Allocated in regulatory category of collective provisions		Net values (a+b-c)	
	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	
1	Loans	42,265	4,615,544	32,721	2,168	1,206	29,347	4,625,088
2	Debt securities	—	1,552,445	121	—	12	109	1,552,324
3	Off-balance sheet exposures	1,469	3,332,250	819	4	66	749	3,332,900
4	Total at 31 Dec 2021	43,734	9,500,239	33,661	2,172	1,284	30,205	9,510,312

¹ The categorisation of ECL accounting provisions into the regulatory categories of specific and collective provisions follows the treatment specified in the completion instructions of the HKMA Capital Adequacy Ratio – MA(BS)3 return. According to the completion instructions, the ECL accounting provisions classified into Stage 1 and Stage 2 are treated as collective provisions, while those classified under Stage 3 are treated as specific provisions. Provisions made for purchased or originated credit-impaired financial assets, under which any changes in lifetime expected credit losses will be recognised in the profit or loss account as an impairment gain or loss, are treated as specific provisions.

Table 19: CR2 – Changes in defaulted loans and debt securities

	a	
	HK\$m	
1	Defaulted loans and debt securities at 30 Jun 2021	40,135
2	Loans and debt securities that have defaulted since 30 Jun 2021	10,625
3	Returned to non-defaulted status	(1,588)
4	Amounts written off	(2,346)
5	Other changes ¹	(4,561)
6	Defaulted loans and debt securities at 31 Dec 2021	42,265

¹ Other changes include repayment and foreign exchange movements.

Table 20: CRB1 – Exposures by geographical location

	Gross carrying amounts at 31 Dec 2021
	HK\$m
Hong Kong ¹	5,393,766
Mainland China ¹	1,133,967
Others ²	3,016,240
Total	9,543,973

¹ The geographical locations shown in this table above represent the location of the principal operations of the subsidiary and by the location of the branch responsible for advancing the funds.

² Any segment which constitutes less than 10% of total gross carrying amounts is disclosed on an aggregated basis under the category 'others'.

Table 21: CRB2 – Exposures by industry

	Gross carrying amounts at 31 Dec 2021
	HK\$m
Property development and investment	982,605
Financial concerns	1,940,994
Individuals	2,544,621
Others ¹	4,075,753
Total	9,543,973

¹ Any segment which constitutes less than 10% of total gross carrying amounts is disclosed on an aggregated basis under the category 'others'.

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Table 22: CRB3 – Exposures by residual maturity

	Gross carrying amounts at 31 Dec 2021 HK\$m
Less than 1 year	4,838,229
Between 1 and 5 years	2,386,259
More than 5 years	2,296,471
Undated	23,014
Total	9,543,973

Credit-impaired exposures, past-due unimpaired exposures and renegotiated exposures

Tables 23 to 26 analyse credit-impaired exposures, impairment allowances, past-due unimpaired exposures and renegotiated exposures on a regulatory consolidation basis. Our approach for determining impairment allowances, definitions for accounting purposes of 'credit impaired', 'renegotiated' and the definition of default for regulatory capital are explained in Note 1.2(i) of the group's *Annual Report and Accounts 2021*. The analysis of gross impaired loans and advances and impairment allowances by major industry sectors based on categories and definitions used by the HSBC Group is as follows:

Table 23: CRB4 – Credit-impaired exposures and impairment allowances and write-offs by industry

	Total gross loans and advances to customers ¹	Gross credit-impaired loans and advances	Specific provisions ²	Collective provisions ²	Net new impairment allowances	Advances written-off in a year
	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
At 31 Dec 2021						
Residential mortgages	1,167,487	5,143	(300)	(159)	81	141
Real Estate	634,484	6,414	(974)	(5,016)	4,756	1
Wholesale and retail trade	428,619	13,429	(10,232)	(381)	(310)	588
Manufacturing	409,840	6,212	(3,896)	(561)	630	706
Others ³	1,218,197	11,687	(4,582)	(5,828)	1,842	3,083
Total	3,858,627	42,885	(19,984)	(11,945)	6,999	4,519

The geographical information shown below has been classified by the location of the principal operations of the subsidiary and by the location of the branch responsible for advancing the funds.

Table 24: CRB5 – Credit-impaired exposures and impairment allowances and write-offs by geographical location

	Total gross loans and advances to customers ¹	Gross credit-impaired loans and advances	Overdue loans and advances	Specific provisions ²	Collective provisions ²	Net new impairment allowances	Advances written-off in a year
	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
At 31 Dec 2021							
Hong Kong	2,434,175	18,337	9,110	(7,034)	(7,954)	4,832	2,130
Mainland China	425,249	1,975	1,085	(943)	(1,414)	630	646
Others ³	999,203	22,573	11,836	(12,007)	(2,577)	1,537	1,743
Total	3,858,627	42,885	22,031	(19,984)	(11,945)	6,999	4,519

1 The amounts shown in column 'Total gross loans and advances to customers' represent loans and advances to customers gross of provisions in the financial statements under regulatory consolidation scope.

2 The classification of specific and collective provisions follows the treatment specified in the completion instructions of the HKMA Capital Adequacy Ratio – MA(BS)3 return. Details can be found in footnote 1 under Table 18 of this document.

3 Any segment which constitutes less than 10% of total gross loans and advances to customers is disclosed on an aggregated basis under the category 'others'.

Past-due unimpaired exposures are those loans where customers have failed to make payments in accordance with the contractual terms of their facilities. Exposures past due for more than 90 days are considered credit impaired.

Table 25: CRB6 – Ageing analysis of accounting past-due unimpaired exposures

	Up to 29 days	30-59 days	60-89 days	Total
	HK\$m	HK\$m	HK\$m	HK\$m
At 31 Dec 2021				
Loans and advances to customers held at amortised cost	19,488	1,288	1,255	22,031
– personal	11,890	1,236	1,192	14,318
– corporate and commercial	6,666	52	63	6,781
– non-bank financial institutions	932	–	–	932
Total	19,488	1,288	1,255	22,031

Table 26: CRB7 – Breakdown of renegotiated loans between credit impaired and not credit impaired

	31 Dec 2021 HK\$m
Not credit impaired	36
Credit impaired	10,272
Total	10,308

Loans and advances to customers

Tables 27 to 29 analyse loans and advances to customers by geographical locations, by industries and by which are overdue and rescheduled on an accounting consolidation basis. The accounting consolidation basis is different from the regulatory consolidation basis as explained in the 'Basis of consolidation' section of this document.

The following analysis of loans and advances to customers by geographical areas is in accordance with the location of counterparties, after recognised risk transfer.

Table 27: Loans and advances to customers by geographical location

	Hong Kong HK\$m	Rest of Asia-Pacific HK\$m	Other HK\$m	Total HK\$m
At 31 Dec 2021				
Gross loans and advances to customers	2,028,921	1,570,903	273,132	3,872,956

Tables 28 and 29 analyse the group's loans and advances to customers based on the categories used by the HKMA in the 'Quarterly Analysis of Loans and Advances and Provisions – (MA(BS)2A)' return.

Table 28: Loans and advances to customers by industry

	Gross Advances at 31 Dec 2021 HK\$m	Collateral and other security at 31 Dec 2021 HK\$m
Industrial, commercial and financial	998,040	609,296
– property development	160,928	59,437
– property investment	297,264	261,866
– financial concerns	120,401	85,313
– stockbrokers	4,768	2,205
– wholesale and retail trade	99,000	45,695
– manufacturing	55,998	15,906
– transport and transport equipment	57,928	31,954
– recreational activities	1,591	802
– information technology	30,603	1,245
– others	169,559	104,873
Individuals	924,221	816,417
– advances for the purchase of flats under the Hong Kong Government's Home Ownership Scheme, Private Sector Participation Scheme and Tenants Purchase Scheme	66,480	66,478
– advances for the purchase of other residential properties	680,610	679,878
– credit card advances	62,837	–
– others	114,294	70,061
Gross loans and advances to customers for use in Hong Kong	1,922,261	1,425,713
Trade Finance	175,838	34,434
Gross loans and advances to customers for use outside Hong Kong	1,774,857	726,889
Gross loans and advances to customers	3,872,956	2,187,036

The categories of advances, and the relevant definitions, used by the HKMA differ from those used for internal purposes by the group as disclosed in Note 10 in the group's *Annual Report and Accounts 2021*.

Collateral includes any tangible security that has a determinable fair market value and is readily marketable. This includes (but is not limited to) cash and deposits, stocks and bonds, mortgages over properties and charges over other fixed assets, such as plant and equipment. Where collateral values are greater than gross advances, only the amount of collateral up to the gross advance has been included.

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Rescheduled loans and advances to customers are those loans and advances that have been restructured or renegotiated because of deterioration in the financial position of the borrower, or because of the inability of the borrower to meet the original repayment schedule. Rescheduled loans and advances to customers are stated net of any loans and advances that have subsequently become overdue for more than three months and which are included in overdue loans and advances to customers.

Table 29: Overdue and rescheduled loans and advances to customers

	Hong Kong		Rest of Asia-Pacific		Total	
	HK\$m	% ¹	HK\$m	% ¹	HK\$m	% ¹
At 31 Dec 2021						
Gross amounts which have been overdue with respect to either principal or interest for:						
– more than three months but not more than six months	1,467	0.1	931	0.1	2,398	0.1
– more than six months but not more than one year	1,177	–	1,365	0.1	2,542	0.1
– more than one year	7,014	0.3	10,592	0.7	17,606	0.4
Total	9,658	0.4	12,888	0.9	22,546	0.6
Specific provisions made in respect of amounts overdue ²	(4,148)		(9,950)		(14,098)	
Fair value of collateral held in respect of amounts overdue	2,814		3,050		5,864	
Rescheduled loans and advances to customers	2,180	0.1	3,959	0.3	6,139	0.2

1 Percentages shown are of gross loans and advances to customers.

2 The classification of specific provisions follows the treatment specified in the completion instructions of the HKMA Capital Adequacy Ratio – MA(BS)3 return. Details can be found in footnote 1 under Table 18 of this document.

Off-balance sheet exposures other than derivative transactions

The following table gives the nominal contract amounts and risk-weighted amounts of contingent liabilities and commitments. The information is consistent with that in the 'Capital Adequacy Ratio' return submitted to the HKMA by the group. The return is prepared on a consolidated basis as specified by the HKMA under the requirements of section 3C(1) of the BCR.

For accounting purposes, acceptances and endorsements are recognised on the balance sheet in 'Other assets'. For the purpose of the BCR, acceptances and endorsements are included in the capital adequacy calculation as if they were contingencies.

Table 30: Off-balance sheet exposures other than derivative transactions

	31 Dec 2021 HK\$m
Contract amounts	
Direct credit substitutes	45,752
Transaction-related contingencies	291,903
Trade-related contingencies	131,447
Forward asset purchases	3,187
Commitments that are unconditionally cancellable without prior notice	2,461,041
Commitments which have an original maturity of not more than one year	64,501
Commitments which have an original maturity of more than one year	335,888
Total	3,333,719
Risk-weighted amounts	319,951

Credit risk under internal ratings-based approach

The internal ratings system and its risk components

Model governance

Throughout HSBC, models are governed under the remit of the GMRC and Regional MRCs, operating in line with HSBC's model risk policy. The MRC is responsible to authorize MOFs where required, to operate under its remit and are responsible for model risk management within their areas. IRB capital models is under the oversight of Group and Regional Wholesale MOFs ('WMOF') and Retail MOFs ('RMOF').

WMOFs and RMOFs require all credit risk models for which they are responsible, to be approved by delegated senior managers with notification to the respective Committees that retain the responsibility for oversight.

Global Model Risk Management 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 function which is separate from our Risk Analytics functions that are responsible for the development of models.

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

Nature of exposures within each IRB class

The group uses the advanced IRB approach for the majority of its business under the approval granted by the HKMA. This includes the following major classes of non-securitisation exposures:

- Corporate exposures, including exposures to global and local large corporates, middle-market corporates and non-bank financial institutions.
- Sovereign exposures, including exposures to central governments, central monetary institutions, multilateral development banks and relevant international organisations.
- Bank exposures, including exposures to banks and regulated securities firms.
- Retail exposures, including residential mortgages, qualifying revolving retail exposures and other retail exposures.
- Equity exposures.
- Other exposures, including cash items and other assets.

At 31 December 2021, the portions of exposure at default ('EAD') and RWAs within the group covered by the IRB approach are summarised in the following table. The remaining portions not covered by the IRB approach are under the STC approach.

Table 31: CRE1 – Percentage of total EAD and RWAs covered by IRB approach

Portfolio	Percentage of total EAD under IRB approach	Percentage of total RWAs under IRB approach
Corporate exposures (includes small- and medium-sized corporates and other corporates and specialised lending ¹)	95%	91%
Sovereign exposures	98%	100%
Bank exposures (including securities firms)	100%	100%
Residential mortgage loans	90%	81%
Other retail exposures	84%	56%
Equity exposures	100%	100%
Other exposures	100%	100%

¹ Specialised lending exposures adopt regulatory slotting approach under the IRB framework.

The above table covers credit risk for non-securitisation exposures excluding counterparty credit risk. For counterparty credit risk, the percentage of total RWAs covered by IRB models is 97% for

sovereign exposures, 99% for bank exposures and 71% for corporate exposures.

Measurement and monitoring – risk rating systems

Exposure to credit risk arises from a very wide range of customers and product types, and the risk rating systems in place to measure and monitor these risks are correspondingly diverse.

Credit risk exposures are generally measured and managed in portfolios of either distinct customer types or product categories. Risk rating systems for the former are designed to assess the default propensity of, and loss severity associated with, customers who are typically managed as individual relationships; these rating systems tend to have a higher subjective content. Risk rating systems for the latter are generally more analytical, applying techniques such as behavioural analysis across product portfolios comprising large numbers of homogeneous transactions.

A fundamental principle of the group's policy and approach is that analytical risk rating systems and scorecards are decision tools facilitating management, serving ultimately judgmental decisions for which individual approvers are accountable. In the case of automated decision-making processes, accountability rests with those responsible for the parameters built into those processes and systems, and the controls surrounding their use. For distinct customers, the credit process requires at least annual review of facility limits granted. Review may be more frequent, as required by circumstances.

Group standards govern the process through which risk rating systems are initially developed, judged fit for purpose, approved and implemented; the conditions under which individual approvers can override analytical risk model outcomes; and the process of model performance monitoring and reporting. There is emphasis on an effective dialogue between global business lines and risk management, appropriate 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 and are subject to review and modification in the light of the changing environment and the greater availability and quality of data. Structured processes and metrics are in place to capture relevant data and feed it into continuous model improvement.

Application of IRB parameters

The group's credit risk rating framework incorporates the probability of default ('PD') of a borrower and the loss severity, expressed in terms of EAD and loss given default ('LGD'). These measures are used to calculate both expected loss ('EL') and capital requirements, subject to any floors required by the HKMA. They are also used in conjunction with other inputs to inform rating assessments for the purpose of credit approval and many other risk management decisions. The narrative explanations that follow relate to the IRB advanced approaches, that is, IRB advanced for distinct customers and retail IRB for the portfolio-managed retail business.

Wholesale business

PD for wholesale customer segments (central governments and central banks (sovereigns), institutions, corporates) are derived from a customer risk rating ('CRR') 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 model for the individual borrower type is mapped to the corresponding CRR. The process through which this, or a judgmentally amended CRR, is then recommended to and reviewed by a credit approver takes into account all additional information relevant to the risk rating determination, including external ratings where available. The approved CRR is mapped to a PD value range of which the 'mid-point' is used in the regulatory capital calculation. PD models are developed where the risk profile of corporate borrowers is specific to a country and sector. For illustration purposes, the CRR is also mapped to external ratings of

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Standard and Poor's ('S&P'), though we also benchmark against other agencies' ratings in an equivalent manner.

LGD and EAD estimation for the wholesale business is subject to a Group framework of basic principles. 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 is based on the effects of facility and collateral structure on outcomes post-default. This includes factors such 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.

The group uses the Supervisory Slotting Criteria approach in rating its specialised lending exposures. Under this approach, ratings are determined by considering both the borrower and the transaction risk characteristics.

Retail business

The wide range of application and behavioural information used in the management of retail portfolios has been supplemented with models to derive the measures of PD, EAD and LGD required for the Basel framework. For management information and reporting purposes, retail portfolios are segmented according to location

and analytically derived PD bands, in nine composite PD grades, facilitating comparability across the group's retail customer segments, business lines and product types.

PD models are developed using statistical estimation generally based on a minimum of five years of historical data. The modelling approach is typically a hybrid approach, which includes elements of Through-The-Cycle (TTC) and Point-in-Time (PiT) approaches.

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

- Closed-end products without the facility for additional drawdowns, EAD is estimated as the outstanding balance of accounts at the time of observation; or
- EAD for products with the facility for additional drawdowns 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 32: CRE2 – Wholesale IRB credit risk models

Regulatory asset classes measured	Component	Number of significant models	Model description and methodology	Number of years loss data	Regulatory Floors
Sovereign/Multilateral development banks	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	45% ¹
	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
Bank/Securities firms	PD	2	Statistical models that combine quantitative analysis on financial information with expert inputs and macroeconomic factors.	10	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	45% ²
	EAD	1	A quantitative model that assigns 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
Other Corporate/Small-and-medium sized corporates ³	PD	13	The corporate models use financial information, macroeconomic information and market-driven data, and is complemented by a qualitative assessment. The non-bank financial institution ('NBFI') models which are the predominantly statistical models that combine quantitative analysis on financial information with expert inputs. The Lombard model for the Global Private Banking portfolio which is a market-oriented model developed based on the historical price movements of the underlying financial collaterals.	>= 10	0.03%
	LGD	2	Regional statistical model covering all corporates, developed using historical loss/recovery data and various data inputs, including collateral information, facility seniority and customer geography. The Lombard model for the Global Private Banking portfolio which is a market-oriented model developed based on the historical price movements of the underlying financial collaterals.	>10	No
	EAD	1	Regional statistical model covering all corporates, developed using historical utilisation information and various data inputs, including product type and nature of commitment.	>10	EAD must be at least equal to the current utilisation of the balance at account level

1 LGD floor exemption for the People's Republic of China and Hong Kong.

2 LGD floor exemption for intra-group entities.

3 Excludes specialised lending exposures subject to supervisory slotting approach.

Table 33: CRE3 – Material retail IRB credit risk models

Retail Portfolio	Component	Number of significant models	Model description and methodology	Number of years loss data	Regulatory Floors
Hong Kong – HSBC Residential Mortgages (Residential mortgage exposures)	PD	1	Statistical model built on internal behavioural data and calibrated to a long-run default rate by segment.	>10	0.03%
	LGD	3	2 statistical models and 1 historical average model based on estimate of loss incurred over a recovery period derived from historical data with downturn adjustment.	>10	10% at portfolio level
	EAD	1	Rule-based calculation based on current balance which continues to be a conservative estimate for EAD.	>10	EAD must at least be equal to current balance
Hong Kong – HSBC Credit Cards (Qualifying revolving retail exposures and Other retail exposures to individuals)	PD	4	Statistical model built on internal behavioural data and calibrated to a long-run default rate by segment.	>10	0.03%
	LGD	2	Statistical model based on forecasting the amount of expected future losses with downturn adjustment.	>10	
	EAD	2	EAD derived by different segments. Statistical models which derive credit conversion factors to determine the undrawn portion of the facility to be added to the outstanding balance of accounts at the time of observation.	>10	EAD must at least be equal to current balance
Hong Kong – HSBC Personal Loans (Qualifying revolving retail exposures and Other retail exposures to individuals)	PD	1	Statistical model built on internal behavioural data and calibrated to a long-run default rate.	> 10	0.03%
	LGD	1	Statistical model based on forecasting the amount of expected future recoveries. Downturn LGD derived using data from the period with highest observed default rate.	> 10	
	EAD	1	Statistical model which 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
Hong Kong – HSBC Overdraft (Qualifying revolving retail exposures and Other retail exposures to individuals)	PD	1	Statistical model built on internal behavioural data and calibrated to a long-run default rate by segment.	> 10	0.03%
	LGD	1	Statistical model based on forecasting the amount of expected losses. Downturn LGD derived using data from the period with highest observed default rate.	> 10	
	EAD	1	Statistical model which derives a credit limit utilisation which is used to determine the EAD.	> 10	EAD must at least be equal to current balance
Hong Kong – Hang Seng Personal Residential Mortgages (Residential mortgage exposures)	PD	1	Statistical model built on internal behavioural data and calibrated to a long-run default rate.	>10	0.03%
	LGD	3	One component based model and two historical average models 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	10%
	EAD	1	Rule-based calculation based on current balance and estimated incurred interest which continues to be a conservative estimate for EAD.	>10	EAD must at least be equal to current balance
Hong Kong – Hang Seng Credit Cards (Qualifying revolving retail exposures and Other retail exposures to individuals)	PD	1	Statistical model built on internal behavioural data and calibrated to a long-run default rate by segment.	>10	0.03%
	LGD	1	Statistical model based on forecasting the amount of expected future losses with downturn adjustment.	>10	
	EAD	1	Statistical model which derives a credit limit utilisation by segment which is used to determine the EAD.	>10	EAD must at least be equal to current balance
Hong Kong – Hang Seng Personal Loans (Other retail exposures to individuals)	PD	1	Statistical model built on internal behavioural data and calibrated to a long-run default rate by segment.	> 10	0.03%
	LGD	1	Statistical model based on forecasting the amount of expected future losses with downturn adjustment.	> 10	
	EAD	1	Rule-based calculation based on current balance and estimated incurred interest which continues to be a conservative estimate for EAD.	> 10	EAD must at least be equal to current balance
Other Asia-Pacific countries – Residential Mortgage (Residential mortgage exposures)	PD	9	Statistical model built on internal behavioural data and calibrated to a long-run default rate by segment.	> 10	0.03%
	LGD	7	Statistical model based on forecasting the amount of expected future losses, or statistical model or historical average model based on estimate of loss incurred over a recovery period derived from historical data, with downturn adjustment.	> 10	10% at portfolio level
	EAD	10	Rule-based calculation based on current balance, total approved loan amount and limit, or derives a credit conversion factor to determine the proportion of the undrawn limit to be added to the balance at observation, which continue to be a conservative estimate for EAD.	> 10	EAD must at least be equal to current balance

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Table 34.1: CR6 – Credit risk exposures by portfolio and PD range – for IRB approach (Wholesale)

	a	b	c	d	e	f	g	h	i	j	k	l
PD scale	Original on-balance sheet gross exposure HK\$m	Off-balance sheet exposures pre-CCF HK\$m	Average CCF %	EAD post-CRM and post-CCF HK\$m	Average PD %	Number of obligors	Average LGD %	Average maturity years	RWAs HK\$m	RWA density %	EL HK\$m	Provisions HK\$m
Portfolio (i) – Sovereign												
0.00 to < 0.15	1,798,908	2,575	21.4	1,799,460	0.02	646	35.7	1.41	104,644	6	147	
0.15 to < 0.25	23,432	–	–	23,432	0.22	33	45.0	1.47	8,531	36	23	
0.25 to < 0.50	4,952	34	50.0	4,969	0.37	23	45.0	1.01	2,194	44	8	
0.50 to < 0.75	17,788	1,311	78.3	18,814	0.63	20	45.0	1.29	11,742	62	53	
0.75 to < 2.50	–	–	–	–	1.20	2	45.0	1.00	–	79	–	
2.50 to < 10.00	7,638	–	–	7,638	4.04	10	45.0	1.13	9,423	123	139	
10.00 to <100.00	1,538	354	30.0	1,644	10.00	9	20.6	4.22	1,522	93	34	
100.00 (Default)	–	–	–	–	–	–	–	–	–	–	–	
Sub-total at 31 Dec 2021	1,854,256	4,274	39.8	1,855,957	0.05	743	35.9	1.41	138,056	7	404	1,599
Portfolio (ii) – Bank												
0.00 to < 0.15	463,861	59,125	43.0	489,293	0.05	15,859	39.9	1.15	64,294	13	94	
0.15 to < 0.25	17,701	9,316	42.6	21,674	0.22	713	45.7	1.03	8,927	41	22	
0.25 to < 0.50	3,434	2,406	28.2	4,111	0.37	999	39.8	0.62	1,865	45	6	
0.50 to < 0.75	8,835	2,467	35.3	9,705	0.63	346	38.0	0.95	5,522	57	23	
0.75 to < 2.50	2,032	1,377	39.1	2,571	1.28	242	44.8	0.66	2,001	78	15	
2.50 to < 10.00	888	466	33.9	1,046	3.85	144	64.1	0.36	1,685	161	26	
10.00 to <100.00	34	20	20.0	38	13.70	22	73.0	0.20	103	270	3	
100.00 (Default)	215	–	–	215	100.00	2	60.9	0.52	591	274	105	
Sub-total at 31 Dec 2021	497,000	75,177	42.1	528,653	0.12	18,327	40.2	1.13	84,988	16	294	1,195
Portfolio (iii) – Corporate – small and medium sized corporates												
0.00 to < 0.15	14,852	17,214	28.5	19,731	0.10	682	35.8	2.01	3,298	17	7	
0.15 to < 0.25	12,940	13,361	25.7	16,271	0.22	901	35.2	1.93	4,110	25	13	
0.25 to < 0.50	24,680	16,557	25.4	28,885	0.37	1,199	31.3	2.07	9,639	33	33	
0.50 to < 0.75	34,407	17,375	26.3	38,984	0.63	1,402	28.4	2.21	14,771	38	70	
0.75 to < 2.50	125,489	57,553	27.0	141,026	1.43	4,826	29.1	1.86	72,917	52	592	
2.50 to < 10.00	27,886	15,192	23.9	31,524	3.92	1,467	32.5	1.53	23,669	75	404	
10.00 to <100.00	733	452	25.8	849	16.65	109	42.6	1.03	1,345	158	59	
100.00 (Default)	3,242	131	14.5	3,261	100.00	71	35.8	1.68	8,124	249	684	
Sub-total at 31 Dec 2021	244,229	137,835	26.4	280,531	2.52	10,657	30.6	1.90	137,873	49	1,862	2,496
Portfolio (iv) – Corporate – other												
0.00 to < 0.15	617,271	723,787	28.3	818,167	0.08	18,413	45.0	1.64	171,424	21	316	
0.15 to < 0.25	176,643	276,809	28.0	252,701	0.22	4,976	46.0	1.43	96,549	38	256	
0.25 to < 0.50	160,762	192,876	21.6	201,130	0.37	4,429	42.8	1.40	94,142	47	318	
0.50 to < 0.75	212,419	188,730	26.7	257,150	0.63	3,977	38.7	1.53	144,417	56	628	
0.75 to < 2.50	418,985	331,778	23.2	495,643	1.36	9,941	37.3	1.40	368,342	74	2,534	
2.50 to < 10.00	109,337	97,115	24.1	132,684	4.13	3,322	35.5	1.26	131,065	99	1,915	
10.00 to <100.00	15,357	7,827	22.4	17,110	46.81	289	33.7	1.58	21,096	123	2,562	
100.00 (Default)	29,349	1,073	18.6	29,549	100.00	507	44.8	0.99	36,484	123	16,628	
Sub-total at 31 Dec 2021	1,740,123	1,819,995	26.2	2,204,134	2.42	45,854	41.8	1.49	1,063,519	48	25,157	34,681

Table 34.2: CR6 – Credit risk exposures by portfolio and PD range – for IRB approach (Retail)

	a	b	c	d	e	f	g	h	i	j	k	l
PD scale	Original on-balance sheet gross exposure HK\$m	Off-balance sheet exposures pre-CCF HK\$m	Average CCF %	EAD post-CRM and post-CCF HK\$m	Average PD %	Number of obligors	Average LGD %	Average maturity ¹ years	RWAs HK\$m	RWA density %	EL HK\$m	Provisions HK\$m
Portfolio (v) – Retail – qualifying revolving retail exposures												
0.00 to < 0.15	32,509	449,552	34.0	185,345	0.06	4,244,226	100.5	–	6,994	4	109	
0.15 to < 0.25	3,164	17,348	47.7	11,433	0.22	242,780	100.6	–	1,345	12	26	
0.25 to < 0.50	8,104	32,147	38.3	20,428	0.39	371,109	97.3	–	3,770	18	78	
0.50 to < 0.75	5,985	7,290	52.9	9,843	0.58	94,108	97.9	–	2,515	26	56	
0.75 to < 2.50	15,195	32,114	38.5	27,562	1.35	307,787	96.9	–	12,904	47	359	
2.50 to < 10.00	8,790	5,346	60.4	12,017	4.51	115,210	91.2	–	12,419	103	498	
10.00 to < 100.00	3,428	1,149	71.2	4,247	22.56	39,772	87.6	–	8,054	190	857	
100.00 (Default)	150	62	0.9	151	100.00	2,151	98.7	–	260	173	128	
Sub-total at 31 Dec 2021	77,325	545,008	35.5	271,026	0.85	5,417,143	99.2	–	48,261	18	2,111	3,267
Portfolio (vi) – Retail – Residential mortgage exposures												
0.00 to < 0.15	458,599	30,640	55.0	475,441	0.09	162,020	15.0	–	84,873	18	61	
0.15 to < 0.25	202,296	13,743	89.5	214,598	0.19	115,317	12.0	–	34,141	16	49	
0.25 to < 0.50	172,464	3,243	77.9	174,990	0.36	61,067	12.4	–	32,254	18	81	
0.50 to < 0.75	79,616	705	126.2	80,506	0.59	36,292	12.2	–	16,400	20	57	
0.75 to < 2.50	105,265	719	98.4	105,972	1.16	51,619	11.1	–	23,787	22	135	
2.50 to < 10.00	36,750	160	120.1	36,942	4.40	16,329	11.6	–	13,249	36	193	
10.00 to < 100.00	9,905	135	97.4	10,036	15.53	5,463	12.6	–	9,629	96	207	
100.00 (Default)	5,026	75	–	5,026	100.00	3,674	13.3	–	7,100	141	228	
Sub-total at 31 Dec 2021	1,069,921	49,420	68.0	1,103,511	1.03	451,781	13.3	–	221,433	20	1,011	1,516
Portfolio (vii) – Retail – small business retail exposures												
0.00 to < 0.15	3,054	10	100.0	3,065	0.08	1,264	11.0	–	72	2	–	
0.15 to < 0.25	444	2	100.0	446	0.19	120	15.5	–	27	6	–	
0.25 to < 0.50	334	–	–	334	0.36	63	35.9	–	70	21	–	
0.50 to < 0.75	595	2	100.0	596	0.56	214	6.4	–	29	5	–	
0.75 to < 2.50	377	2	100.0	379	1.25	85	23.9	–	100	26	1	
2.50 to < 10.00	410	–	100.0	410	5.04	171	9.1	–	56	14	3	
10.00 to < 100.00	–	–	–	–	–	–	–	–	–	–	–	
100.00 (Default)	4	–	–	4	100.00	2	23.1	–	10	277	–	
Sub-total at 31 Dec 2021	5,218	16	100.0	5,234	0.70	1,919	13.2	–	364	7	4	7
Portfolio (viii) – Other retail exposures to individuals												
0.00 to < 0.15	6,517	27,536	30.3	14,850	0.08	78,937	10.8	–	314	2	1	
0.15 to < 0.25	2,449	17,352	31.3	7,880	0.21	53,062	5.4	–	175	2	1	
0.25 to < 0.50	9,109	11,926	40.1	13,891	0.34	85,933	56.1	–	4,379	32	25	
0.50 to < 0.75	4,381	3,845	46.7	6,177	0.67	21,140	27.5	–	1,378	22	10	
0.75 to < 2.50	8,132	1,384	36.0	8,629	1.48	37,919	67.9	–	6,871	80	91	
2.50 to < 10.00	4,805	2,409	43.6	5,855	3.48	23,644	36.0	–	3,081	53	98	
10.00 to < 100.00	503	20	66.7	516	18.36	5,079	88.8	–	954	185	86	
100.00 (Default)	87	24	17.2	91	100.00	1,163	74.2	–	164	180	56	
Sub-total at 31 Dec 2021	35,983	64,496	34.0	57,889	1.10	306,877	34.6	–	17,316	30	368	416

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Table 34.3: CR6 – Credit risk exposures by portfolio and PD range – for IRB approach (Total)

	a	b	c	d	e	f	g	h	i	j	k	l
	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 ¹ maturity	RWAs	RWA density	EL	Provisions ²
	HK\$m	HK\$m	%	HK\$m	%		%	years	HK\$m	%	HK\$m	HK\$m
Total (sum of all portfolios) at 31 Dec 2021	5,524,055	2,696,221	29.5	6,306,935	1.21	6,253,301	36.8	1.45	1,711,810	27	31,211	45,177

¹ The average maturity is relevant to wholesale portfolios only.

² Provisions in this table represent the eligible provisions as defined under Division 1, Part 6 of the BCR which include the regulatory reserves for general banking risks and the impairment allowances reported under IRB approach.

The increase in weighted average PD from 1.09% in June 2021 to 1.21% in December 2021 was mainly driven by an increase in exposure to corporate portfolios with high PD scales.

Table 35: CR10 – Specialised Lending under supervisory slotting criteria approach – HVCRE

Supervisory Rating Grade	Remaining maturity	a	b	c	d	e	f
		On-balance sheet exposure amount	Off-balance sheet exposure amount	Supervisory risk weight ('SRW')	EAD amount	RWAs	Expected loss amount
		HK\$m	HK\$m	%	HK\$m	HK\$m	HK\$m
Strong [^]	Less than 2.5 Years	8	36	70	23	17	–
Strong	Equal to or more than 2.5 Years	43	–	95	43	40	–
Good [^]	Less than 2.5 Years	–	1	95	1	1	–
Good	Equal to or more than 2.5 Years	22	–	120	22	26	–
Total at 31 Dec 2021		73	37		89	84	–

[^] Use of preferential risk-weights

Table 36: CR10 – Specialised Lending under supervisory slotting criteria approach – Other than HVCRE

Supervisory Rating Grade	Remaining Maturity	a	b	c	EAD amount			e	f			
					On-balance sheet exposure amount	Off-balance sheet exposure amount	SRW			Income Producing Real Estate ('IPRE')		Expected loss amount
										Project Finance ('PF')	Total	
		HK\$m	HK\$m	%	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m			
Strong [^]	Less than 2.5 years	37,092	3,641	50	1,915	36,730	38,645	19,323	–			
Strong	Less than 2.5 years	6,621	2,117	70	1,097	6,217	7,314	5,120	29			
Strong [^]	Equal to or more than 2.5 years	3,776	2,289	50	4,582	–	4,582	2,291	–			
Strong	Equal to or more than 2.5 years	46,056	2,434	70	11,744	35,201	46,945	32,860	188			
Good [^]	Less than 2.5 years	12,686	3,193	70	338	13,530	13,868	9,708	55			
Good	Less than 2.5 years	3,779	1,347	90	–	4,265	4,265	3,839	34			
Good [^]	Equal to or more than 2.5 years	3,871	1,109	70	4,393	–	4,393	3,075	18			
Good	Equal to or more than 2.5 years	9,444	112	90	–	9,519	9,519	8,567	76			
Satisfactory		9,118	3,218	115	3,569	6,540	10,109	11,626	283			
Weak		965	55	250	–	987	987	2,467	79			
Default		938	–	–	938	–	938	–	469			
Total at 31 Dec 2021		134,346	19,515		28,576	112,989	141,565	98,876	1,231			

[^] Use of preferential risk weights.

RWAs of specialised lending under supervisory slotting criteria approach increased by HK\$21.1bn over the second half of 2021, mainly due to growth in corporate exposures in Hong Kong.

Table 37: CR10 – Equity exposures under the simple risk weight method

	a	c	d	e
	On-balance sheet exposure amount	SRW	EAD amount	RWAs
	HK\$m	%	HK\$m	HK\$m
Categories				
Publicly traded equity exposures	–	300	–	–
All other equity exposures	6,642	400	6,642	26,566
Total at 31 Dec 2021	6,642		6,642	26,566

Credit risk under standardised approach

Use of external credit ratings under the standardised approach for credit risk

The standardised (credit risk) ('STC') 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 STC approach requires banks to use risk assessments prepared by External Credit Assessment Institutions ('ECAI') 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:

- public sector entity ('PSE') exposures;

- bank or corporate exposures (those without an internal CRR); and
- collective investment scheme ('CIS') exposures.

The group uses external credit ratings from the following ECAIs:

- Fitch Ratings;
- Moody's Investors Service; and
- Standard & Poor's Ratings Services.

The group determines ECAI issuer ratings or ECAI issue-specific ratings in the banking book in a process consistent with Part 4 of the BCR.

All other exposure classes are assigned risk weightings as prescribed in the HKMA's BCR.

Table 38: CR5 – Credit risk exposures by asset classes and by risk weights – for STC approach

	a	c	d	e	f	g	h	j
Risk Weight	0%	20%	35%	50%	75%	100%	150%	Total credit risk exposures amount (post CCF and post CRM)
Exposure class	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
1 Sovereign exposures	33,339	222	–	1	–	–	–	33,562
2 PSE exposures	98,754	29,028	–	2,235	–	7,582	8	137,607
2a of which: domestic PSEs	–	9,929	–	–	–	–	–	9,929
2b of which: foreign PSEs	98,754	19,099	–	2,235	–	7,582	8	127,678
4 Bank exposures	–	321	–	201	–	71	3	596
5 Securities firm exposures	–	–	–	2	–	–	–	2
6 Corporate exposures	–	12,943	–	4,146	–	122,784	210	140,083
10 Regulatory retail exposures	–	–	–	–	54,500	–	–	54,500
11 Residential mortgage loans	–	–	112,999	–	8,998	6,012	–	128,009
12 Other exposures which are not past due exposures	–	–	–	–	–	8,336	–	8,336
13 Past due exposures	89	–	–	–	–	298	1,616	2,003
15 Total at 31 Dec 2021	132,182	42,514	112,999	6,585	63,498	145,083	1,837	504,698

Credit 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, unsecured facilities may be provided.

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 is geographic.

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.

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.

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 and Securities Services¹ businesses utilise credit risk mitigation to manage the credit risk of their 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.

1 In the second half of 2021, the reportable segments have been changed to reflect the change in the management of the Global Banking and Markets ('GBM') business, with the splitting out of Global Banking and Markets and Securities Services as separate reportable segments, whilst GBM-Other (previously reported within GBM) is now reported under 'Other (GBM-other)'.

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 residential mortgages, 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 CRE, 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 locally 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 advanced IRB approach, recognition may be through PD or LGD.
- Eligible financial collateral under the advanced IRB approach is recognised in LGD models.
- For all other types of collateral, including real estate, the LGD for exposures calculated under the advanced IRB approach are calculated by models.

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 credit derivatives, the exposure is divided into covered and uncovered portions. The covered portion, which is determined after applying an appropriate 'haircut' for currency and maturity mismatches (and for omission of restructuring clauses for 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 39: CR3 – Overview of recognised credit risk mitigation

	a	b1	b	d
	Exposures unsecured: carrying amount HK\$m	Exposures to be secured HK\$m	Exposures secured by recognised collateral HK\$m	Exposures secured by recognised guarantees HK\$m
1 Loans	2,110,137	2,514,951	2,099,906	415,045
2 Debt securities	1,518,769	33,555	–	33,555
3 Total at 31 Dec 2021	3,628,906	2,548,506	2,099,906	448,600
4 <i>of which: defaulted</i>	<i>6,931</i>	<i>15,905</i>	<i>14,932</i>	<i>973</i>

Unsecured exposures decreased by HK\$50.6bn over the second half of 2021, mainly arising from matured loans related to initial public offerings ('IPO').

Table 40: CR7 – Effects on RWAs of recognised credit derivative contracts used as recognised credit risk mitigation – for IRB approach

	a	b
	Pre-credit derivatives RWAs HK\$m	Actual RWAs HK\$m
1 Corporate – Specialised lending under supervisory slotting criteria approach (project finance)	19,653	19,653
4 Corporate – Specialised lending under supervisory slotting criteria approach (income-producing real estate)	79,223	79,223
5 Corporate – Specialised lending (high-volatility commercial real estate)	84	84
6 Corporate – Small-and-medium sized corporates	137,873	137,873
7 Corporate – Other corporates	1,063,519	1,063,519
8 Sovereigns	134,315	134,315
10 Multilateral development banks	3,741	3,741
11 Bank exposures – Banks	68,203	68,203
12 Bank exposures – Securities firms	16,785	16,785
14 Retail – Small business retail exposures	364	364
15 Retail – Residential mortgages to individuals	217,807	217,807
16 Retail – Residential mortgages to property-holding shell companies	3,626	3,626
17 Retail – Qualifying revolving retail exposures ('QRRE')	48,261	48,261
18 Retail – Other retail exposures to individuals	17,316	17,316
19 Equity – Equity exposures under market-based approach (simple risk weight method)	26,566	26,566
26 Other – Cash items	2,541	2,541
27 Other – Other items	155,397	155,397
28 Total (under the IRB calculation approaches) at 31 Dec 2021	1,995,274	1,995,274

Table 41: CR4 – Credit risk exposures and effects of recognised credit risk mitigation – for STC approach

	a	b	c	d	e	f
Exposure classes	Exposures pre-CCF and pre-CRM		Exposures post-CCF and post-CRM		RWAs and RWA density	
	On-balance sheet amount HK\$m	Off-balance sheet amount HK\$m	On-balance sheet amount HK\$m	Off-balance sheet amount HK\$m	RWAs HK\$m	RWA density %
	1 Sovereign exposures	–	–	33,512	50	45
2 PSE exposures	178,628	14,476	134,180	3,427	14,517	11
2a <i>of which: domestic PSEs</i>	<i>8,554</i>	<i>3,107</i>	<i>8,555</i>	<i>1,374</i>	<i>1,986</i>	<i>20</i>
2b <i>of which: foreign PSEs</i>	<i>170,074</i>	<i>11,369</i>	<i>125,625</i>	<i>2,053</i>	<i>12,531</i>	<i>10</i>
4 Bank exposures	445	950	526	70	241	40
5 Securities firm exposures	1	142	1	1	1	45
6 Corporate exposures	153,750	151,628	129,731	10,352	127,761	91
10 Regulatory retail exposures	57,147	423,062	54,172	328	40,875	75
11 Residential mortgage loans	127,311	9,247	127,250	759	52,310	41
12 Other exposures which are not past due exposures	19,732	15,149	8,187	149	8,336	100
13 Past due exposures	1,975	105	1,975	28	2,722	136
15 Total at 31 Dec 2021	538,989	614,759	489,534	15,164	246,808	49

RWAs under the STC approach decreased by HK\$36.7bn over the second half of 2021, mainly arising from matured loans related to IPO; partly offset by an increase in corporate exposures in Hong Kong.

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Model performance

The disclosure covers wholesale and retail models which have been approved by regulators. It compares the PD estimated by our IRB models against actual default experience and shows our IRB models are generally conservative.

Table 42: CR9 – Back-testing of PD per portfolio

b	c(i)	c(ii)	c(iii)	d	e	f		g	h	i
						Beginning of the year	End of the year			
PD range	External rating equivalent (S&P)	External rating equivalent (Moody's)	External rating equivalent (Fitch)	Weighted average PD % ¹	Arithmetic average PD by obligors % ¹	Number of obligors ^{2,3}		Defaulted obligors in the year	Of which: new defaulted obligors in the year	Average historical annual default rate %
Sovereigns										
0.00 to <0.15	AAA to BBB	Aaa to Baa2	AAA to BBB	0.02	0.03	45	40	–	–	–
0.15 to <0.25	BBB-	Baa3	BBB-	0.22	0.22	2	3	–	–	–
0.25 to <0.50	BBB-	Baa3	BBB-	0.37	0.37	2	2	–	–	–
0.50 to <0.75	BB+ to BB	Ba1 to Ba2	BB+ to BB	0.63	0.63	2	2	–	–	–
0.75 to <2.50	BB- to B+	Ba3 to B2	BB- to B-	1.20	1.20	1	1	–	–	–
2.5 to <10.00	B to B-	B2 to Caa1	CCC+ to CCC	4.15	4.54	4	3	–	–	–
10.00 to <100.00	B- to C	Caa1 to C	CCC to C	–	–	–	1	–	–	–
Banks										
0.00 to <0.15	AAA to A-	Aaa to Baa1	AAA to BBB+	0.04	0.07	234	222	–	–	–
0.15 to <0.25	BBB+	Baa2	BBB	0.22	0.22	62	70	–	–	–
0.25 to <0.50	BBB	Baa3	BBB-	0.37	0.37	36	22	–	–	–
0.50 to <0.75	BBB-	Baa3	BBB-	0.63	0.63	36	30	–	–	–
0.75 to <2.50	BB+ to BB-	Ba1 to B1	BB+ to B+	1.17	1.21	34	43	–	–	–
2.5 to <10.00	B+ to B-	B2 to Caa1	B to CCC+	3.25	3.43	19	13	–	–	1.43
10.00 to <100.00	CCC+ to C	Caa1 to C	CCC to C	48.23	13.00	2	3	–	–	–
Corporate – small-and-medium sized corporates										
0.00 to <0.15	AAA to A-	Aaa to Baa1	AAA to BBB+	0.11	0.11	482	512	–	–	0.03
0.15 to <0.25	BBB+	Baa2	BBB	0.22	0.22	731	698	–	–	0.17
0.25 to <0.50	BBB	Baa3	BBB-	0.37	0.37	1,112	983	2	–	0.30
0.50 to <0.75	BBB-	Baa3	BBB-	0.63	0.63	1,252	1,143	–	–	0.13
0.75 to <2.50	BB+ to BB-	Ba1 to B1	BB+ to B+	1.43	1.52	4,664	4,243	13	–	0.51
2.5 to <10.00	B+ to B-	B2 to Caa1	B to CCC+	4.05	4.09	1,184	1,237	18	–	1.90
10.00 to <100.00	CCC+ to C	Caa1 to C	CCC to C	28.82	16.63	60	56	9	–	15.70
Corporate – other⁴										
0.00 to <0.15	AAA to A-	Aaa to Baa1	AAA to BBB+	0.09	0.10	3,635	4,070	–	–	0.02
0.15 to <0.25	BBB+	Baa2	BBB	0.22	0.22	2,006	2,146	–	–	0.07
0.25 to <0.50	BBB	Baa3	BBB-	0.37	0.37	2,032	2,136	4	–	0.19
0.50 to <0.75	BBB-	Baa3	BBB-	0.63	0.63	2,210	2,055	4	–	0.18
0.75 to <2.50	BB+ to BB-	Ba1 to B1	BB+ to B+	1.34	1.44	5,627	5,166	28	1	0.51
2.5 to <10.00	B+ to B-	B2 to Caa1	B to CCC+	4.31	4.21	1,710	1,629	12	–	1.89
10.00 to <100.00	CCC+ to C	Caa1 to C	CCC to C	16.83	17.57	145	143	11	–	12.29

1 The weighted average PD% and the arithmetic average PD% by obligors are based on the position at the beginning of the year.

2 The number of obligors represents the obligor rated by key wholesale IRB models directly.

3 The number of obligors for corporates is being reported at counterparty level, while the number of obligors for banks and multilateral development banks is being reported at entity level. Sovereigns are reported at country level based on local currency and foreign currency ratings.

4 Specialised lending exposures are excluded.

Table 42: CR9 – Back-testing of PD per portfolio (continued)

b	d	e	f		g	h	i
PD range	Weighted average PD % ¹	Arithmetic average PD % by obligors ¹	Number of obligors ²		Defaulted obligors in the year	Of which: new defaulted obligors in the year	Average historical annual default rate %
			Beginning of the year	End of the year			
Retail – QRRE							
0.00 to < 0.15	0.06	0.06	4,871,593	4,770,620	2,198	23	0.04
0.15 to < 0.25	0.22	0.22	243,129	248,593	344	6	0.13
0.25 to < 0.50	0.40	0.40	374,417	388,524	1,025	20	0.25
0.50 to < 0.75	0.58	0.59	98,220	96,018	448	21	0.43
0.75 to < 2.50	1.34	1.31	494,981	468,012	3,437	102	0.65
2.50 to < 10.00	4.58	4.44	147,719	140,904	4,250	24	2.82
10.00 to < 100.00	22.62	25.38	52,969	43,458	6,267	16	11.13
Retail – Residential mortgage exposures							
0.00 to < 0.15	0.09	0.09	164,652	173,002	57	–	0.04
0.15 to < 0.25	0.19	0.18	119,327	125,347	177	1	0.16
0.25 to < 0.50	0.35	0.35	55,798	66,334	82	1	0.15
0.50 to < 0.75	0.57	0.61	47,730	38,657	153	–	0.31
0.75 to < 2.50	1.16	1.20	55,250	54,853	166	–	0.31
2.50 to < 10.00	4.77	5.07	16,973	17,220	242	–	1.88
10.00 to < 100.00	22.70	21.44	8,445	5,760	650	–	9.79
Retail – small business retail exposures							
0.00 to < 0.15	0.08	0.07	1,200	1,484	–	–	–
0.15 to < 0.25	0.19	0.19	133	150	–	–	–
0.25 to < 0.50	0.42	0.42	165	89	–	–	–
0.50 to < 0.75	0.55	0.55	167	263	–	–	–
0.75 to < 2.50	1.23	1.24	101	103	–	–	–
2.50 to < 10.00	6.10	6.07	203	200	–	–	0.27
10.00 to < 100.00	–	–	–	–	–	–	–
Other retail exposures to individuals							
0.00 to < 0.15	0.09	0.08	40,418	42,001	15	–	0.04
0.15 to < 0.25	0.20	0.20	29,636	26,724	14	–	0.06
0.25 to < 0.50	0.34	0.33	72,868	68,595	93	4	0.12
0.50 to < 0.75	0.66	0.63	17,273	15,962	60	4	0.31
0.75 to < 2.50	1.44	1.47	36,017	35,138	351	33	0.86
2.50 to < 10.00	3.47	4.20	26,215	20,132	677	45	2.21
10.00 to < 100.00	19.53	20.16	5,928	5,050	593	2	9.97

1 The weighted average PD% and the arithmetic average PD% by obligors are based on the position at the beginning of the year.

2 The number of obligors is based on account level information for all IRB portfolios except for the Hong Kong overdraft portfolio, which is presented at an aggregated level by consolidating savings and current account information.

Counterparty credit risk exposures

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 of the transaction. CCR is generated primarily in our wholesale global businesses.

Starting from 30 June 2021, a new counterparty credit risk ('SA-CCR') approach was adopted, as required by HKMA, to replace the current exposure method ('CEM') for exposures which are not in scope of the internal models (counterparty credit risk) approach ('IMM(CCR)'). Across the group, both the SA-CCR and IMM(CCR) approaches are used to determine RWAs.

The SA-CCR retains the same general structure as that used in the CEM, consisting of two key regulatory components: replacement cost and potential future exposure. In addition, an 'alpha' factor of 1.4 is applied to the sum of these components in arriving at the EAD.

Under the IMM(CCR) approach, EAD is calculated by multiplying the effective expected positive exposure with a same 'alpha' factor of 1.4. Alpha accounts for several portfolio features that increase EL above that indicated by effective expected positive exposure 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 effective expected positive exposure is derived from simulation, pricing and aggregation under the internal models approved by the HKMA. 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 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 and type of derivatives and SFT trading undertaken with the counterparty.

The models and methodologies used in the calculation of CCR are overseen and monitored by the Regional Traded Risk Model Oversight Forum. Models are subject to ongoing monitoring and validation. Additionally, they are subject to independent review at inception and periodically, in line with the model review cycle.

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.

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 and receiving collateral and investigating disputes and non-receipts.

Eligible 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 99.1% of collateral held as variation margin under Credit Support Annexes ('CSAs') is 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 in the group's Annual Report and Accounts 2021.

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 over-the-counter ('OTC') derivatives to 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.

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.
- 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 HK\$13m and for a two-notch downgrade was HK\$47m.

Table 43: CCR1 – Analysis of counterparty default risk exposures (other than those to CCPs) by approaches

	a	b	c	d	e	f
	Replacement cost ('RC') HK\$m	PFE HK\$m	Effective expected positive exposures ('EPE') HK\$m	Alpha (α) used for computing default risk exposure HK\$m	Default risk exposure after CRM HK\$m	RWAs HK\$m
1 SA-CCR approach (for derivative contracts)	23,620	101,370		1.4	174,985	38,709
2 IMM (CCR) approach			64,987	1.4	90,982	33,024
4 Comprehensive approach (for SFTs)					200,591	28,574
6 Total at 31 Dec 2021						100,307

Table 44: CCR2 – CVA capital charge

	a	b
	EAD post CRM HK\$m	RWAs HK\$m
Netting sets for which CVA capital charge is calculated by the advanced CVA method	90,982	15,357
1 (i) VaR (after application of multiplication factor if applicable)		3,874
2 (ii) Stressed VaR (after application of multiplication factor if applicable)		11,483
3 Netting sets for which CVA capital charge is calculated by the standardised CVA method	169,759	26,255
4 Total at 31 Dec 2021	260,741	41,612

Table 45: CCR6 – Credit-related derivatives contracts

	a	b
	Protection bought HK\$m	Protection sold HK\$m
At 31 Dec 2021		
Notional amounts		
Single-name credit default swaps	129,144	118,566
Index credit default swaps	83,157	75,029
Total return swaps	12,967	6,241
Total notional amounts	225,268	199,836
Fair values		
Positive fair value (asset)	264	3,246
Negative fair value (liability)	(3,502)	(249)

The decrease in the notional amount of credit default swaps of HK\$31.8bn in the second half of 2021 was due to lower client demand for both bought and sold protection.

Table 46: CCR5 – Composition of collateral for counterparty default risk exposures (including those for contracts or transactions cleared through CCPs)

	Derivative contracts				SFTs	
	Fair value of recognised collateral received		Fair value of posted collateral		Fair value of recognised collateral received	Fair value of posted collateral
	Segregated HK\$m	Unsegregated HK\$m	Segregated HK\$m	Unsegregated HK\$m	HK\$m	HK\$m
Cash – domestic currency	–	4,766	–	2,188	100	21,280
Cash – other currencies	–	76,001	–	49,612	377,966	927,131
Domestic sovereign debt	–	–	–	–	482	2,431
Other sovereign debt	–	14,699	7,143	22,776	630,154	408,938
Government agency debt	–	406	–	125	–	–
Corporate bonds	8,973	7,430	8,754	63	267,300	62,480
Equity securities	–	2,510	–	–	61,789	93,259
Other collateral	–	6,740	–	–	–	–
Total at 31 Dec 2021	8,973	112,552	15,897	74,764	1,337,791	1,515,519

The received and posted collateral for SFTs increased by HK\$253.8bn and HK\$278.2bn respectively in the second half of 2021, due to higher demand for reverse repo from sovereign counterparties.

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Table 47: CCR8 – Exposures to CCPs

	a	b
	Exposure after CRM HK\$m	RWAs HK\$m
At 31 Dec 2021		
1 Exposures of the AI as clearing member or clearing client to qualifying CCPs (total)		794
2 Default risk exposures to qualifying CCPs (excluding items disclosed in rows 7 to 10)	13,024	261
3 – of which: (i) OTC derivative transactions	2,194	44
4 – of which: (ii) exchange-traded derivative contracts	10,830	217
7 Segregated initial margin	10,001	
8 Unsegregated initial margin	6,964	139
9 Funded default fund contributions	1,409	394
11 Exposures of the AI as clearing member or clearing client to non-qualifying CCPs (total)		383
18 Unsegregated initial margin	8	8
19 Funded default fund contributions	30	375

Counterparty default risk under internal ratings-based approach

Table 48: CCR4 – Counterparty default risk exposures (other than those to CCPs) by portfolio and PD range – for IRB approach

	a	b	c	d	e	f	g
PD scale	EAD post-CRM HK\$m	Average PD %	Number of obligors	Average LGD %	Average maturity years	RWAs HK\$m	RWA density %
Portfolio (i) – Sovereign							
0.00 to < 0.15	100,491	0.07	49	45.1	0.23	8,881	9
0.15 to < 0.25	5,535	0.22	2	45.0	0.02	1,667	30
0.25 to < 0.50	17	0.37	1	45.0	1.04	6	36
0.50 to < 0.75	69	0.63	1	50.2	1.50	40	58
0.75 to < 2.50	–	–	–	–	–	–	–
2.50 to < 10.00	–	4.20	1	45.0	1.00	1	124
10.00 to < 100.00	–	–	–	–	–	–	–
100.00 (Default)	–	–	–	–	–	–	–
Sub-total at 31 Dec 2021	106,112	0.08	54	45.1	0.22	10,595	10
Portfolio (ii) – Bank							
0.00 to < 0.15	230,753	0.05	1,563	34.2	1.10	28,264	12
0.15 to < 0.25	13,661	0.22	167	49.2	0.70	5,618	41
0.25 to < 0.50	6,987	0.37	178	46.9	0.57	3,623	52
0.50 to < 0.75	1,839	0.63	34	45.4	1.20	1,415	77
0.75 to < 2.50	919	1.05	28	46.5	0.93	598	65
2.50 to < 10.00	14	3.30	4	46.9	1.18	14	97
10.00 to < 100.00	–	–	–	–	–	–	–
100.00 (Default)	–	–	–	–	–	–	–
Sub-total at 31 Dec 2021	254,173	0.08	1,974	35.4	1.06	39,532	16
Portfolio (iii) – Corporate							
0.00 to < 0.15	56,305	0.07	1,822	48.2	1.35	12,666	22
0.15 to < 0.25	10,281	0.22	535	49.7	0.84	4,461	43
0.25 to < 0.50	4,885	0.37	438	50.3	1.27	2,948	60
0.50 to < 0.75	4,384	0.63	396	51.2	1.27	3,443	79
0.75 to < 2.50	6,921	1.31	907	50.8	1.37	6,873	99
2.50 to < 10.00	2,740	3.64	265	50.7	1.43	3,831	140
10.00 to < 100.00	16	12.49	9	55.4	1.00	36	232
100.00 (Default)	94	100.00	2	48.0	0.01	–	–
Sub-total at 31 Dec 2021	85,626	0.46	4,374	48.9	1.28	34,258	40
Total (sum of all portfolios) at 31 Dec 2021	445,911	0.15	6,402	40.3	0.91	84,385	19

The decrease in average RW% in the second half of 2021 was due to decreases in the average PD and average LGD for counterparty credit risk exposures under the bank portfolio.

Details on the scope of models for each of the regulatory portfolios can be found in the 'Credit risk under internal ratings-based approach' section from pages 26 to 28 of this document.

Counterparty default risk under standardised approach

Table 49: CCR3 – Counterparty default risk exposures (other than those to CCPs) by asset classes and by risk weights – for STC approach

	a	c	d	e	f	i	
	0%	20%	50%	75%	100%	Total default risk exposure after CRM	
Risk Weight	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	
Exposure class							
1	Sovereign exposures	–	1,756	–	–	–	1,756
2	PSE exposures	1,218	771	673	–	–	2,662
2a	<i>of which: domestic PSEs</i>	–	440	–	–	–	440
2b	<i>of which: foreign PSEs</i>	1,218	331	673	–	–	2,222
4	Bank exposures	–	354	812	–	13	1,179
6	Corporate exposures	–	5	1	–	13,993	13,999
8	Regulatory retail exposures	–	–	–	135	–	135
12	Total at 31 Dec 2021	1,218	2,886	1,486	135	14,006	19,731

Securitisation

Securitisation strategy

The group acts as originator, sponsor, liquidity provider and derivative counterparty to our own originated and sponsored securitisations, as well as those of third parties. Our strategy is to use securitisation to meet our needs for aggregate funding or capital management, to the extent that market, regulatory treatments and other conditions are suitable, and for customer facilitation. We do not provide support to any of our originated or sponsored securitisations, and it is not our policy to do so.

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.

The group as originator

We use special purpose entities ('SPEs') 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. In such cases, we transfer the loans and advances to the SPEs for cash, and the SPEs issue debt securities to investors to fund the cash purchases.

In addition, we use SPEs to mitigate the capital absorbed by some of the customer loans and advances we have originated. Credit derivatives are used to transfer the credit risk associated with such customer loans and advances to an SPE, using an approach commonly known as synthetic securitisation by which the SPE writes CDS protection for the group.

The group as sponsor

There were no outstanding underlying exposures in securitisation transactions where the group acted as a sponsor.

The group 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 and further details are provided on page 55 to 56 of the group's *Annual Report and Accounts 2021*.

Valuation of securitisation positions

The process of valuing 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 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.

Full details of these assessments and our accounting policy on structured entities may be found in Note 35 on the group's Financial Statements of the Annual Report and Accounts 2021.

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

The group 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 the measurement basis of the financial asset, either the amortised cost or the fair value of the rights and obligations retained by the entity.

Securitisation regulatory treatment

For regulatory purposes, any reduction in RWAs that would be achieved by our own originated securitisations must satisfy section 229 (1) of the BCR. If achieved, the associated SPEs and underlying assets are not consolidated but exposures to them, including derivatives or liquidity facilities, are risk-weighted as securitisation positions.

For our securitised banking book positions, we use either the securitisation internal ratings-based approach, securitisation external ratings-based approach, securitisation standardised approach or securitisation fall-back approach to calculate the credit risk for our securitisation exposures. Securitisation positions in the trading book are under the standardised (market risk) approach, which calculates the market risk capital charge for specific risk interest rate exposures.

The group uses Standard & Poor's Rating Services, Moody's Investors Service and Fitch Ratings as the ECALs for each and all classes of securitisation exposures.

Analysis of securitisation exposures

The group's involvement in securitisation activities is as follows:

- as an investor, the group's securitisation activities mainly consisted of changes to the existing portfolio mix in the normal course of business;
- as an originator, the group securitised HK\$4,583m of additional residential mortgages in the banking book into an existing SPE.

Table 50: SEC1 – Securitisation exposures in banking book

	a	b	c	g	h	i
	Acting as originator (excluding sponsor)			Acting as investor		
	Traditional HK\$m	Synthetic HK\$m	Sub-total HK\$m	Traditional HK\$m	Synthetic HK\$m	Sub-total HK\$m
At 31 Dec 2021						
1 Retail (total) – of which:	71,424	–	71,424	37,879	–	37,879
2 <i>residential mortgage</i>	71,424	–	71,424	13,996	–	13,996
3 <i>credit card</i>	–	–	–	7,409	–	7,409
4 <i>other retail exposures</i>	–	–	–	16,474	–	16,474

Table 51: SEC2 – Securitisation exposures in trading book

		g	i
		Acting as investor	
		Traditional HK\$m	Sub-total HK\$m
At 31 Dec 2021			
1 Retail (total) – of which:		7,423	7,423
2 <i>residential mortgage</i>		4,157	4,157
4 <i>other retail exposures</i>		3,266	3,266

Table 52: SEC4 – Securitisation exposures in banking book and associated capital requirements – where AI acts as investor

	a	b	c	d	g	h	k	l	o	p
	Exposure values (by RW bands)				Exposure values (by regulatory approach)		RWAs (by regulatory approach)		Capital charges after cap	
	≤20% RW HK\$m	>20% to 50% RW HK\$m	>50% to 100% RW HK\$m	>100% to <1250% RW HK\$m	SEC-ERBA (including IAA) HK\$m	SEC-SA HK\$m	SEC-ERBA (including IAA) HK\$m	SEC-SA HK\$m	SEC-ERBA (including IAA) HK\$m	SEC-SA HK\$m
At 31 Dec 2021										
1 Total exposures	31,699	3,487	1,992	701	20,219	17,660	4,283	4,349	343	348
2 Traditional securitisation	31,699	3,487	1,992	701	20,219	17,660	4,283	4,349	343	348
3 <i>of which: securitisation</i>	31,699	3,487	1,992	701	20,219	17,660	4,283	4,349	343	348
4 <i>of which: retail</i>	31,699	3,487	1,992	701	20,219	17,660	4,283	4,349	343	348

Market risk

Overview and governance

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.

Exposures to market risk

Exposure to market risk is separated into two portfolios:

- 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.

Where appropriate, the group applies 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 profile consistent with our established risk appetite.

Market risk governance

The majority of the total VaR, trading VaR, stressed VaR ('SVaR') and incremental risk charge ('IRC') of HSBC resides in Markets and Securities Services. Markets and Securities Services manages market risk, within overall risk limits set by the group CRO and approved by the Board.

For a discussion on market risk governance and structure refer to the Annual Report and Accounts 2021.

Market risk measures

Monitoring and limiting market risk exposures

Our objective is to manage and control market risk exposures while maintaining a market risk profile consistent with our risk appetite.

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

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

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

Our VaR models use 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 change in foreign exchange rates and volatilities.
Interest rate and Credit	Risk arising from changes in the level of interest rates and credit spreads that may impact prices of interest rate and credit spread sensitive assets.
Equity	Risk arising from changes in equity prices, volatilities and dividend yields.
Commodity	Risk arising from changes in commodity prices.

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 models 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:

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

The nature of the VaR models 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; and
- VaR is calculated on the basis of exposures outstanding at the 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 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 either incorporated directly in the VaR models, 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 is included in the VaR calculation and back-testing; a stressed VaR RNIV is also computed for the risk factors considered in the VaR-based RNIV approach.

Stress-type RNIVs are also included where appropriate.

Back-testing

We validate on a daily basis the accuracy of our VaR models by back-testing them 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. A VaR model is deemed satisfactory if it experiences fewer than five profit or loss exceptions in a 250-day period.

We back-test our VaR at various levels of our group entity hierarchy. Back-testing using the regulatory hierarchy includes entities which have approval to use VaR in the calculation of market risk regulatory capital requirements.

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. 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, provide management with insights regarding the 'tail risk' beyond VaR for which HSBC's appetite is limited.

The market risk stress testing incorporates historical and hypothetical events.

Market risk under standardised approach

Table 53: MR1 – Market risk under STM approach

		a
		RWAs HK\$m
Outright product exposures		
2	Equity exposures (general and specific risk)	1,792
4	Commodity exposures	1
8	Securitisation exposures	677
9	Total at 31 Dec 2021	2,470

Market risk capital models

HSBC has permission to use a number of market risk capital models to calculate regulatory capital, namely VaR, Stressed VaR and IRC, 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 banking 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.
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.

VaR

VaR used for regulatory purposes differs from VaR used for management purpose with key differences listed below.

VaR	Regulatory	Management
Scope	Regulatory approval	Broader population of trading and banking 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. Regulatory VaR levels contribute to the calculation of market risk RWAs.

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;
- 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.

Incremental risk charge

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

IRC risk factors include credit migration, default, product basis, concentration, hedge mismatch, recovery rate and liquidity. The PDs are floored to reflect the lack of historical data on defaults and a period of stress is used to calibrate the spread changes for the relevant ratings. 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. IRC relies on a range of liquidity horizons from three months, corresponding to the regulatory floor, 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 (Standard & Poor's, Moody's and Fitch) as the starting point, in combination with internal rules for flooring. The average of the three matrices is computed for each sector. The PDs are then floored: sovereign PDs are consistent with IRB, while a 3 basis point floor is applied to corporates' and banks' PDs.

The IRC correlation matrix is derived from historical CDS spreads data, covering the latest two-year VaR period. The returns estimation window is set equal to either three or 12 months, depending on the liquidity horizon of each obligor. First, each obligor is mapped to six sector/rating categories; then the correlation matrix is obtained by computing the arithmetic mean of correlations for each category.

Analysis of VaR, stressed VaR and incremental risk charge measures

The following table is prepared in accordance with the basis of preparation used to calculate the group's market risk capital charge under the IMM approach.

Table 54: MR3 – IMM approach values for market risk exposures

		a
		HK\$m
At 31 Dec 2021		
VaR (10 day – one-tailed 99% confidence interval)¹		
1	Maximum Value	766
2	Average Value	485
3	Minimum Value	264
4	Period End	409
Stressed VaR (10 day – one-tailed 99% confidence interval)¹		
5	Maximum Value	2,536
6	Average Value	1,145
7	Minimum Value	623
8	Period End	1,656
IRC (99.9% confidence interval)		
9	Maximum Value	3,213
10	Average Value	2,827
11	Minimum Value	2,314
12	Period End	2,605

¹ The total VaR excludes Risks not in VaR ('RNIV').

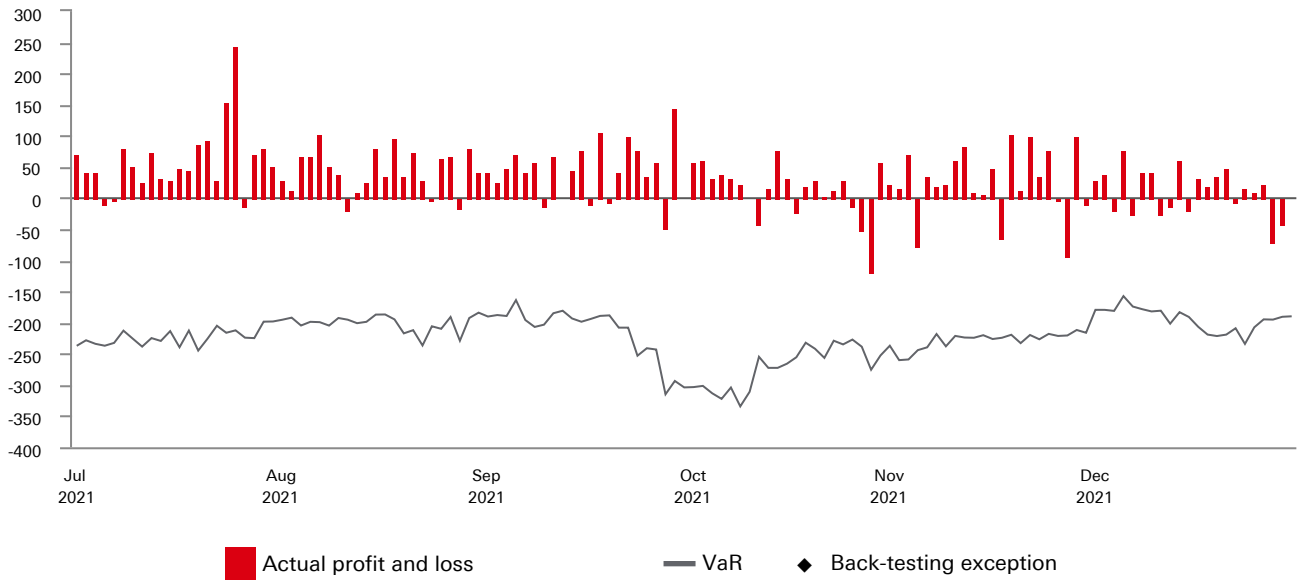
The group's trading VaR at 31 December 2021 was lower than 30 June 2021 due to a reduction in the interest rate trading VaR.

The increase in trading Stressed VaR at 31 December 2021 compared to 30 June 2021 was mainly driven by increase in interest rate positions from foreign exchange and cross currency products.

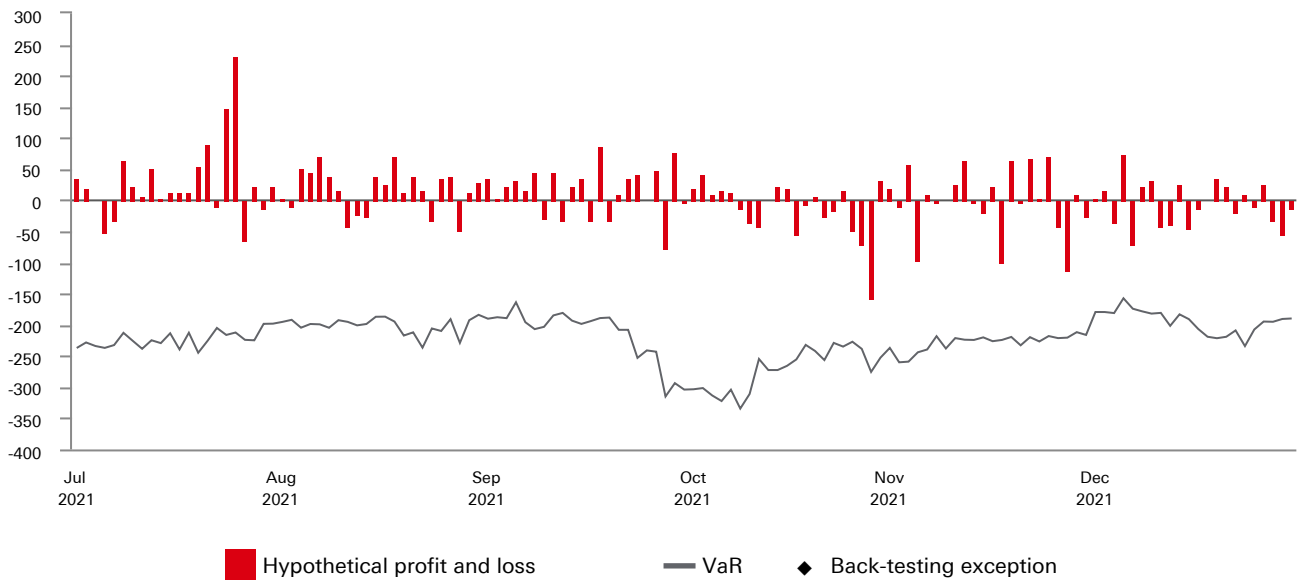
Trading IRC at 31 December 2021 was higher than 30 June 2021 due to increase in the bond trading positions.

Table 55: MR4 – Comparison of VaR estimates with gains or losses

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



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



There were no VaR back-testing loss exceptions against hypothetical and actual profit and loss in the second half of 2021.

Prudent valuation adjustment

HSBC has documented policies and maintains systems and controls for the calculation of Prudent Valuation Adjustment ('PVA'). Prudent value is an estimated conservative pricing with a 90% degree of certainty 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's methodology addresses fair value uncertainties arising from a number of sources; market price uncertainty, bid offer uncertainty, model risk, concentration, administrative cost, unearned credit spreads and investing and funding costs.

Table 56: PV1 – Prudent valuation adjustments

	a	b	c	d	f	g	h
	Equity HK\$m	Interest rates HK\$m	Foreign exchange 'FX' HK\$m	Credit HK\$m	Total HK\$m	Of which: In the trading book HK\$m	Of which: In the banking book HK\$m
1 Close-out uncertainty	290	956	37	151	1,434	1,026	408
2 – of which:							
Mid-market value	183	301	25	101	610	410	200
3 Close-out costs	24	380	6	11	421	398	23
4 Concentration	83	275	6	39	403	218	185
5 Early termination							
6 Model risk	51	90	–	–	141	142	(1)
7 Operational risks	21	75	5	12	113	91	22
8 Investing and funding costs	–	–	–	13	13	13	–
9 Unearned credit spreads	1	108	24	–	133	132	1
12 Total adjustments at 31 Dec 2021	363	1,229	66	176	1,834	1,404	430

Liquidity information

The liquidity coverage ratio ('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. The group also uses the net stable funding ratio ('NSFR') as a basis for ensuring operating entities raise sufficient stable funding to support their business activities. The NSFR requires institutions to maintain minimum amount of stable funding based on assumptions of asset liquidity.

The following table displays the LCR and NSFR levels on three reporting bases in accordance with rules 10(1)(a), 10(1)(b) and 11(1) of the BLR:

Table 57: LIQA – LCRs and NSFRs on three liquidity reporting bases

	At 31 Dec 2021	
	LCR %	NSFR %
Hong Kong Office	168.6	136.9
Unconsolidated	164.6	141.1
Consolidated	143.6	151.9

Information relating to the group's approach to liquidity risk management, including customised measurement tools and metrics, and details of collateral pools and funding sources can be found in pages 55 to 56 of the Risk Report of the group's *Annual Report and Accounts 2021*. The on- and off-balance sheet items, broken down into maturity buckets, is disclosed in Notes 26 and 27 in the group's *Annual Report and Accounts 2021*.

Table 58: LIQ1 – Liquidity coverage ratio – for category 1 institution

	Number of data points used in calculating the average value of the LCR and related components set out in this table for the quarters ended on 31 December 2021 was 74.	Basis of disclosure: consolidated	a	b
			Quarter ended 31 Dec 2021	
			Unweighted value (average) HK\$m	Weighted value (average) HK\$m
A HQLA				
1 Total HQLA				1,911,407
B Cash outflows				
2 Retail deposits and small business funding, of which:			3,495,396	329,562
3 <i>Stable retail deposits and stable small business funding</i>			285,770	8,599
4 <i>Less stable retail deposits and less stable small business funding</i>			3,209,626	320,963
5 Unsecured wholesale funding (other than small business funding) and debt securities and prescribed instruments issued by the AI, of which:			2,807,661	1,284,171
6 <i>Operational deposits</i>			902,467	221,369
7 <i>Unsecured wholesale funding (other than small business funding) not covered in row 6</i>			1,894,577	1,052,185
8 <i>Debt securities and prescribed instruments issued by the AI and redeemable within the LCR period</i>			10,617	10,617
9 Secured funding transactions (including securities swap transactions)				32,963
10 Additional requirements, of which:			713,766	266,308
11 <i>Cash outflows arising from derivative contracts and other transactions, and additional liquidity needs arising from related collateral requirements</i>			190,596	190,537
12 <i>Cash outflows arising from obligations under structured financing transactions and repayment of funding obtained from such transactions</i>			4,223	4,223
13 <i>Potential drawdown of undrawn committed facilities (including committed credit facilities and committed liquidity facilities)</i>			518,947	71,548
14 Contractual lending obligations (not otherwise covered in Section B) and other contractual cash outflows			191,847	191,847
15 Other contingent funding obligations (whether contractual or non-contractual)			2,736,929	23,001
16 Total cash outflows				2,127,852
C Cash inflows				
17 Secured lending transactions (including securities swap transactions)			549,281	85,165
18 Secured and unsecured loans (other than secured lending transactions covered in row 17) and operational deposits placed at other financial institutions			1,002,199	568,260
19 Other cash inflows			233,862	232,919
20 Total cash inflows			1,785,342	886,344
D Liquidity coverage ratio (adjusted value)				
21 Total HQLA				1,911,407
22 Total net cash outflows				1,241,508
23 LCR (%)				154.3%

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Table 59: LIQ2 – Net stable funding ratio – for category 1 institution

		a	b	c	d	e
		Quarter ended 31 Dec 2021				
		Unweighted value by residual maturity				
Basis of disclosure: consolidated		No specified term to maturity HK\$m	<6 months or repayable on demand HK\$m	6 months to < 12 months HK\$m	12 months or more HK\$m	Weighted amount HK\$m
A	Available stable funding ('ASF') item					
1	Capital:	804,250			20,369	824,619
2	Regulatory capital	801,131			16,154	817,285
3	Other capital instruments	3,119			4,215	7,334
4	Retail deposits and small business funding:		3,543,343			3,203,589
5	Stable deposits		291,607			277,027
6	Less stable deposits		3,251,736			2,926,562
7	Wholesale funding:		3,365,737	35,228	21,224	1,232,307
8	Operational deposits		910,218			455,109
9	Other wholesale funding		2,455,519	35,228	21,224	777,198
10	Liabilities with matching interdependent assets	332,044				
11	Other liabilities:	250,409	128,249	28,746	239,944	254,318
13	All other funding and liabilities not included in the above categories	250,409	128,249	28,746	239,944	254,318
14	Total ASF					5,514,833
B	Required stable funding ('RSF') item					
15	Total HQLA for NSFR purposes ¹		2,005,371			90,980
17	Performing loans and securities:	415,151	2,460,082	363,351	2,503,260	3,111,144
18	Performing loans to financial institutions secured by Level 1 HQLA		773,824	322	12,463	90,007
19	Performing loans to financial institutions secured by non-Level 1 HQLA and unsecured performing loans to financial institutions	9,450	302,568	54,412	183,677	265,718
20	Performing loans, other than performing residential mortgage, to non-financial corporate clients, retail and small business customers, sovereigns, the Monetary Authority for the account of the Exchange Fund, central banks and PSEs, of which:	136,169	1,166,380	264,929	1,203,044	1,751,350
21	With a risk-weight of less than or equal to 35% under the STC approach	231	9,563	521	13,591	13,894
22	Performing residential mortgages, of which:		21,555	20,324	1,015,525	701,848
23	With a risk-weight of less than or equal to 35% under the STC approach		20,546	19,209	912,104	612,878
24	Securities that are not in default and do not qualify as HQLA, including exchange-traded equities	269,532	195,755	23,364	88,551	302,221
25	Assets with matching interdependent liabilities	332,044				
26	Other assets:	615,709	60,000		2,152	401,457
27	Physical traded commodities, including gold	18,018				15,316
28	Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs	32,294				27,450
29	Net derivative assets	9,472				9,472
30	Total derivative liabilities before adjustments for deduction of variation margin posted	156,025				7,801
31	All other assets not included in the above categories	399,900	60,000		2,152	341,418
32	Off-balance sheet items ¹			3,338,925		27,422
33	Total RSF					3,631,003
34	Net Stable Funding Ratio (%)					151.9

Table 59: LIQ2 – Net stable funding ratio – for category 1 institution (continued)

	a	b	c	d	e
	Quarter ended				
	30 Sep 2021				
Basis of disclosure: consolidated	Unweighted value by residual maturity				Weighted amount HK\$m
	No specified term to maturity HK\$m	<6 months or repayable on demand HK\$m	6 months to < 12 months HK\$m	12 months or more HK\$m	
A Available stable funding ('ASF') item					
1 Capital:	797,831			24,483	822,314
2 <i>Regulatory capital</i>	794,716			16,342	811,058
3 <i>Other capital instruments</i>	3,115			8,141	11,256
4 Retail deposits and small business funding:		3,471,493			3,138,698
5 <i>Stable deposits</i>		287,084			272,730
6 <i>Less stable deposits</i>		3,184,409			2,865,968
7 Wholesale funding:		3,309,766	27,216	20,909	1,199,451
8 <i>Operational deposits</i>		864,430			432,215
9 <i>Other wholesale funding</i>		2,445,336	27,216	20,909	767,236
10 Liabilities with matching interdependent assets	323,004				
11 Other liabilities:	235,513	285,751	21,872	252,064	263,000
13 <i>All other funding and liabilities not included in the above categories</i>	235,513	285,751	21,872	252,064	263,000
14 Total ASF					5,423,463
B Required stable funding ('RSF') item					
15 Total HQLA for NSFR purposes ¹		2,010,087			92,594
17 Performing loans and securities:	437,221	2,309,424	391,044	2,461,099	3,068,722
18 <i>Performing loans to financial institutions secured by Level 1 HQLA</i>		652,573	3,132	10,400	77,224
19 <i>Performing loans to financial institutions secured by non-Level 1 HQLA and unsecured performing loans to financial institutions</i>	14,181	355,365	61,708	158,419	256,759
20 <i>Performing loans, other than performing residential mortgage, to non-financial corporate clients, retail and small business customers, sovereigns, the Monetary Authority for the account of the Exchange Fund, central banks and PSEs, of which:</i>	163,318	1,086,117	283,021	1,204,705	1,751,323
21 <i>With a risk-weight of less than or equal to 35% under the STC approach</i>	443	5,605	532	13,331	11,755
22 <i>Performing residential mortgages, of which:</i>		21,123	20,425	987,545	683,114
23 <i>With a risk-weight of less than or equal to 35% under the STC approach</i>		20,207	19,243	886,701	596,347
24 <i>Securities that are not in default and do not qualify as HQLA, including exchange-traded equities</i>	259,722	194,246	22,758	100,030	300,302
25 Assets with matching interdependent liabilities	323,004				
26 Other assets:	645,998	211,205		2,071	420,391
27 <i>Physical traded commodities, including gold</i>	18,003				15,302
28 <i>Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs</i>	32,198				27,368
29 <i>Net derivative assets</i>	21,081				21,081
30 <i>Total derivative liabilities before adjustments for deduction of variation margin posted</i>	165,485				8,274
31 <i>All other assets not included in the above categories</i>	409,231	211,205		2,071	348,366
32 Off-balance sheet items ¹			3,236,373		25,676
33 Total RSF					3,607,383
34 Net Stable Funding Ratio (%)					150.3

¹ The unweighted values disclosed in these rows are not required to be split by residual maturity.

Other disclosures

Interest rate exposures in the banking book

Interest rate risk in the banking book ('IRRBB') is the potential adverse impact of changes in interest rates on earnings and capital. The component of IRRBB that can be economically neutralised in the market is transferred to Markets Treasury team to manage, in accordance with internal transfer pricing rules. In its management of IRRBB, the group aims to balance the potential adverse effect of future interest rate movements on the net interest income against the cost of hedging. The monitoring of the projected net interest income ('NII') and economic value of equity ('EVE') sensitivities (' Δ ') under varying interest rate scenarios is a key part of this.

Governance and structure

Global Treasury monitors and controls interest rate risk in the banking book. This includes reviewing and challenging the global businesses prior to the release of new products and proposed behavioural assumptions used for hedging activities. Global Treasury is also responsible for maintaining and updating the transfer pricing framework, informing the Asset and Liability Committee ('ALCO') of the group's overall banking book interest rate risk exposure and managing the balance sheet in conjunction with Markets Treasury.

The ALCO defines each operating entity's transfer pricing curve and reviews and approves the transfer pricing policy, including behavioural assumptions used for products where there is either no defined maturity or customer optionality exists.

The ALCO is also responsible for monitoring and reviewing each entity's overall structural interest rate risk position. Interest rate behavioural assumptions policies are formulated in line with the Group's behavioural assumptions policies and approved at least annually by local ALCOs. Banking book assets and liabilities are transferred to Markets Treasury based on their repricing and maturity characteristics.

Markets Treasury manages the banking book interest rate positions transferred to it within the Market Risk limits.

Sensitivity of economic value of equity

An Δ EVE is the extent to which the EVE will change due to a pre-specified movement in interest rates (six interest rate shock scenarios prescribed by the HKMA), where all other economic variables are held constant. Variations in market interest rates can affect the economic value of assets, liabilities and off-balance sheet positions. The economic value of an instrument represents an assessment of the present value of its expected net cash flows, discounted to reflect market rates. The economic value perspective reflects this sensitivity. It provides a more comprehensive view of the potential long-term effects of changes in interest rates.

Sensitivity of net interest income

Δ NII is the sensitivity of expected net interest income under varying interest rate scenarios, where all other economic variables are held constant. The sensitivity of net interest income reflects the bank's sensitivity of earnings due to changes in market interest

rates. Based on the reported interest rate repricing positions in the Interest Rate Risk Return, the impact on earnings is assessed over the next 12 months using the interest rate shock scenarios prescribed by the HKMA.

The Δ EVE and Δ NII shown in Table 60 are indicative and based on scenarios and assumptions prescribed by the HKMA under its completion instructions for the Return of Interest Rate Risk in the banking book, which is completed and reported quarterly on a consolidated basis.

Key modelling and parametric assumptions used in calculating Δ EVE and Δ NII in Table 60 include:

- a. for Δ EVE, commercial margins and other spread components have been excluded from the cash flows used in the computation and discount rate used;
- b. all the positions captured are assumed to run to maturity and slotted into the appropriate time bands according to the earliest interest repricing date (as per MA(BS)12A) including for non-maturity deposits; and
- c. no prepayment or early redemption risk is assumed as the bank does not have material long term fixed rate positions, the majority of loans are on a floating basis and the average term for fixed rate deposits is one to three months, therefore the risk is immaterial.

HSBC uses an internal measurement system ('IMS') to generate Δ EVE for internal assessment of capital adequacy which is different from the modelling assumptions prescribed for this disclosure, however, the cumulative impact on the quantification of economic value of equity sensitivity is small. This includes:

- a. behaviouralisation of non-maturity products, the extent of which can be driven by:
 - i. the amount of the current balance that can be assessed as stable under business-as-usual conditions; and
 - ii. for managed rate balances the historic market interest rate re-pricing behaviour observed; or
 - iii. for non-interest bearing balances the duration for which the balance is expected to remain under business-as-usual conditions. This assessment is often driven by the re-investment tenors available to Markets Treasury to neutralise the risk through the use of fixed rate government bonds or interest rate derivatives, and for derivatives the availability of cash flow hedging capacity.
- b. internal measurements consider aggregated results of all currencies and not only material currencies as prescribed by the HKMA under its completion instruction for the Return of Interest Rate Risk in the banking book (MA(BS)12A);
- c. negative rate flooring is set at -1% for the overnight tenor to 0% for 20-year tenor, unlike the modelling assumptions prescribed under this disclosure which is set at -2% for all currencies; and
- d. economic value gains weighted 50% and losses weighted 100% under internal measurement unlike the modelling assumptions for this disclosure where economic value gains are weighted at 0%.

The average and the longest repricing maturity for non-maturity deposits ('NMDs') in 2021 was one day.

Quantitative information on interest rate risk in banking book

The worst case scenario for change in the economic value of equity is the 'Parallel up' scenario with a specific size of interest rate shock for each currency. The major contributor to the change in economic value of equity is from the net gap positions for USD and CNY currencies, mainly due to deployment of the increased commercial surplus, partly offset by reduction in risk of existing longer term positions across HKD, AUD and other currencies.

The scenario with the most adverse impact of interest rate movements from an earnings perspective under the supervisory prescribed interest rate shock scenarios over the next twelve months is the 'Parallel up' scenario. The increase in net interest income sensitivity year-on-year is mainly due to higher total balances from customer accounts.

Table 60: IRRBB1 – Quantitative information on interest rate risk in banking book

	a		b		c		d	
	ΔEVE		ΔNII					
	31 Dec 2021	31 Dec 2020	31 Dec 2021	31 Dec 2020	31 Dec 2021	31 Dec 2020	31 Dec 2021	31 Dec 2020
	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
1 Parallel up	33,026	22,428	24,657	17,553				
2 Parallel down	–	–	(24,477)	(17,887)				
3 Steepener	1,350	–						
4 Flattener	12,896	12,375						
5 Short rate up	24,371	19,326						
6 Short rate down	–	–						
7 Maximum	33,026	22,428	24,657	17,553				
Period	31 Dec 2021		31 Dec 2020					
8 Tier 1 capital	530,701		555,553					

Mainland activities

The analysis of mainland activities is based on the categories of non-bank counterparties and the type of direct exposures defined by the HKMA under the BDR with reference to the HKMA's Return of Mainland Activities – (MA(BS)20), which includes the mainland exposures extended by the Bank's Hong Kong offices and wholly-owned banking subsidiaries in mainland China.

Table 61: Mainland activities

		On-balance sheet exposure	Off-balance sheet exposure	Total exposures
		HK\$m	HK\$m	HK\$m
At 31 Dec 2021				
Types of counterparties				
1	Central government, central government-owned entities and their subsidiaries and joint ventures ('JVs')	223,228	26,936	250,164
2	Local governments, local government-owned entities and their subsidiaries and JVs	90,410	6,040	96,450
3	People's Republic of China ('PRC') nationals residing in mainland China or other entities incorporated in mainland China and their subsidiaries and JVs	469,614	77,307	546,921
4	Other entities of central government not reported in item 1 above	13,894	4,814	18,708
5	Other entities of local governments not reported in item 2 above	7,935	1,378	9,313
6	PRC nationals residing outside mainland China or entities incorporated outside mainland China where the credit is granted for use in mainland China	29,407	4,763	34,170
7	Other counterparties where the exposures are considered by the reporting institution to be non-bank mainland China exposures	53,052	4,883	57,935
Total		887,540	126,121	1,013,661
Total assets after provision		6,069,122		
On-balance sheet exposures as percentage of total assets		14.62%		

International claims

The group's country risk exposures in the table below are prepared in accordance with the HKMA Return of International Banking Statistics – (MA(BS)21) guidelines. International claims are on-balance sheet exposures to counterparties based on the location of the counterparties, after taking into account the transfer of risk, and represent the sum of cross-border claims in all currencies and local claims in foreign currencies.

The table shows claims on individual countries and territories or areas, after recognised risk transfer, amounting to not less than 10% of the group's total international claims.

Table 62: International claims

	Banks	Official sector	Non-bank financial institutions	Non-financial private sector	Total
	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
At 31 Dec 2021					
Developed countries	488,782	427,010	453,229	526,735	1,895,756
– of which: United States	41,532	217,883	214,271	192,501	666,187
Offshore centres	84,290	83,282	148,651	520,510	836,733
– of which: Hong Kong	58,326	4,090	83,747	346,089	492,252
Developing Asia and Pacific	514,277	178,629	88,274	488,412	1,269,592
– of which: Mainland China	391,248	129,857	54,088	288,827	864,020

Foreign currency positions

The group had the following non-structural foreign currency positions that were not less than 10% of the net non-structural positions in all foreign currencies at 31 December 2021:

Table 63: Non-structural foreign currency positions

HK\$m equivalent	United States Dollars	Chinese Renminbi	Australian dollars
	HK\$m	HK\$m	HK\$m
At 31 Dec 2021			
Spot assets	2,303,553	954,088	624,005
Spot liabilities	(3,014,777)	(882,341)	(538,656)
Forward purchases	10,483,349	2,118,968	1,120,507
Forward sales	(9,757,578)	(2,194,021)	(1,204,658)
Net options positions	(13,567)	9,730	309
Net long (net short) position¹	980	6,424	1,507

¹ The net options positions reported above are calculated using the delta-weighted positions of the options contracts.

Remuneration

Remuneration Strategy

Our performance and pay strategy underpinned by our Group's Remuneration Framework and principles aims to competitively reward long-term sustainable performance. We aim to do this by attracting, motivating and retaining the very best people, regardless of gender, ethnicity, age, disability or any other factor unrelated to performance or experience. The strategy supports the long-term interests of our stakeholders, which includes the customers and the communities we serve, our shareholders and our regulators. The strategy is underpinned by the below principles designed to support a fair and appropriate pay and performance approach, whilst recognizing the need for flexibility in a hybrid workplace. These include:

- Ensuring that the decisions made are fair, appropriate and free from bias. Managers are encouraged to challenge their assessment by questioning whether they were objective and based on facts;
- Supporting a culture of continuous feedback through manager and employee empowerment and creating a culture where employees can fulfil their potential, gain new skills and develop their careers for the future;
- To deliver a balanced, simple and transparent total reward package that supports employee well-being; and
- Compliance with relevant regulation across all of our countries and territories.

Based on these principles and promoting sound and effective risk management whilst supporting business objectives, our approach to determining remuneration is based on the following objectives:

- Offering a competitive total reward package. This includes market competitive fixed pay levels for the role, skills and experience required by the business, whilst ensuring our employees are able to meet their basic day-to-day needs;
- Maintaining an appropriate balance between fixed pay, variable pay and employee benefits, taking into consideration an employee's seniority, role, individual performance and the market. We are informed, but not driven by market position and practice;
- Ensuring variable pay is determined against a balanced scorecard of relevant financial and non-financial objectives including appropriate risk and compliance objectives, differentiated by performance and adherence to the HSBC values;
- Offering employee benefits that support the mental, physical and financial health of a diverse workforce, are appropriate at the local market level and support HSBC's commitment to employee well-being;
- Promoting employee share ownership through variable pay deferral or voluntary enrolment in an all employee share plan;

- Linking reward packages to performance and behaviour with no bias towards an individual's ethnicity, gender, age, or any other characteristic; and
- Providing career planning tools to help employees thinking about future roles and capability they require, and empowering managers to make appropriate decisions at key stages during the pay review process by providing them with clear guidance materials to help their decision making.

Please refer to the HSBC remuneration practices and governance at www.hsbc.com/who-we-are/leadership-and-governance/remuneration and the Pillar 3 Remuneration Disclosures in the Director's Remuneration Report section of the Annual Report and Accounts of HSBC Holdings plc for details of the major design characteristics of the remuneration strategy including alignment between risk and reward.

Governance and role of relevant stakeholders

The Group Remuneration Committee is responsible for setting the principles, parameters and governance framework for the Group's remuneration strategy applicable to all Group employees, which is adopted by the Bank. The members of the Bank's Remuneration Committee are independent non-executive Directors of the Bank Board.

The Bank as an authorised institution under the Banking Ordinance is required by HKMA Supervisory Policy Manual CG-5 'Guideline on a Sound Remuneration System' (the Guideline) to assess whether their existing remuneration systems and policy are in line with the principles in the Guideline, independently of management. This review is undertaken annually. For the review completed in April 2021, Deloitte LLP confirmed that the Bank's remuneration strategy as adopted from the Group strategy is consistent with the principles set out in the Guideline. Deloitte has been commissioned to undertake the review for 2021/2022.

Senior management and key personnel

Senior management is defined as those persons responsible for oversight of the group's strategy, activities or material business lines. This includes the Executive Directors, Executive Committee members, Chief Executive, Alternative Chief Executive, Head of Control Functions (Audit, Risk, Finance, Legal and Compliance) and Managers as registered with the HKMA. There were 27 members of senior management during 2021.

Key personnel is defined as individual employees whose duties or activities involve the assumption of material risk or the taking on of material exposures on behalf of the group. Under the provisions of the UK Prudential Regulation Authority's ('PRA') Remuneration Rules, HSBC is required to identify individuals who will be considered as 'Identified Staff and Material Risk Takers' (collectively referred to as 'Material Risk Takers' or 'MRTs') based on the qualitative and quantitative criteria specified in the Regulatory Technical Standard ('RTS') issued by the European Banking Authority ('EBA'). Based on the criteria applicable to the Group, the identified number of MRTs, and in turn key personnel, in 2021 were 289 members.

Table 64: REM1 – Remuneration awarded during financial year

		a	b
		2021	
Remuneration amount and quantitative information		Senior Management	Key personnel
Fixed remuneration¹			
1	Number of employees	27	289
2	Total fixed remuneration (HK\$m)	235	1,225
3	Of which: cash-based	235	1,225
Variable remuneration²			
9	Number of employees ³	27	289
10	Total variable remuneration (HK\$m)	266	1,208
11	Of which: cash-based	120	585
12	Of which: deferred	69	291
13	Of which: shares or other share-linked instruments	146	623
14	Of which: deferred	94	331
17	Total remuneration (HK\$m)	501	2,433

1 Fixed remuneration includes base salary, cash allowance, pension contribution and international assignment benefits where applicable.

2 The forms of variable remuneration and the proportion deferred are based on the seniority, role and responsibilities of employees and their level of total variable compensation.

3 Number of employees disclosed above includes leavers who may have zero variable pay.

Total remuneration has increased from prior year as a result of senior management changes during the year, a reflection of the increase in variable remuneration awarded for 2021, and fixed pay increases made during the year.

Table 65: REM2 – Special payments

		e	f
		2021	
Special payments		Number of employees	Total amount HK\$m
2	Key personnel	15	49

Table 66: REM3 – Deferred remuneration

		a	b	d	e
		2021			
Deferred and retained remuneration		Total amount of outstanding deferred remuneration	Of which: Total amount of outstanding deferred and retained remuneration exposed to ex post explicit and/or implicit adjustment	Total amount of amendment during the year due to ex post implicit adjustments	Total amount of deferred remuneration paid out in the financial year
Footnotes		HK\$m	HK\$m	HK\$m	HK\$m
1	Senior management	251	251	17	87
2	Cash	125	125	–	46
3	Shares	126	126	17	41
6	Key personnel	959	959	74	379
7	Cash	446	446	–	189
8	Shares	512	512	74	187
10	Other ¹	1	1	–	3
11	Total	1,210	1,210	91	466

1 Other deferred and retained remuneration for key personnel refers to index cash awards.

Amount of outstanding deferred remuneration and amount of deferred remuneration paid out in the financial year is lower compared to prior year as a reflection of reduced variable remuneration awards for year 2020.

Other information

Abbreviations

The following abbreviated terms are used throughout this document.

Currencies		Hong Kong	The Hong Kong Special Administrative Region of the People's Republic of China
HK\$m	Millions of Hong Kong dollars	HQLA	High-quality liquid assets
HK\$b	Billions (thousands of millions) of Hong Kong dollars	HSBC	HSBC Holdings together with its subsidiary undertakings
US\$m	Millions of United States dollars	HVCRE	High volatility commercial real estate
A		I	
AI	Authorised institution	IAA	Internal assessment approach
ALCM	Asset, Liability and Capital Management	IMM ¹	Internal Models Method
ALCO	Asset and Liability Management Committee	IMM(CCR)	Internal models (counterparty credit risk)
ASF	Available stable funding	IMS	Internal measurement system
AT1	Additional tier 1	IPO	Initial public offerings
AVA	Additional valuation adjustments	IPRE	Income producing real estate
B		IRB ¹	Internal ratings-based approach
BCBS	Basel Committee on Banking Supervision	IRRBB	Interest rate risk in the banking book
BCR	Banking (Capital) Rules	IRC	Incremental risk charge
BDR	Banking (Disclosure) Rules	J	
BLR	Banking (Liquidity) Rules	JCCyB	Jurisdictional countercyclical capital buffer
BSC	Basic approach	JVs	Joint ventures
C		L	
CCF	Credit conversion factor	LAC	Loss-absorbing capacity
CCP ¹	Central counterparty	LAC Rules	Financial Institutions (Resolution) (Loss-absorbing Capacity Requirements - Banking Sector) Rules
CCR ¹	Counterparty credit risk	LCR ¹	Liquidity Coverage Ratio
CCyB ¹	Countercyclical capital buffer	LGD ¹	Loss given default
CDS ¹	Credit default swap	LR	Leverage ratio
CEM	Current exposure method	M	
CET1 ¹	Common equity tier 1	MOF	Model Oversight Forum
CIS	Collective investment scheme	MRC	Regional Model Risk Committee
CMB	Commercial Banking, a global business	MRTs	Identified Staff and Material Risk Takers
CRE ¹	Commercial real estate	MSRs	Mortgage servicing rights
CRM ¹	Credit risk mitigation/mitigant	N	
CRO	Chief Risk Officer	NII	Net interest income
CRR ¹	Customer risk rating	NSFR ¹	Net stable funding ratio
CSA	Credit Support Annex	NMDs	Non-maturity and deposits
CVA ¹	Credit valuation adjustment	O	
D		OBS	Off-balance sheet
D-SIB	Domestic systemically important authorised institution	OTC ¹	Over-the-counter
DTAs	Deferred tax assets	P	
E		PD ¹	Probability of default
EAD ¹	Exposure at default	PF	Project finance
EBA	European Banking Authority	PFE	Potential future exposure
ECA	Export Credit Agency	PIT	Point-in-Time
ECAI	External Credit Assessment Institution	PRA ¹	Prudential Regulation Authority
ECL ¹	Expected credit loss	PRC	People's Republic of China
EL	Expected loss	PSE	Public sector entities
EPE	Effective expected positive exposures	PVA	Prudent valuation adjustments
EVE	Economic value of equity	Q	
F		QRRE	Qualifying revolving retail exposures
FIRO	Financial Institutions (Resolution) Ordinance	R	
FSB	Financial Stability Board	RAS	Risk appetite statement
FX	Foreign exchange	RC	Replacement cost
G		RMM	Risk Management Meeting
GBM	Global Banking and Markets, a global business	RMOF	Retail Banking and Wealth Management Risk Model Oversight Forum
GMRC	Global model risk committee	RNIV	Risks not in VaR
Group	HSBC Holdings together with its subsidiary undertakings	RSF	Required stable funding
group	The Hongkong and Shanghai Banking Corporation Limited together with its subsidiary undertakings	RTS	Regulatory Technical Standard
G-SIB ¹	Global systemically important authorised institution	RW	Risk weight
H		RWA ¹	Risk-weighted asset/risk-weighted amount
HAHO	HSBC Asia Holdings Limited		
HKFRS	Hong Kong Financial Reporting Standards		
HKMA	Hong Kong Monetary Authority		

S	
SA-CCR	Standardised (counterparty credit risk) approach
SEC-ERBA	Securitisation external ratings-based approach
SEC-FBA	Securitisation fall-back approach
SEC-IRBA	Securitisation internal ratings-based approach
SEC-SA	Securitisation standardised approach
SFT	Securities Financing Transactions
Δ	Sensitivity
SMEs	Small-and-medium sized enterprises
SPE ¹	Special Purpose Entity
SRW	Supervisory risk weight
STC	Standardised (credit risk) approach
STM	Standardised (market risk) approach
STO	Standardised (operational risk) approach
SVaR	Stressed Value at risk
S&P	Standard and Poor's rating agency
T	
T1	Tier 1
T2	Tier 2
TC	Total regulatory capital
TLAC ¹	Total Loss-absorbing Capacity
TTC	Through-The-Cycle
V	
VaR ¹	Value at risk
W	
WPB	Wealth and Personal Banking
WMOF	Wholesale Model Oversight Forum

¹ Full definition included in the Glossary published on HSBC website www.hsbc.com

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