

The Hongkong and Shanghai Banking Corporation Limited

**Banking Disclosure Statement at 31 December 2019
(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 2019*. The group's *Annual Report and Accounts 2019*, 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 2019 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 18 February 2020. 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 2019*, 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 2019 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 2019*. 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 2019</i> :	References:
• BDR Section 16FJ – LIQA : Liquidity risk management	Page 40-41
• 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 43
• BDR Section 44 : Assets used as security	Note 12
• BDR Section 46 – The general disclosure of the major business activities and product lines	Page 8, Note 2 & Note 32
• BDR Section 52 – Corporate governance	Page 3-7

Loss-absorbing Capacity Disclosures

The LAC Rules in Hong Kong were implemented in December 2018. Following classification under these rules by the HKMA, entities in Hong Kong are required to issue loss-absorbing capacity ('LAC') instruments that can be written down or converted in the event of failure.

On 1 April 2019, HSBC Asia Holdings Limited ('HAHO'), the immediate parent company of the Bank, was classified as a resolution entity by the HKMA. At the same time, both the Bank and Hang Seng Bank Limited were classified as material subsidiaries. Following this classification, both HAHO and the group are required to publish LAC disclosures in accordance with the LAC Rules from 30 September 2019, subsequent to conformance with the LAC requirements from 1 July 2019. The basis of calculating the group's LAC and RWAs is in accordance with the LAC Rules. The disclosures are made in accordance with the standard disclosure templates as issued by the HKMA.

The group's LAC disclosures are included as part of this Banking Disclosure Statement while HAHO's LAC disclosures are included as part of the HSBC Group's disclosures which can be found in the Investors section of the Group's website, <https://www.hsbc.com>. The location of HAHO's LAC disclosure can be found in the following table:

Location of HAHO's LAC disclosures in Q419:
KM2 – Key metrics of the resolution groups
• Page 20 of the Group's Pillar 3 Disclosures
TLAC1 – TLAC composition
• Page 21 of the Group's Pillar 3 Disclosures
TLAC3 – HSBC Asia Holdings Limited Creditor Ranking
• Page 23 of the Group's Pillar 3 Disclosures
CCA(A) – Main features of the regulatory capital instruments and non-capital LAC debt instruments
• A standalone document which can be found in : https://www.hsbc.com/investors/fixed-income-investors/regulatory-capital-securities

Table 1: KM1 – Key prudential ratios

		a	b	c	d	e
		At				
	Footnotes	31 Dec 2019	30 Sep 2019	30 Jun 2019	31 Mar 2019	31 Dec 2018
Regulatory capital (HK\$m)						
1	Common Equity Tier 1 ('CET1')	491,641	482,522	480,610	472,760	463,774
2	Tier 1	537,460	528,254	526,297	510,575	501,503
3	Total capital	598,934	590,912	589,349	572,506	557,180
Risk-weighted assets ('RWAs') (HK\$m)						
4	Total RWAs	2,851,380	2,905,034	2,897,902	2,881,842	2,813,912
Risk-based regulatory capital ratios (as a percentage of RWA)						
5	CET1 ratio (%)	17.2	16.6	16.6	16.4	16.5
6	Tier 1 ratio (%)	18.8	18.2	18.2	17.7	17.8
7	Total capital ratio (%)	21.0	20.3	20.3	19.9	19.8
Additional CET1 buffer requirements (as a percentage of RWA)						
8	Capital conservation buffer requirement (%)	2.500	2.500	2.500	2.500	1.875
9	Countercyclical capital buffer requirement (%)	1.02	1.26	1.27	1.26	0.96
10	Higher loss absorbency requirements (%) (applicable only to G-SIBs or D-SIBs)	2.500	2.500	2.500	2.500	1.875
11	Total AI-specific CET1 buffer requirements (%)	6.02	6.26	6.27	6.26	4.71
12	CET1 available after meeting the AI's minimum capital requirements (%)	12.7	12.1	12.1	11.7	11.8
Basel III leverage ratio						
13	Total leverage ratio ('LR') exposure measure (HK\$m)	8,078,204	8,039,868	8,136,588	7,968,614	7,741,301
14	LR (%)	6.7	6.6	6.5	6.4	6.5
Liquidity Coverage Ratio ('LCR')						
15	Total high quality liquid assets ('HQLA') (HK\$m)	1,619,870	1,527,910	1,583,650	1,663,852	1,566,715
16	Total net cash outflows (HK\$m)	990,793	1,021,983	1,074,261	1,106,393	974,311
17	LCR (%)	163.5	149.7	147.5	150.5	161.0
Net Stable Funding Ratio ('NSFR')						
18	Total available stable funding (HK\$m)	4,996,772	4,907,163	4,902,835	4,829,714	4,789,003
19	Total required stable funding (HK\$m)	3,427,503	3,452,888	3,379,361	3,313,491	3,198,246
20	NSFR (%)	145.8	142.1	145.1	145.8	149.7

- 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 At 4Q 2019, the JCCyB of Hong Kong used in the calculation of the CCyB buffer requirement was 2.0%, which was reduced from 2.5% at 3Q 2019 in accordance with the announcement made by the HKMA on 14 October 2019. The JCCyB of other countries used in the calculation of the CCyB requirement ranged from 0% to 2.5%.
- 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 Liquidity Coverage Ratios 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 Net Stable Funding Ratio 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.

Overview of risk management

Our risk management framework

We use an enterprise risk management framework across the organisation and across all risk types. It is underpinned by our risk culture and is reinforced by the HSBC Values and our Global Standards programme.

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 12 of the group's *Annual Report and Accounts 2019*. The management and mitigation of principal risks facing the group is described in our top and emerging risks on page 15 of the group's *Annual Report and Accounts 2019*.

Risk culture

HSBC has long recognised the importance of a strong risk culture. Our risk culture is reinforced by the HSBC Values. 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 risk culture is a key responsibility of our senior executives.

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

Risk governance

The Board has ultimate responsibility for the effective management of risk and approves HSBC's risk appetite. It is advised 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, 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 the group's 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 aggregate level and risk types that we are 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 approved biannually by the Board on the advice of the group's Risk Committee.

The group's 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 the top and emerging risks report and stress testing, to ensure consistency in risk management. Information about our risk management tools is set out on page 13 of the group's *Annual Report and Accounts 2019*. Details on the group's overarching risk appetite are set out on page 12 of the group's *Annual Report and Accounts 2019*.

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.

Global Risk and the group's Risk functions

We have a dedicated Global Risk function, headed by the Group Chief Risk Officer, 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 all risks to our operations. 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 Chief Risk Officer, is independent from the global businesses and responsible for the group's risk management framework.

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 the group's Audit Committee, conduct an annual review of the effectiveness of our system of risk management and internal control. The group's Risk Committee and the group's Audit Committee receive confirmation that executive management has taken or is taking the necessary actions to remedy any failings or weaknesses identified through the operation of our framework of controls.

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 at Group level are applied throughout global businesses and major operating subsidiaries through a common operating model for integrated risk management and control. This model sets out the respective responsibilities of Group, global business, region and country level risk functions in respect of such matters as 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

The Global Risk and the group's Risk functions 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 Oversight Committee ('MOC') is the primary committee responsible for the oversight of Model Risk globally within HSBC. It serves an important role in providing strategic direction on the management of models and their associated risks to HSBC's businesses globally and is an essential element of the governance structure for model risk management. Global MOC is supported by Functional MOCs at the global and regional levels which are responsible for model risk management within their functional areas, including wholesale credit risk, market risk, retail risk, and finance.

Models are also subject to an independent validation process and governance oversight by the Model Risk Management team within Global Risk. The team provides robust challenge to the modelling approaches used across the Group. It also ensures that the performance of those models is transparent and that their limitations are visible to key stakeholders. The development and use of data and models to meet local requirements are the responsibility of global businesses or functions, as well as regional and/or local entities under the governance of their own management, subject to overall Group policy and oversight.

Linkage to the Annual Report and Accounts 2019

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 on the financial statements in the group's *Annual Report and Accounts 2019*.

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 Banking (Capital) Rules ('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 certain thresholds, 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\$61,075m 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 both the accounting scope of consolidation and the regulatory scope of consolidation, but where the method of consolidation differs at 31 December 2019.

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 2019.

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 2019, the effect of this requirement is to reduce the amount of reserves which can be distributed to shareholders by HK\$23,979m.

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

	Principal activities	At 31 Dec 2019	
		Total assets HK\$m	Total equity HK\$m
HSBC Broking Futures (Hong Kong) Ltd	Futures broking	4,522	605
HSBC Broking Services (Asia) Ltd and its subsidiaries	Broking services	10,917	2,545
HSBC Corporate Advisory (Malaysia) Sdn Bhd	Financial services	9	8
HSBC Corporate Finance (Hong Kong) Ltd	Financial services	19	16
HSBC Global Asset Management Holdings (Bahamas) Ltd	Asset management	131	128
HSBC Global Asset Management (Hong Kong) Ltd	Asset management	899	526
HSBC Global Asset Management (Japan) K.K.	Asset management	241	130
HSBC Global Asset Management (Singapore) Ltd	Asset management	79	42
HSBC Insurance (Asia-Pacific) Holdings Ltd and its subsidiaries	Insurance	475,180	28,768
HSBC InvestDirect (India) Ltd and its subsidiaries	Financial services	1,016	693
HSBC Investment Funds (Hong Kong) Ltd	Asset management	492	262
HSBC Qianhai Securities Ltd	Securities services	1,710	1,478
HSBC Securities (Asia) Ltd and its subsidiary	Broking services	26	26
HSBC Securities (Japan) Ltd	Broking services	164,893	1,706
HSBC Securities (Singapore) Pte Ltd	Broking services	195	75
HSBC Securities Brokers (Asia) Ltd	Broking services	6,675	3,683
Hang Seng Insurance Co. Ltd and its subsidiaries	Insurance	148,870	12,332
Hang Seng Investment Management Ltd	Asset management	1,194	1,140
Hang Seng Investment Services Ltd	Investment services	9	9
Hang Seng Qianhai Fund Management Co. Ltd	Asset management	370	357
Hang Seng Securities Ltd	Broking services	3,030	899

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 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, securitisation external ratings-based approach, securitisation standardised approach or securitisation fall-back approach to determine credit risk for its banking book securitisation exposures. For counterparty credit risk, the group uses both the current exposure method and an internal models approach to calculate its default risk exposures. For market risk,

the group uses an internal models 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 internal models 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) approach for calculating other market risk positions, as well as trading book securitisation exposures, and the standardised (operational risk) 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 2019		
	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 sight balances at central banks	202,746	202,352	
Items in the course of collection from other banks	21,140	21,140	
Hong Kong Government certificates of indebtedness	298,944	298,944	
Trading assets	622,761	622,583	
<i>of which: significant LAC investments in financial sector entities</i>		12	1
Derivatives	280,642	280,746	
Financial assets designated and otherwise mandatorily measured at fair value through profit or loss	153,511	7,384	
Reverse repurchase agreements – non-trading	422,333	265,872	
Loans and advances to banks	328,905	319,286	
Loans and advances to customers	3,720,875	3,715,691	
<i>of which: impairment allowances eligible for inclusion in Tier 2 capital</i>		(4,193)	2
Financial investments	1,900,298	1,498,626	
Amounts due from Group companies	87,632	216,837	
<i>of which: significant LAC investments in financial sector entities</i>		6,854	3
Investments in subsidiaries	–	16,864	
Interests in associates and joint ventures	151,917	148,566	
<i>of which: goodwill</i>		3,687	4
<i>of which: significant LAC investments in financial sector entities exceeding 10% threshold</i>		105,426	5
Goodwill and intangible assets	81,643	18,641	
<i>of which: goodwill</i>		4,938	6
<i>of which: intangible assets</i>		13,703	7
Property, plant and equipment	137,930	131,143	
Deferred tax assets	2,179	2,105	
<i>of which: deferred tax assets net of related tax liabilities</i>		2,214	8
<i>of which: deferred tax liabilities related to goodwill</i>		(91)	9
<i>of which: deferred tax liabilities related to intangible assets</i>		(18)	10
Prepayments, accrued income and other assets	248,258	150,932	
<i>of which: defined benefit pension fund net assets</i>		50	11
Total assets	8,661,714	7,917,712	

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

	a	b	c
	At 31 Dec 2019		
	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	298,944	298,944	
Items in the course of transmission to other banks	25,576	25,576	
Repurchase agreements – non-trading	106,396	106,395	
Deposits by banks	179,819	179,819	
Customer accounts	5,432,424	5,430,875	
Trading liabilities	87,532	87,532	
Derivatives	292,231	292,387	
<i>of which: gains and losses due to changes in own credit risk on fair valued liabilities</i>		(340)	12
Financial liabilities designated at fair value	160,291	123,267	
<i>of which: gains and losses due to changes in own credit risk on fair valued liabilities</i>		(7)	13
Debt securities in issue	106,933	106,619	
Retirement benefit liabilities	2,595	2,595	
Amounts due to Group companies	311,111	293,914	
<i>of which: qualifying Tier 2 capital instruments</i>		14,839	14
<i>of which: gains and losses due to changes in own credit risk on fair valued liabilities</i>		2,360	15
Accruals and deferred income, other liabilities and provisions	203,252	143,599	
Liabilities under insurance contracts	528,760	–	
Current tax liabilities	12,614	12,087	
Deferred tax liabilities	29,889	19,577	
<i>of which: deferred tax liabilities related to goodwill</i>		5	16
<i>of which: deferred tax liabilities related to intangible assets</i>		2,082	17
<i>of which: deferred tax liabilities related to defined benefit pension fund net assets</i>		5	18
Subordinated liabilities	4,066	4,066	
<i>of which: portion eligible for Tier 2 capital instruments, subject to phase-out arrangements</i>		3,114	19
Total liabilities	7,782,433	7,127,252	
Equity			
Share capital	172,335	172,335	
<i>of which: portion eligible for inclusion in CET1 capital</i>		170,881	20
<i>of which: revaluation reserve capitalisation issue</i>		1,454	21
Other equity instruments	44,615	44,615	
<i>of which: qualifying AT1 capital instruments</i>		44,615	22
Other reserves	133,099	128,680	
<i>of which: fair value gains arising from revaluation of land and buildings</i>		70,077	24
<i>of which: cash flow hedging reserves</i>		(41)	25
<i>of which: valuation adjustment</i>		15	26
Retained earnings	464,629	390,543	
<i>of which: regulatory reserve for general banking risks</i>		23,979	28
<i>of which: regulatory reserve eligible for inclusion in Tier 2 capital</i>		11,958	29
<i>of which: fair value gains arising from revaluation of land and buildings</i>		4,549	30
<i>of which: valuation adjustment</i>		1,539	31
Total shareholders' equity	814,678	736,173	
Non-controlling interests	64,603	54,287	
<i>of which: portion allowable in CET1 capital</i>		27,459	32
<i>of which: portion allowable in Additional Tier1 ('AT1') capital</i>		1,204	33
Total equity	879,281	790,460	
Total Liabilities and equity	8,661,714	7,917,712	

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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
Footnotes	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
Assets							
Cash and balances at central banks	202,746	202,352	202,352	–	–	–	–
Items in the course of collection from other banks	21,140	21,140	21,140	–	–	–	–
Hong Kong Government certificates of indebtedness	298,944	298,944	298,944	–	–	–	–
Trading assets	² 622,761	622,583	–	26,733	–	622,583	–
Derivatives	² 280,642	280,746	–	280,746	–	280,746	–
Financial assets designated at fair value	153,511	7,384	4,935	2,447	–	–	2
Reverse repurchase agreements – non-trading	422,333	265,872	–	265,872	–	–	–
Loans and advances to banks	328,905	319,286	319,111	175	–	–	–
Loans and advances to customers	3,720,875	3,715,691	3,674,167	309	38,909	–	2,306
Financial investments	1,900,298	1,498,626	1,497,529	–	–	–	1,097
Amounts due from Group companies	² 87,632	216,837	77,816	126,610	–	2,056	12,337
Investments in subsidiaries	–	16,864	–	–	–	–	16,864
Interests in associates and joint ventures	151,917	148,566	59,707	–	–	–	88,859
Goodwill and intangible assets	³ 81,643	18,641	–	–	–	–	16,554
Property, plant and equipment	137,930	131,143	131,143	–	–	–	–
Deferred tax assets	2,179	2,105	–	–	–	–	2,105
Prepayments, accrued income and other assets	^{3, 4} 248,258	150,932	110,758	29,483	40	–	10,646
Total assets at 31 Dec 2019	8,661,714	7,917,712	6,397,602	732,375	38,949	905,385	150,770
Liabilities							
Hong Kong currency notes in circulation	298,944	298,944	–	–	–	–	298,944
Items in the course of transmission to other banks	25,576	25,576	–	–	–	–	25,576
Repurchase agreements – non-trading	106,396	106,395	–	106,395	–	–	–
Deposits by banks	179,819	179,819	–	–	–	–	179,819
Customer accounts	5,432,424	5,430,875	–	–	–	–	5,430,875
Trading liabilities	² 87,532	87,532	–	1,309	–	87,532	–
Derivatives	² 292,231	292,387	–	292,387	–	292,387	–
Financial liabilities designated at fair value	160,291	123,267	–	–	–	101,118	22,149
Debt securities in issue	106,933	106,619	–	–	–	–	106,619
Retirement benefit liabilities	2,595	2,595	–	–	–	–	2,595
Amounts due to Group companies	² 311,111	293,914	–	6,324	–	623	287,544
Accruals and deferred income, other liabilities and provisions	203,252	143,599	–	–	–	–	143,599
Liabilities under insurance contracts	528,760	–	–	–	–	–	–
Current tax liabilities	12,614	12,087	–	–	–	–	12,087
Deferred tax liabilities	29,889	19,577	–	–	–	–	19,577
Subordinated liabilities	4,066	4,066	–	–	–	–	4,066
Total liabilities at 31 Dec 2019	7,782,433	7,127,252	–	406,415	–	481,660	6,533,450

- ¹ The amounts shown in the column 'subject to securitisation framework' only include non-trading book. 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 mark 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) the 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	credit risk framework	securitisation framework	counterparty credit risk framework	market risk framework	
Footnotes		HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	
1	Asset carrying value amount under scope of regulatory consolidation (as per template LI1)	1	7,766,942	6,397,602	38,949	732,375	905,385
2	Liabilities carrying value amount under regulatory scope of consolidation (as per template LI1)	2	593,802	–	–	406,415	481,660
3	Total net amount under regulatory scope of consolidation		7,173,140	6,397,602	38,949	325,960	423,725
4	Off-balance sheet amounts and potential future exposure for counterparty risk		3,110,883	771,354	1,030	166,249	–
5	Differences in netting rules		(14,805)	(16,130)	–	1,325	–
6	Differences due to financial collateral on standardised approach		(36,306)	(36,306)	–	–	–
7	Differences due to impairments on IRB approach		16,150	16,150	–	–	–
8	Differences due to credit risk mitigation		(235,729)	–	–	(235,729)	–
9	Exposure amounts considered for regulatory purposes at 31 Dec 2019		10,013,333	7,132,670	39,979	257,805	423,725

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.

Explanations of differences between accounting and regulatory exposure amounts

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

Off-balance sheet amounts subject to credit risk and the securitisation frameworks include the undrawn portion of committed facilities, various trade finance commitments and guarantees, by applying credit conversion factors ('CCF') to these items and consideration of 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 default of a counterparty rather than just those transactions that are actually settled net in the normal course of business.

Differences due to financial collateral

The 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 impairments

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, model uncertainty and concentration adjustments.

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 55 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 2019		
	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	Directly issued qualifying CET1 capital instruments plus any related share premium	170,881	20
2	Retained earnings	390,543	27
3	Disclosed reserves	128,680	23
5	Minority interests arising from CET1 capital instruments issued by consolidated bank subsidiaries and held by third parties (amount allowed in CET1 capital of the consolidation group)	27,459	32
6	CET1 capital before regulatory deductions	717,563	
CET1 capital: regulatory deductions			
7	Valuation adjustments	1,554	26+31
8	Goodwill (net of associated deferred tax liabilities)	8,529	4+6+9-16
9	Other intangible assets (net of associated deferred tax liabilities)	11,603	7+10-17
10	Deferred tax assets (net of associated deferred tax liabilities)	2,214	8
11	Cash flow hedge reserve	(41)	25
14	Gains and losses due to changes in own credit risk on fair valued liabilities	(2,013)	-(12+13+15)
15	Defined benefit pension fund net assets (net of associated deferred tax liabilities)	45	11-18
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)	105,426	5
26	National specific regulatory adjustments applied to CET1 capital	98,605	
26a	Cumulative fair value gains arising from the revaluation of land and buildings (own-use and investment properties)	74,626	24+30
26b	Regulatory reserve for general banking risks	23,979	28
28	Total regulatory deductions to CET1 capital	225,922	
29	CET1 capital	491,641	
AT1 capital: instruments			
30	Qualifying AT1 capital instruments plus any related share premium	44,615	22
31	<i>of which: classified as equity under applicable accounting standards</i>	44,615	22
34	AT1 capital instruments issued by consolidated bank subsidiaries and held by third parties (amount allowed in AT1 capital of the consolidated group)	1,204	33
36	AT1 capital before regulatory deductions	45,819	
44	AT1 capital	45,819	
45	Tier 1 capital (T1 = CET1 + AT1)	537,460	
Tier 2 capital: instruments and provisions			
46	Qualifying Tier 2 capital instruments plus any related share premium	14,839	14
47	Capital instruments subject to phase-out arrangements from Tier 2 capital	3,114	19
50	Collective provisions and regulatory reserve for general banking risks eligible for inclusion in Tier 2 capital	16,151	29-2
51	Tier 2 capital before regulatory deductions	34,104	
Tier 2 capital: regulatory deductions			
55	Significant LAC investments in Tier 2 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation (net of eligible short positions)	6,866	1+3
56	National specific regulatory adjustments applied to Tier 2 capital	(34,236)	
56a	Add back of cumulative fair value gains arising from the revaluation of land and buildings (own-use and investment properties) eligible for inclusion in Tier 2 capital	(34,236)	(21+24+30)x45%
57	Total regulatory adjustments to Tier 2 capital	(27,370)	
58	Tier 2 capital (T2)	61,474	
59	Total regulatory capital (TC = T1 + T2)	598,934	
60	Total RWAs	2,851,380	

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

		a	b
		At 31 Dec 2019	
		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	17.24%	
62	Tier 1 capital ratio	18.85%	
63	Total capital ratio	21.01%	
64	Institution-specific buffer requirement (capital conservation buffer plus countercyclical capital buffer plus higher loss absorbency requirements)	6.02%	
65	<i>of which: capital conservation buffer requirement</i>	2.500%	
66	<i>of which: bank specific countercyclical capital buffer requirement</i>	1.02%	
67	<i>of which: higher loss absorbency requirement</i>	2.500%	
68	CET1 (as a percentage of RWA) available after meeting minimum capital requirements	12.74%	
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	17,615	
73	Significant LAC investments in CET1 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation	59,707	
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 BSC approach, or the STC approach and SEC-ERBA, SEC-SA and SEC-FBA (prior to application of cap)	3,550	
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	3,141	
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)	19,189	
79	Cap for inclusion of provisions in Tier 2 under the IRB approach and SEC-IRBA	13,010	
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	13,673	

At 31 December 2019, our CET1 capital ratio increased to 17.24% from 16.58% at 30 June 2019.

CET1 capital increased in the second half of 2019 by HK\$11bn, mainly due to:

- HK\$8.6bn of capital generated through profits, net of dividends;
- a HK\$1.8bn decrease in threshold deductions as a result of an increase in the CET1 capital base;
- a HK\$0.8bn increase in the fair value through other comprehensive income reserve.

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

Notes to the template:

		At 31 Dec 2019	
		Hong Kong basis	Basel III basis
		HK\$m	HK\$m
10	Deferred tax assets (net of associated deferred tax liabilities)	2,214	40

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 authorised institution ('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 2019	
		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)	105,426	103,537

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 Monetary Authority 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 2019	
		Total amount	Amount recognised in regulatory capital
			HK\$m
CET1 capital instruments			
	Ordinary shares	HK\$172,335m	170,880
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	7,064
	Fixed rate perpetual subordinated loans, callable from 2027	US\$600m	4,686
Tier 2 capital instruments			
	Primary capital undated floating rate notes	US\$400m	3,114
	Subordinated loan due 2030, callable from 2025	US\$1,000m	8,301
	Subordinated loan due 2030, callable from 2025	US\$180m	1,511
	Subordinated loan due 2031, callable from 2026	US\$600m	5,028

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 countercyclical capital buffer ('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

Geographical breakdown by Jurisdiction (J)	Footnotes	a	c	d	e
		At 31 Dec 2019			
		Applicable JCCyB ratio in effect %	RWAs used in computation of CCyB ratio HK\$m	AI-specific CCyB ratio %	CCyB amount HK\$m
1	Hong Kong	1	2.00	1,061,355	
2	Bulgaria		0.50	2	
3	Czech Republic		1.50	1	
4	Denmark		1.00	152	
5	France		0.25	1,234	
6	Ireland		1.00	8,901	
7	Norway		2.50	94	
8	Slovakia		1.50	1	
9	Sweden		2.50	543	
10	United Kingdom		1.00	13,062	
	Sum	2		1,085,345	
	Total	3		2,112,226	1.02
					29,084

1 At 4Q 2019, the JCCyB of Hong Kong used in the calculation of the CCyB buffer requirement was 2.0%, which was reduced from 2.5% at 3Q 2019 in accordance with the announcement made by the HKMA on 14 October 2019. The JCCyB of other countries used in the calculation of the CCyB requirement ranged from 0% to 2.5%.

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 bank 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 multiplied by the group specific CCyB ratio in column (d).

The CCyB ratio decreased from 1.27% at 30 June 2019 to 1.02% at 31 December 2019 mainly due to the decrease in Hong Kong's Jurisdictional countercyclical capital buffer ('JCCyB') ratio from

2.5% to 2.0% in accordance with the announcement made by the HKMA on 14 October 2019.

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 2019 HK\$m	30 Sep 2019 HK\$m	
On-balance sheet exposures			
1	On-balance sheet exposures (excluding those arising from derivative contracts and SFTs, but including collateral)	6,816,117	6,765,850
2	Less: Asset amounts deducted in determining Tier 1 capital	(229,388)	(223,224)
3	Total on-balance sheet exposures (excluding derivative contracts and SFTs)	6,586,729	6,542,626
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)	34,185	41,614
5	Add-on amounts for PFE associated with all derivative contracts	316,947	363,512
8	Less: Exempted CCP leg of client-cleared trade exposures	(4,274)	(4,284)
9	Adjusted effective notional amount of written credit derivative contracts	310,700	392,809
10	Less: Adjusted effective notional offsets and add-on deductions for written credit derivative contracts	(296,847)	(377,654)
11	Total exposures arising from derivative contracts	360,711	415,997
Exposures arising from SFTs			
12	Gross SFT assets (with no recognition of netting), after adjusting for sale accounting transactions	534,293	504,027
14	CCR exposure for SFT assets	25,691	25,154
16	Total exposures arising from SFTs	559,984	529,181
Other off-balance sheet exposures			
17	Off-balance sheet exposure at gross notional amount	3,110,883	3,024,375
18	Less: Adjustments for conversion to credit equivalent amounts	(2,521,733)	(2,453,973)
19	Off-balance sheet items	589,150	570,402
Capital and total exposures			
20	Tier 1 capital	537,460	528,254
20a	Total exposures before adjustments for specific and collective provisions	8,096,574	8,058,206
20b	Adjustments for specific and collective provisions	(18,370)	(18,338)
21	Total exposures after adjustments for specific and collective provisions	8,078,204	8,039,868
Leverage ratio			
22	Leverage ratio	6.7%	6.6%

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

	a	
	Value under the LR framework	
	31 Dec 2019 HK\$m	
Item		
1	Total consolidated assets as per published financial statements	8,661,714
2	Adjustment for investments in banking, financial, insurance or commercial entities that are consolidated for accounting purposes but outside the scope of regulatory consolidation	(695,481)
4	Adjustments for derivative contracts	79,965
5	Adjustment for SFTs (i.e. repos and similar secured lending)	25,691
6	Adjustment for off-balance sheet ('OBS') items (i.e. conversion to credit equivalent amounts of OBS exposures)	589,150
6a	Adjustments for collective provisions and specific provisions that are allowed to be excluded from exposure measure	(890)
7	Other adjustments	(581,945)
8	Leverage ratio exposure measure	8,078,204

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 2019 HK\$m	30 Sep 2019 HK\$m	31 Dec 2019 HK\$m
1 Credit risk for non-securitisation exposures	2,046,521	2,077,216	172,442
2 <i>of which: standardised credit risk ('STC') approach</i>	229,814	245,426	18,385
4 <i>of which: supervisory slotting criteria approach</i>	64,756	62,438	5,491
5 <i>of which: advanced internal ratings-based ('IRB') approach</i>	1,751,951	1,769,352	148,566
6 Counterparty default risk and default fund contributions	58,533	68,330	4,923
7a <i>of which: current exposure method ('CEM')</i>	12,444	16,188	1,047
8 <i>of which: internal models (counterparty credit risk) ('IMM(CCR)') approach</i>	32,440	35,489	2,733
9 <i>of which: Others</i>	13,649	16,653	1,143
10 Credit valuation adjustment ('CVA') Risk	18,216	21,449	1,457
11 Equity positions in banking book under the simple risk-weight method and the internal models method	30,580	25,373	2,593
15 Settlement risk	14	15	1
16 Securitisation exposures in banking book	14,344	15,842	1,147
18 <i>of which: securitisation external ratings-based approach ('SEC-ERBA') including internal assessment approach ('IAA')</i>	11,092	14,117	887
19 <i>of which: securitisation standardised approach ('SEC-SA')</i>	3,252	1,725	260
20 Market risk	97,897	122,153	7,833
21 <i>of which: standardised market risk ('STM') approach</i>	1,663	4,170	134
22 <i>of which: internal models ('IMM') approach</i>	96,234	117,983	7,699
24 Operational risk	355,448	347,611	28,436
25 Amounts below the thresholds for deduction (subject to 250% RW)	149,267	145,733	12,658
26a Deduction to RWAs	42,253	42,341	3,380
26b <i>of which: portion of regulatory reserve for general banking risks and collective provisions which is not included in Tier 2 Capital</i>	409	325	33
26c <i>of which: portion of cumulative fair value gains arising from the revaluation of land and buildings which is not included in Tier 2 Capital</i>	41,844	42,016	3,347
27 Total	2,728,567	2,781,381	228,110

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

² Minimum capital requirement represents 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 decreased by HK\$30,695m in the fourth quarter of 2019, including an increase of HK\$9,670m from foreign currency translation differences. Excluding the foreign currency translation differences, the decrease of HK\$40,365m was primarily driven by:

- HKD22,373m from RWA initiatives;
- a net decrease of HK\$9,305m due to the migration of the global private banking portfolio from the Standardised approach to the IRB approach; and
- HK\$7,341m from an improvement in asset quality in the wholesale portfolios.

Market risk

RWAs decreased by HK\$24,256m in the fourth quarter of 2019 mainly due to movements in risk levels.

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 2019	1,831,790
2 Asset size	(12,976)
3 Asset quality	(7,341)
4 Model updates	6,527
5 Methodology and policy	(9,044)
7 Foreign exchange movements	7,751
9 RWAs as at 31 Dec 2019	1,816,707

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

RWAs under the IRB approach decreased by HK\$15,083m in the fourth quarter of 2019, including an increase in foreign currency translation differences of HK\$7,751m. Excluding foreign currency translation differences, the decrease of HK\$22,834m was mainly due to:

- HK\$15,421m from RWA initiatives of which HK\$9,044m in methodology and policy and HK\$6,377m in asset size;
- HK\$7,341m through improvement in asset quality in the wholesale portfolios; and
- HK\$6,599m in asset size driven by a general decrease in lending to banks; partly offset by
- an increase of HK\$6,527m in model updates as a result of the migration of the global private banking portfolio from the Standardised approach to the IRB approach.

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 2019	35,489
2 Asset size	(2,737)
3 Credit quality of counterparties	(86)
7 Foreign exchange movements	(226)
9 RWAs as at 31 Dec 2019	32,440

RWA flow statement for market risk

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

	a	b	c	e	f
	VaR HK\$m	Stressed VaR HK\$m	IRC HK\$m	Other HK\$m	Total RWAs HK\$m
1 RWAs as at 30 Sep 2019	18,338	34,881	40,858	23,906	117,983
2 Movement in risk levels	(1,603)	(13,592)	(6,146)	(2,385)	(23,726)
3 Model updates/changes	1,045	1,637	46	–	2,728
6 Foreign exchange movements	(117)	(222)	(260)	(152)	(751)
8 RWAs as at 31 Dec 2019	17,663	22,704	34,498	21,369	96,234

Loss-absorbing Capacity

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

		a	b	c	d	e
		At ¹				
	Footnotes	31 Dec 2019	30 Sep 2019	30 Jun 2019	31 Mar 2019	31 Dec 2018
Of the group at LAC consolidation group level						
1	Internal loss-absorbing capacity available (HK\$m)	769,124	762,295	N/A	N/A	N/A
2	Risk-weighted amount under the LAC Rules (HK\$m)	2,851,380	2,905,034	N/A	N/A	N/A
3	Internal LAC risk-weighted ratio (%)	27.0	26.2	N/A	N/A	N/A
4	Exposure measure under the LAC Rules (HK\$m)	8,071,283	8,033,779	N/A	N/A	N/A
5	Internal LAC leverage ratio (%)	9.5	9.5	N/A	N/A	N/A
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?	2	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?	2	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 (%)	2	Not applicable	Not applicable	Not applicable	Not applicable

1 The LAC disclosures for the group commenced on 30 September 2019 in accordance with the LAC Rules, accordingly the prior periods' ratios are not available.

2 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.

Table 16: TLAC1(A) – TLAC composition

	a	
	At 31 Dec 2019	
Regulatory capital elements of internal loss-absorbing capacity and adjustments (HK\$m)		
1	Common Equity Tier 1 ('CET1') capital	491,641
2	Additional tier 1 ('AT1') capital before LAC adjustments	45,819
5	AT1 capital eligible under the LAC Rules	45,819
6	Tier 2 ('T2') capital before LAC adjustments	61,474
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	3,114
10	T2 capital eligible under the LAC Rules	58,360
11	Internal loss-absorbing capacity arising from regulatory capital	595,820
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	173,359
17	Internal loss-absorbing capacity arising from non-capital LAC debt instruments before adjustments	173,359
Non-regulatory capital elements of internal loss-absorbing capacity: adjustments (HK\$m)		
18	Internal loss-absorbing capacity before deductions	769,179
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	55
22	Internal loss-absorbing capacity after deductions	769,124
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	2,851,380
24	Exposure measure under the LAC Rules	8,071,283
Internal LAC ratios and buffers (%)		
25	Internal LAC risk-weighted ratio	27.0%
26	Internal LAC leverage ratio	9.5%
27	CET1 capital (as a percentage of RWA under the BCR) available after meeting the LAC consolidation group's minimum capital and LAC requirements	11.0%
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)	6.0%
29	Of which: capital conservation buffer requirement	2.5%
30	Of which: institution-specific countercyclical capital buffer requirement	1.0%
31	Of which: higher loss absorbency requirement	2.5%

Banking Disclosure Statement at 31 December 2019

Table 17: TLAC2 – The Hongkong & Shanghai Bank Corporation Ltd 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	172,335	44,398	3,116	13,865	164,946	398,660
5	172,335	44,398	3,116	13,865	164,946	398,660
6	– of row 5 that are eligible as internal loss-absorbing capacity					
	172,335	44,398	–	13,865	164,946	395,544
8	– of row with 2 years ≤ residual maturity < 5 years					
	–	–	–	–	76,552	76,552
9	– of row 6 with 5 years ≤ residual maturity < 10 years					
	–	–	–	–	72,817	72,817
10	– of row 6 with residual maturity ≥ 10 years, but excluding perpetual securities					
	–	–	–	13,865	15,578	29,443
11	– of row 6 that are perpetual securities					
	172,335	44,398	–	–	–	216,733

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

Credit risk management

Credit risk represents our largest regulatory capital requirement. The principal objectives of our credit risk management function are:

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

The credit risk functions within Wholesale Credit and Market Risk and Retail Banking and Wealth Management ('RBWM') are the constituent parts of the group's Risk functions that support the group's Chief Risk Officer 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, owning our credit policy and credit system programmes, overseeing portfolio management and reporting 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 Risk on the internal control framework and with Risk Strategy on the risk appetite process. In addition, they work jointly with Risk Strategy and Finance on stress testing.

The credit responsibilities of the group's Risk function are described on page 22 of the group's Annual Report and Accounts 2019.

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 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 chief risk officers and management teams on an individual basis. Each operating company is responsible for the quality and performance of its credit portfolios in accordance with Group standards. Above these thresholds of delegated personal credit limited approval authorities, approval must be sought from the regional and, as appropriate, global credit risk function.

Credit risk management

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

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

Risk rating systems for retail exposures are generally quantitative in nature, applying techniques such as behavioural analysis across product portfolios comprising large numbers of homogeneous transactions. Rating systems for individually managed relationships typically use customer financial statements and market data analysis, but also qualitative elements and a final subjective overlay to better reflect any idiosyncratic elements of the customer's risk profile. See 'Credit risk under internal ratings-based approach' on pages 25 to 27.

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

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

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

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

Like other facets of risk management, analytical risk rating systems are not static. They are subject to review and modification in light of the changing environment, the greater availability and quality of data, and any deficiencies identified through internal and external regulatory review. Structured processes and metrics are in place to capture relevant data and feed this into continuous model improvement. See 'Model performance' on page 34 for more information.

Credit risk models governance

Model governance is under the general oversight of the group Wholesale Model Oversight Committee ('WMOC') and Retail Banking and Wealth Management Risk MOC ('RMOC') and is described in detail on page 25.

Credit quality of assets

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 analyse credit exposures between defaulted and non-defaulted, changes in defaulted loans and debt securities, exposures by geographical location, by industries and residual maturity on a regulatory consolidation basis.

The exposures covered in these tables include loans, debt securities and off-balance sheet exposures. Loans 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				Allowances/		Of which ECL accounting provisions ¹ for credit losses on		Of which ECL accounting provisions for credit losses on		Of which ECL accounting provisions for credit losses on		Net values	
		Defaulted exposures	Non-defaulted exposures			impairments	STC approach exposures	STC approach exposures	STC approach exposures	STC approach exposures	STC approach exposures	STC approach exposures	STC approach exposures	STC approach exposures	(a+b-c)
		HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	
1	Loans	20,547	4,326,533	18,064	1,914	796	15,354	4,329,016							
2	Debt securities	–	1,464,302	67	–	7	60	1,464,235							
3	Off-balance sheet exposures	1,664	3,107,812	824	3	67	754	3,108,652							
4	Total at 31 Dec 2019	22,211	8,898,647	18,955	1,917	870	16,168	8,901,903							

¹ The categorisation of Expected Credit Loss ('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
		Footnote
		HK\$m
1	Defaulted loans and debt securities at 30 Jun 2019	19,611
2	Loans and debt securities that have defaulted since 30 Jun 2019	4,183
3	Returned to non-defaulted status	(725)
4	Amounts written off	(2,530)
5	Other changes	1
6	Defaulted loans and debt securities at 31 Dec 2019	20,547

¹ Other changes include repayment and foreign exchange movements.

Table 20: CRB1 – Exposures by geographical location

		Gross carrying amounts at
		31 Dec
		2019
		Footnote
		HK\$m
	Hong Kong	5,257,474
	Mainland China	950,911
	Others	1
	Total	8,920,858

Table 21: CRB2 – Exposures by industry

		Gross carrying amounts at
		31 Dec
		2019
		Footnote
		HK\$m
	Property development and investment	973,936
	Financial concerns	1,575,666
	Individuals	2,362,774
	Others	1
	Total	8,920,858

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

Table 22: CRB3 – Exposures by residual maturity

	Gross carrying amounts at 31 Dec 2019 HK\$m
Less than 1 year	4,576,918
Between 1 and 5 years	2,074,609
More than 5 years	2,179,425
Undated	89,906
Total	8,920,858

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 2019*.

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

	Footnote	Total gross loans and advances to customers ¹ HK\$m	Gross credit-impaired loans and advances HK\$m	Specific provisions ² HK\$m	Collective provisions ² HK\$m	Net new impairment allowances HK\$m	Advances written-off in a year HK\$m
At 31 Dec 2019							
Residential mortgages		1,027,087	2,061	(196)	(133)	24	103
Real Estate		666,299	271	(59)	(656)	196	—
Wholesale and retail trade		418,669	4,237	(3,206)	(783)	1,000	962
Manufacturing		418,822	3,945	(2,291)	(859)	1,103	859
Others	3	1,202,202	7,276	(3,548)	(5,657)	3,090	2,958
Total		3,733,079	17,790	(9,300)	(8,088)	5,413	4,882

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

	Footnote	Total gross loans and advances to customers ¹ HK\$m	Gross credit-impaired loans and advances HK\$m	Overdue loans and advances HK\$m	Specific provisions ² HK\$m	Collective provisions ² HK\$m	Net new impairment allowances HK\$m	Advances written-off in a year HK\$m
At 31 Dec 2019								
Hong Kong		2,395,478	7,087	12,975	(4,248)	(4,659)	3,387	1,916
Mainland China		332,294	1,275	1,177	(958)	(1,235)	962	639
Others	3	1,005,307	9,428	13,236	(4,094)	(2,194)	1,064	2,327
Total		3,733,079	17,790	27,388	(9,300)	(8,088)	5,413	4,882

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 HK\$m	30-59 days HK\$m	60-89 days HK\$m	Total HK\$m
At 31 Dec 2019				
Loans and advances to customers held at amortised cost	23,477	2,250	1,661	27,388
– personal	14,959	2,083	1,412	18,454
– corporate and commercial	7,832	167	249	8,248
– non-bank financial institutions	686	—	—	686
Total	23,477	2,250	1,661	27,388

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

	31 Dec 2019 HK\$m
Not credit impaired	528
Credit impaired	5,999
Total	6,527

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 2019				
Gross loans and advances to customers	1,963,250	1,469,153	305,866	3,738,269

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

return required to be submitted to the HKMA by branches of the Bank and banking subsidiaries in Hong Kong.

Table 28: Loans and advances to customers by industry

	Gross Advances at 31 Dec 2019 HK\$m	Collateral and other security at 31 Dec 2019 HK\$m
Industrial, commercial and financial	1,083,423	493,569
– property development	190,000	55,631
– property investment	312,133	201,016
– financial concerns	130,137	76,505
– stockbrokers	10,193	1,923
– wholesale and retail trade	109,489	26,573
– manufacturing	61,896	13,463
– transport and transport equipment	55,051	31,465
– recreational activities	1,872	513
– information technology	31,856	3,691
– others	180,796	82,789
Individuals	830,373	729,033
– advances for the purchase of flats under the Hong Kong Government's Home Ownership Scheme, Private Sector Participation Scheme and Tenants Purchase Scheme	53,608	53,608
– advances for the purchase of other residential properties	600,506	600,506
– credit card advances	61,801	–
– others	114,458	74,919
Gross loans and advances to customers for use in Hong Kong	1,913,796	1,222,602
Trade Finance	144,673	31,932
Gross loans and advances to customers for use outside Hong Kong	1,679,800	632,244
Gross loans and advances to customers	3,738,269	1,886,778

The categories of advances, and the relevant definitions, used by the HKMA differ from those used for internal purposes by the HSBC Group as disclosed in Note 10 in the group's *Annual Report and Accounts 2019*.

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.

Table 29: Overdue and rescheduled loans and advances to customers

	Footnote	Hong Kong		Rest of Asia-Pacific		Total	
		HK\$m	% ¹	HK\$m	% ¹	HK\$m	% ¹
At 31 Dec 2019							
Gross amounts which have been overdue with respect to either principal or interest for:							
– more than three months but not more than six months		732	–	1,509	0.1	2,241	0.1
– more than six months but not more than one year		844	–	935	0.1	1,779	–
– more than one year		3,634	0.2	3,805	0.3	7,439	0.2
Total		5,210	0.2	6,249	0.5	11,459	0.3
Specific provisions made in respect of amounts overdue	2	(2,032)		(3,679)		(5,711)	
Fair value of collateral held in respect of amounts overdue		1,181		2,502		3,683	
Rescheduled loans and advances to customers		472	–	1,997	0.1	2,469	0.1

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.

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.

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 2019 HK\$m
Contract amounts	
Direct credit substitutes	52,557
Transaction-related contingencies	228,312
Trade-related contingencies	105,630
Forward asset purchases	6,123
Commitments that are unconditionally cancellable without prior notice	2,371,017
Commitments which have an original maturity of not more than one year	52,874
Commitments which have an original maturity of more than one year	294,370
Total	3,110,883
Risk-weighted amounts	292,001

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 global functional MOCs, operating in line with HSBC's model risk policy, and under the oversight of the Global MOC. Model governance for IRB capital models is under the general oversight of group WMOC and RMOC.

Both WMOC and RMOC require all credit risk models for which they are responsible to be approved by delegated senior managers with notification to the committees that retain the responsibility for oversight.

Global Risk sets internal standards for the development, validation, independent review, approval, implementation and performance monitoring of credit risk rating models. Independent reviews of our models are performed by our Independent Model Review 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, non-bank financial institutions and specialised lending.
- 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 2019, 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)	96%	92%
Sovereign exposures	96%	100%
Bank exposures (including securities firms)	100%	99%
Residential mortgage loans	89%	79%
Other retail exposures	83%	56%
Equity exposures	100%	100%
Other exposures	100%	100%

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 100% for sovereign exposures, 98% for bank exposures and 80% 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/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 business lines and risk management, appropriate independence of decision takers, and a good understanding and robust reflection 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 which 21 are non-default grades representing varying degrees of strength of financial condition and two are default grades. A 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 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 horizon and broadly represents the current exposure, plus an estimate for future increases in exposure, taking into account such factors as available but undrawn facilities and the crystallisation of contingent exposures, post-default. LGD focuses on the facility and collateral structure, involving factors like facility priority/seniority, the type and value of collateral, type of client and variances in experience, and 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 hybrid.

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 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 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 NBF1 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 exempted to the People's Republic of China and Hong Kong Special Administrative Region.

² LGD floor exempted to 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	LGD floor of 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	PD floor of 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	PD floor of 0.03%
	LGD	1	Statistical model based on forecasting the amount of expected losses. Downturn LGD derived using data from the period with 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	LGD floor of 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 – 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 (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	PD floor of 0.03%
	LGD	1	Statistical model based on forecasting the amount of expected future losses with downturn adjustment.	> 10	
	EAD	1	EAD derived by different product types. Statistical model which derives a credit conversion factor to determine the proportion of undrawn limit to be added to the balance at observation for revolving nature while rule based calculation based on current balance for non-revolving nature.	> 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	PD floor of 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	LGD floor of 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

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
	Original on-balance sheet gross exposure	Off-balance sheet exposures pre-CCF	Average CCF	EAD post-CRM and post-CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWAs	RWA density	EL	Provisions
PD scale	HK\$m	HK\$m	%	HK\$m	%		%	years	HK\$m	%	HK\$m	HK\$m
Portfolio (i) – Sovereign												
0.00 to < 0.15	1,575,001	2,960	33.6	1,575,994	0.02	585	35.6	1.50	92,523	6	113	
0.15 to < 0.25	–	34	50.0	17	0.22	22	45.0	4.99	12	70	–	
0.25 to < 0.50	1,803	–	20.0	1,803	0.37	9	45.0	1.00	794	44	3	
0.50 to < 0.75	13,071	1,181	91.6	14,153	0.63	17	45.0	1.15	8,589	61	40	
0.75 to < 2.50	7,701	1,119	30.0	8,037	1.11	18	43.8	1.81	6,637	83	39	
2.50 to < 10.00	239	–	–	239	4.20	3	45.0	1.33	305	128	5	
10.00 to <100.00	–	–	–	–	–	–	–	–	–	–	–	
100.00 (Default)	–	–	–	–	–	–	–	–	–	–	–	
Sub-total at 31 Dec 2019	1,597,815	5,294	45.9	1,600,243	0.03	654	35.8	1.50	108,860	7	200	1,535
Portfolio (ii) – Bank												
0.00 to < 0.15	370,829	55,399	32.2	388,630	0.04	13,105	38.2	1.20	45,113	12	63	
0.15 to < 0.25	20,887	4,995	44.5	23,111	0.22	1,133	42.0	0.74	8,156	35	21	
0.25 to < 0.50	10,488	1,369	36.1	10,982	0.37	378	20.8	0.78	2,543	23	8	
0.50 to < 0.75	3,092	339	19.3	3,158	0.63	243	45.9	0.72	2,058	65	9	
0.75 to < 2.50	2,796	2,875	39.0	3,917	1.09	370	46.8	0.66	2,969	76	19	
2.50 to < 10.00	1,121	98	29.1	1,149	3.24	115	57.7	0.51	1,603	139	22	
10.00 to <100.00	292	–	50.0	292	18.94	16	25.3	0.43	398	136	14	
100.00 (Default)	209	–	–	209	100.00	2	61.0	0.53	347	166	121	
Sub-total at 31 Dec 2019	409,714	65,075	33.4	431,448	0.14	15,362	38.1	1.16	63,187	15	277	1,087
Portfolio (iii) – Corporate – small- and medium-sized corporates												
0.00 to < 0.15	16,081	16,134	33.3	21,290	0.10	746	34.0	2.76	3,738	18	7	
0.15 to < 0.25	14,688	12,249	26.8	17,975	0.22	1,075	31.2	2.25	4,784	27	12	
0.25 to < 0.50	55,969	21,790	29.4	62,364	0.37	1,481	27.4	2.28	18,591	30	63	
0.50 to < 0.75	57,502	20,929	29.9	63,753	0.63	1,536	28.5	2.23	24,794	39	114	
0.75 to < 2.50	118,375	55,209	25.1	132,255	1.42	5,203	29.1	1.95	66,794	51	546	
2.50 to < 10.00	18,376	11,816	28.3	21,725	3.97	1,042	36.2	1.65	18,074	83	315	
10.00 to <100.00	1,796	270	15.3	1,837	11.17	64	27.4	1.19	1,680	91	57	
100.00 (Default)	1,357	59	17.3	1,367	100.00	89	47.3	1.22	3,065	224	615	
Sub-total at 31 Dec 2019	284,144	138,456	27.9	322,566	1.55	11,236	29.6	2.11	141,520	44	1,729	3,275
Portfolio (iv) – Corporate – other												
0.00 to < 0.15	689,123	616,992	29.7	869,722	0.08	17,524	44.7	1.86	189,722	22	321	
0.15 to < 0.25	222,190	216,964	30.6	285,917	0.22	4,732	42.3	1.69	105,972	37	266	
0.25 to < 0.50	202,944	183,575	27.9	252,942	0.37	4,498	40.2	1.64	113,653	45	376	
0.50 to < 0.75	179,272	131,574	26.6	213,831	0.63	3,790	38.3	1.63	121,059	57	515	
0.75 to < 2.50	432,069	316,053	22.6	494,521	1.42	9,676	37.4	1.42	361,071	73	2,585	
2.50 to < 10.00	71,877	68,819	26.4	90,026	4.04	2,626	42.3	1.15	104,797	116	1,555	
10.00 to <100.00	5,828	5,114	34.4	7,586	14.46	221	37.3	1.19	12,102	160	371	
100.00 (Default)	10,156	435	14.8	10,220	100.00	402	50.2	1.32	13,230	129	6,476	
Sub-total at 31 Dec 2019	1,813,459	1,539,526	27.8	2,224,765	1.15	43,469	41.5	1.66	1,021,606	46	12,465	25,232

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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 years	RWAs HK\$m	RWA density %	EL HK\$m	Provisions HK\$m
Portfolio (v) – Retail – qualifying revolving retail exposures												
0.00 to < 0.15	28,478	424,191	34.5	175,007	0.06	4,118,922	100.7	–	6,754	4	106	
0.15 to < 0.25	3,046	17,327	46.5	11,095	0.22	253,608	100.3	–	1,303	12	25	
0.25 to < 0.50	9,819	34,081	36.7	22,337	0.39	404,325	95.8	–	3,944	18	84	
0.50 to < 0.75	7,211	8,392	49.4	11,353	0.58	110,196	97.0	–	2,768	24	64	
0.75 to < 2.50	20,235	40,090	38.1	35,518	1.36	404,514	96.2	–	16,328	46	464	
2.50 to < 10.00	11,930	6,631	57.8	15,760	4.60	152,852	90.6	–	16,299	103	663	
10.00 to < 100.00	4,947	1,632	64.4	5,997	21.05	58,993	87.5	–	11,652	194	1,125	
100.00 (Default)	191	63	1.4	192	100.00	2,622	99.9	–	341	177	166	
Sub-total at 31 Dec 2019	85,857	532,407	36.0	277,259	1.06	5,506,032	98.7	–	59,389	21	2,697	3,546
Portfolio (vi) – Retail – Residential mortgage exposures												
0.00 to < 0.15	384,708	24,390	55.2	398,165	0.09	145,357	13.8	–	66,207	17	48	
0.15 to < 0.25	174,783	13,545	89.6	186,916	0.19	109,929	12.2	–	25,270	14	43	
0.25 to < 0.50	119,811	1,249	58.9	120,547	0.34	48,249	10.2	–	19,933	17	42	
0.50 to < 0.75	109,241	1,720	94.0	110,858	0.58	48,441	15.2	–	20,719	19	99	
0.75 to < 2.50	101,458	916	96.0	102,337	1.17	54,035	11.3	–	20,475	20	133	
2.50 to < 10.00	39,407	261	105.3	39,682	4.50	19,630	11.8	–	14,560	37	213	
10.00 to < 100.00	6,633	76	105.1	6,713	17.62	6,204	13.9	–	4,985	74	166	
100.00 (Default)	3,460	18	–	3,460	100.00	4,689	15.6	–	3,332	96	279	
Sub-total at 31 Dec 2019	939,501	42,175	69.2	968,678	0.97	436,534	12.8	–	175,481	18	1,023	2,479
Portfolio (vii) – Retail – small business retail exposures												
0.00 to < 0.15	2,657	7	100.0	2,664	0.08	1,054	9.0	–	19	1	–	
0.15 to < 0.25	516	3	100.0	519	0.19	146	15.9	–	43	8	–	
0.25 to < 0.50	520	1	100.0	521	0.36	102	30.1	–	93	18	1	
0.50 to < 0.75	553	–	–	553	0.59	172	10.6	–	49	9	–	
0.75 to < 2.50	218	2	100.0	219	1.32	51	18.0	–	63	29	1	
2.50 to < 10.00	486	1	100.0	487	5.60	180	5.6	–	43	9	2	
10.00 to < 100.00	–	–	–	–	–	–	–	–	–	–	–	
100.00 (Default)	–	–	–	–	–	–	–	–	–	–	–	
Sub-total at 31 Dec 2019	4,950	14	100.0	4,963	0.78	1,705	12.2	–	310	6	4	4
Portfolio (viii) – Other retail exposures to individuals												
0.00 to < 0.15	5,666	46,561	29.5	19,382	0.09	176,604	7.5	–	305	2	1	
0.15 to < 0.25	3,005	32,582	32.6	13,617	0.21	117,485	17.2	–	1,051	8	5	
0.25 to < 0.50	5,055	14,242	34.3	9,934	0.37	72,249	25.8	–	1,588	16	10	
0.50 to < 0.75	8,937	6,240	43.8	11,668	0.64	45,097	29.2	–	2,568	22	19	
0.75 to < 2.50	5,347	2,146	32.1	6,035	1.60	39,277	57.8	–	4,214	70	60	
2.50 to < 10.00	8,560	4,541	43.2	10,521	3.42	52,249	34.4	–	5,232	50	155	
10.00 to < 100.00	869	34	39.2	883	16.10	7,096	70.3	–	1,213	137	99	
100.00 (Default)	100	41	27.0	111	100.00	1,522	80.2	–	176	159	77	
Sub-total at 31 Dec 2019	37,539	106,387	32.5	72,151	1.20	511,579	24.4	–	16,347	23	426	455

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 2019	5,172,979	2,429,334	30.7	5,902,073	0.76	6,526,571	36.8	1.59	1,586,700	27	18,821	37,613

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.

Table 35: 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	PF	IPRE	Total	RWAs	Expected loss amount
		HK\$m	HK\$m	%	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
Strong [^]	Less than 2.5 years	22,432	3,197	50	1,465	22,099	23,564	11,782	–
Strong	Less than 2.5 years	8,581	1,528	70	2,732	6,561	9,293	6,505	37
Strong [^]	Equal to or more than 2.5 years	3,651	3,187	50	4,755	–	4,755	2,378	–
Strong	Equal to or more than 2.5 years	32,309	906	70	9,737	22,959	32,696	22,887	131
Good [^]	Less than 2.5 years	4,277	395	70	12	4,377	4,389	3,072	18
Good	Less than 2.5 years	3,228	526	90	–	3,418	3,418	3,076	28
Good [^]	Equal to or more than 2.5 years	2,949	1,195	70	3,323	–	3,323	2,326	13
Good	Equal to or more than 2.5 years	5,946	2,814	90	–	6,930	6,930	6,237	55
Satisfactory		4,574	206	115	3,089	1,557	4,646	5,343	130
Weak		460	–	250	460	–	460	1,150	37
Default		485	–	–	480	5	485	–	242
Total at 31 Dec 2019		88,892	13,954		26,053	67,906	93,959	64,756	691

[^] Use of preferential riskweights.

Table 36: 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	46	300	46	138
All other equity exposures	7,610	400	7,610	30,442
Total at 31 Dec 2019	7,656		7,656	30,580

Credit risk under standardised approach

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

The standardised (credit risk) approach is applied where exposures do not qualify for use of an IRB approach and/or where an exemption from IRB has been granted. The standardised (credit risk) 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 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 37: CR5 – Credit risk exposures by asset classes and by risk weights – for STC approach

Risk Weight	Exposure class	a	c	d	e	f	g	h	j
		0% HK\$m	20% HK\$m	35% HK\$m	50% HK\$m	75% HK\$m	100% HK\$m	150% HK\$m	Total credit risk exposures amount (post CCF and post CRM) HK\$m
1	Sovereign exposures	58,744	326	–	421	–	–	–	59,491
2	PSE exposures	114,014	15,443	–	5,104	–	3,822	–	138,383
2a	of which: domestic PSEs	–	2,749	–	–	–	–	–	2,749
2b	of which: foreign PSEs	114,014	12,694	–	5,104	–	3,822	–	135,634
4	Bank exposures	–	281	–	833	–	192	7	1,313
5	Securities firm exposures	–	–	–	569	–	–	–	569
6	Corporate exposures	–	11,264	–	581	–	107,717	–	119,562
10	Regulatory retail exposures	–	–	–	–	59,476	–	–	59,476
11	Residential mortgage loans	–	–	98,310	–	8,188	7,109	–	113,607
12	Other exposures which are not past due exposures	–	–	–	–	–	11,987	–	11,987
13	Past due exposures	73	487	–	–	–	214	2,861	3,635
15	Total at 31 Dec 2019	172,831	27,801	98,310	7,508	67,664	131,041	2,868	508,023

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, facilities may be provided unsecured.

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

Collateral

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

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

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. Where this applies, the customer accounts are treated as cash collateral and are reflected in our LGD estimates.

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

Other forms of credit risk mitigation

Our Global Banking and Markets ('GB&M') business utilises credit risk mitigation to manage the credit risk of its portfolios, with the goal of reducing concentrations in individual names, sectors or portfolios. The techniques in use include credit default swap

('CDS') purchases, structured credit notes and securitisation structures. Buying credit protection creates credit exposure against the protection provider, which is monitored as part of the overall credit exposure to them. Where applicable, the transaction is entered into directly with a central clearing house counterparty; otherwise our exposure to CDS protection providers is diversified among mainly banking counterparties with strong credit ratings. In our corporate lending, we also take guarantees from corporates and Export Credit Agencies ('ECA'). Corporates would normally provide guarantees as part of a parent/subsidiary or common parent relationship and would span a number of credit grades. The ECAs will normally be investment grade.

Policy and procedures

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

Valuing collateral

Valuation strategies are established to monitor collateral mitigants to ensure that they will continue to provide the anticipated secure secondary repayment source. The frequency of valuation increases with the volatility of the collateral. For residential mortgages, Group policy prescribes revaluation at intervals of up to three years, or more frequently as the need arises; for example, where the loan is in distress or 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.

Local market conditions determine the frequency of valuation for CRE. Revaluations are sought where, for example, material concerns arise in relation to the performance of the collateral. CRE revaluation also occurs commonly in circumstances where an obligor's credit quality has declined sufficiently to cause concern that the principal payment source may not fully meet the obligation.

Recognition of risk mitigation under the IRB approach

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

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

The first category typically includes full parental guarantees where one obligor within a group guarantees another. In these circumstances, the parent guarantor materially influences the PD of the guaranteed obligor. PD estimates are also subject to a 'sovereign ceiling', constraining the risk ratings assigned to obligors in countries of higher risk, and where only partial parental

support exists. In certain jurisdictions, certain types of third-party guarantee are recognised by substituting the obligor's PD with that of the guarantor.

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

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

EAD and LGD values, in the case of individually assessed exposures, are determined by reference to regionally approved internal risk parameters based on the nature of the exposure. For retail portfolios, credit risk mitigation data is incorporated into the internal risk parameters for exposures and feeds into the calculation of the expected loss ('EL') band value summarising both customer delinquency and product or facility risk. Credit and credit risk mitigation data form inputs submitted by all group offices to centralised databases. A range of collateral recognition approaches are applied to IRB capital treatments:

- Unfunded protection, which includes credit derivatives and guarantees, is reflected through adjustment or determination of PD or LGD. Under the IRB advanced approach, recognition may be through PD or LGD.
- Eligible financial collateral under the IRB advanced approach is recognised in LGD models.
- For all other types of collateral, including real estate, the LGD for exposures calculated under the IRB advanced 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 arising from 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 38: CR3 – Overview of recognised credit risk mitigation

	a	b1	b	d	f	
	Exposures unsecured: carrying amount	Exposures to be secured	Exposures secured by recognised collateral	Exposures secured by recognised guarantees	Exposures secured by recognised credit derivative contracts	
	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	
1	Loans	1,854,761	2,474,255	2,004,429	469,467	359
2	Debt securities	1,405,338	58,897	—	58,897	—
3	Total at 31 Dec 2019	3,260,099	2,533,152	2,004,429	528,364	359
4	<i>of which: defaulted</i>	<i>4,182</i>	<i>6,915</i>	<i>5,936</i>	<i>979</i>	<i>—</i>

The decrease in unsecured exposures for HK\$84,602m in the second half of 2019 was mainly due to a general decrease in loans and advances to banks while the increase in secured exposures for HK\$75,010m was mainly a result of growth in residential mortgages and corporate loans in the second half of 2019.

Table 39: CR7 – Effects on RWAs of recognised credit derivative contracts used as recognised credit risk mitigation – for IRB approach

	a	b
	Pre-credit derivatives RWAs	Actual RWAs
	HK\$m	HK\$m
1 Corporate – Specialised lending under supervisory slotting criteria approach (project finance)	18,875	18,875
4 Corporate – Specialised lending under supervisory slotting criteria approach (income-producing real estate)	45,881	45,881
6 Corporate – Small and medium-sized corporates	141,520	141,520
7 Corporate – Other corporates	1,021,616	1,021,606
8 Sovereigns	105,310	105,310
10 Multilateral development banks	3,550	3,550
11 Bank exposures – Banks	57,750	57,750
12 Bank exposures – Securities firms	5,437	5,437
14 Retail – Small business retail exposures	310	310
15 Retail – Residential mortgages to individuals	171,258	171,258
16 Retail – Residential mortgages to property-holding shell companies	4,223	4,223
17 Retail – Qualifying revolving retail exposures ('QRRE')	59,389	59,389
18 Retail – Other retail exposures to individuals	16,347	16,347
19 Equity – Equity exposures under market-based approach (simple risk-weight method)	30,580	30,580
26 Other – Cash items	5,416	5,416
27 Other – Other items	159,849	159,849
28 Total (under the IRB calculation approaches) at 31 Dec 2019	1,847,311	1,847,301

Credit risk mitigation effects from credit derivative contracts are recognised through LGD adjustments. Covered exposures are subject to lower risk-weights as a result of reduced LGDs.

Table 40: CR4 – Credit risk exposures and effects of recognised credit risk mitigation – for STC approach

	a	b	c	d	e	f
	Exposures pre-CCF and pre-CRM		Exposures post-CCF and post-CRM		RWAs and RWA density	
	On-balance sheet amount	Off-balance sheet amount	On-balance sheet amount	Off-balance sheet amount	RWAs	RWA density
	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	%
Exposure classes						
1 Sovereign exposures	–	–	59,040	451	276	0
2 PSE exposures	201,734	12,222	135,166	3,217	9,462	7
2a of which: domestic PSEs	840	4,150	840	1,909	550	20
2b of which: foreign PSEs	200,894	8,072	134,326	1,308	8,912	7
4 Bank exposures	837	2,075	1,020	293	675	51
5 Securities firm exposures	569	14	569	–	284	50
6 Corporate exposures	130,973	253,838	113,409	6,153	110,261	92
10 Regulatory retail exposures	60,903	360,478	59,044	432	44,607	75
11 Residential mortgage loans	112,296	9,370	112,135	1,472	47,659	42
12 Other exposures which are not past due exposures	18,937	21,023	11,078	909	11,987	100
13 Past due exposures	3,141	1,047	3,141	494	4,603	127
15 Total at 31 Dec 2019	529,390	660,067	494,602	13,421	229,814	45

The decrease in RWAs from HK\$267,108m at 30 June 2019 to HK\$229,814m at 31 December 2019 was mainly driven by savings from RWA initiatives and migration of the global private banking portfolio to the IRB approach.

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 41: CR9 – Back-testing of PD per portfolio

b	c(i)	c(ii)	c(iii)	d	e	f		g	h	i
						Number of obligors ^{1,2}	End of previous year			
PD range	External rating equivalent (S&P)	External rating equivalent (Moody's)	External rating equivalent (Fitch)	Weighted average PD %	Arithmetic average PD by obligors %	End of previous year	End of the year	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	46	–	–	–
0.15 to <0.25	BBB-	Baa3	BBB-	0.22	0.22	2	2	–	–	–
0.25 to <0.50	BBB-	Baa3	BBB-	0.37	0.37	2	1	–	–	–
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-	1.15	1.09	5	5	–	–	–
2.5 to <10.00	B to B-	B2 to Caa1	CCC+ to CCC	4.20	4.20	1	1	–	–	–
10.00 to <100.00	B- to C	Caa1 to C	CCC to C	0.00	–	–	–	–	–	–
Banks										
0.00 to <0.15	AAA to A-	Aaa to Baa1	AAA to BBB+	0.04	0.07	167	190	–	–	–
0.15 to <0.25	BBB+	Baa2	BBB	0.22	0.22	34	40	–	–	–
0.25 to <0.50	BBB	Baa3	BBB-	0.37	0.37	34	26	–	–	–
0.50 to <0.75	BBB-	Baa3	BBB-	0.63	0.63	26	22	–	–	–
0.75 to <2.50	BB+ to BB-	Ba1 to B1	BB+ to B+	1.09	1.21	37	50	–	–	–
2.5 to <10.00	B+ to B-	B2 to Caa1	B to CCC+	3.95	4.36	16	14	–	–	–
10.00 to <100.00	CCC+ to C	Caa1 to C	CCC to C	12.81	11.50	2	1	–	–	–
Corporate – small and medium-sized corporates										
0.00 to <0.15	AAA to A-	Aaa to Baa1	AAA to BBB+	0.11	0.11	713	637	–	–	0.03
0.15 to <0.25	BBB+	Baa2	BBB	0.22	0.22	949	842	–	–	0.18
0.25 to <0.50	BBB	Baa3	BBB-	0.37	0.37	1,269	1,271	5	–	0.31
0.50 to <0.75	BBB-	Baa3	BBB-	0.63	0.63	1,358	1,311	–	–	0.20
0.75 to <2.50	BB+ to BB-	Ba1 to B1	BB+ to B+	1.43	1.49	4,513	4,670	22	1	0.59
2.5 to <10.00	B+ to B-	B2 to Caa1	B to CCC+	3.84	4.02	888	865	20	–	1.90
10.00 to <100.00	CCC+ to C	Caa1 to C	CCC to C	19.84	19.51	67	42	5	–	11.69
Corporate – other³										
0.00 to <0.15	AAA to A-	Aaa to Baa1	AAA to BBB+	0.09	0.09	3,759	4,129	1	–	0.02
0.15 to <0.25	BBB+	Baa2	BBB	0.22	0.22	2,262	2,183	1	–	0.04
0.25 to <0.50	BBB	Baa3	BBB-	0.37	0.37	2,172	2,311	3	–	0.07
0.50 to <0.75	BBB-	Baa3	BBB-	0.63	0.63	1,903	2,078	3	–	0.22
0.75 to <2.50	BB+ to BB-	Ba1 to B1	BB+ to B+	1.37	1.46	5,098	5,378	16	–	0.53
2.5 to <10.00	B+ to B-	B2 to Caa1	B to CCC+	3.97	4.13	1,260	1,344	16	–	1.78
10.00 to <100.00	CCC+ to C	Caa1 to C	CCC to C	23.44	16.86	87	124	6	–	9.05

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

2 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.

3 Specialised lending exposures are excluded.

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Table 41: CR9 – Back-testing of PD per portfolio (continued)

b PD range	d Weighted average PD %	e Arithmetic average PD % by obligors	f Number of obligors ¹		g Defaulted obligors in the year	h of which: new defaulted obligors in the year	i Average historical annual default rate %
			End of previous year	End of the year			
Retail – QRRE							
0.00 to < 0.15	0.06	0.06	4,283,398	4,573,126	1,938	19	0.04
0.15 to < 0.25	0.22	0.22	252,917	253,369	324	5	0.13
0.25 to < 0.50	0.39	0.40	426,103	418,280	1,015	27	0.24
0.50 to < 0.75	0.58	0.59	117,687	110,751	473	23	0.44
0.75 to < 2.50	1.36	1.33	572,251	571,919	3,585	204	0.69
2.50 to < 10.00	4.57	4.50	179,547	178,395	4,677	76	2.89
10.00 to < 100.00	20.60	23.38	64,758	64,386	6,560	10	10.85
Retail – Residential mortgage exposures							
0.00 to < 0.15	0.09	0.09	140,438	153,952	39	5	0.03
0.15 to < 0.25	0.19	0.18	113,774	116,978	157	4	0.10
0.25 to < 0.50	0.34	0.35	48,541	52,173	72	4	0.11
0.50 to < 0.75	0.58	0.61	43,849	51,589	96	1	0.29
0.75 to < 2.50	1.11	1.17	62,041	56,821	171	2	0.33
2.50 to < 10.00	4.61	5.00	21,105	20,652	354	5	2.10
10.00 to < 100.00	16.90	18.31	6,825	6,359	510	–	11.70
Retail – small business retail exposures							
0.00 to < 0.15	0.08	0.07	1,226	1,237	–	–	–
0.15 to < 0.25	0.19	0.19	188	166	–	–	–
0.25 to < 0.50	0.37	0.38	137	147	–	–	–
0.50 to < 0.75	0.58	0.56	222	214	–	–	–
0.75 to < 2.50	1.19	1.19	56	62	–	–	0.13
2.50 to < 10.00	6.10	6.11	204	220	–	–	0.11
10.00 to < 100.00	–	–	–	–	–	–	–
Other retail exposures to individuals							
0.00 to < 0.15	0.08	0.09	92,926	90,936	37	–	0.07
0.15 to < 0.25	0.21	0.21	58,754	59,043	27	–	0.11
0.25 to < 0.50	0.37	0.38	42,610	43,879	41	4	0.22
0.50 to < 0.75	0.62	0.58	34,778	34,588	87	4	0.64
0.75 to < 2.50	1.61	1.65	32,208	31,950	265	34	1.16
2.50 to < 10.00	3.42	4.23	44,889	44,598	911	88	2.50
10.00 to < 100.00	15.84	16.60	7,351	7,466	693	21	10.77

¹ 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.

Four approaches may be used to calculate exposure values for CCR: mark-to-market, original exposure, standardised and IMM. Exposure values calculated under these approaches are used to determine RWAs. Across the group, we use the mark-to-market and IMM approaches.

Under the mark-to-market approach, the EAD is calculated as current exposure plus regulatory add-ons. We use this approach for all products not covered by our IMM permission. Under the IMM approach, EAD is calculated by multiplying the effective expected positive exposure with a multiplier called 'alpha'.

Alpha (set to a default value of 1.4) 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 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 derivatives 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 Committee. Models are subject to ongoing monitoring and validation. Additionally, they are subject to independent review at inception and annually thereafter.

Credit valuation adjustment

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

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

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 99.5% of collateral held as variation margin under 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 on the group's Annual Report and Accounts 2019.

Central counterparties

While exchange traded derivatives have been cleared through central counterparties ('CCPs') for many years, recent regulatory initiatives designed to reduce systemic risk in the banking system are directing increasing volumes of OTC derivatives to 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 2019, 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\$95m and for a two-notch downgrade was HK\$134m.

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Table 42: CCR1 – Analysis of counterparty default risk exposures (other than those to CCPs) by approaches

	a	b	c	d	e	f
	Replacement cost ('RC')	PFE	Effective expected positive exposures (EPE)	Alpha (α) used for computing default risk exposure	Default risk exposure after CRM	RWAs
	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
1a CEM	12,050	31,946		N/A	43,981	12,444
2 IMM (CCR) approach			64,928	1.4	90,899	32,440
4 Comprehensive Approach (for SFTs)					97,553	11,183
6 Total at 31 Dec 2019						56,067

Table 43: CCR2 – CVA capital charge

	a	b
	EAD post CRM	RWAs
	HK\$m	HK\$m
Netting sets for which CVA capital charge is calculated by the advanced CVA method	89,081	14,747
1 (i) VaR (after application of multiplication factor if applicable)		2,470
2 (ii) Stressed VaR (after application of multiplication factor if applicable)		12,277
3 Netting sets for which CVA capital charge is calculated by the standardised CVA method	39,202	3,469
4 Total at 31 Dec 2019	128,283	18,216

Table 44: CCR6 – Credit-related derivatives contracts

	a	b
	Protection bought	Protection sold
	HK\$m	HK\$m
At 31 Dec 2019		
Notional amounts		
Single-name credit default swaps	254,234	231,881
Index credit default swaps	89,729	80,488
Total return swaps	10,142	–
Total notional amounts	354,105	312,369
Fair values		
Positive fair value (asset)	179	6,362
Negative fair value (liability)	(7,084)	(109)

The decrease in credit default swaps compared to 30 June 2019 was business driven.

Table 45: CCR5 – Composition of collateral for counterparty default risk exposures (including those for contracts or transactions cleared through CCPs)

	a	b	c	d	e	f
	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	Unsegregated	Segregated	Unsegregated		
	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
Cash – domestic currency	–	2,705	–	1,807	72,251	33,796
Cash – other currencies	–	51,754	–	42,256	431,952	431,474
Domestic sovereign debt	–	4	–	15	–	33,569
Other sovereign debt	–	7,281	6,957	31,040	61,735	139,276
Government agency debt	–	130	–	20	–	–
Corporate bonds	7,193	6,028	8,827	57	28,090	28,530
Equity securities	–	468	–	–	3,281	28,218
Other collateral	–	2,654	–	–	–	–
Total at 31 Dec 2019	7,193	71,024	15,784	75,195	597,309	694,863

Table 46: CCR8 – Exposures to CCPs

	a	b
	Exposure after CRM HK\$m	RWAs HK\$m
At 31 Dec 2019		
1 Exposures of the AI as clearing member or client to qualifying CCPs (total)		2,091
2 Default risk exposures to qualifying CCPs (excluding items disclosed in rows 7 to 10), of which:	13,619	272
3 (i) OTC derivative transactions	6,660	133
4 (ii) exchange-traded derivative contracts	6,959	139
7 Segregated initial margin	6,957	
8 Unsegregated initial margin	9,723	1,313
9 Funded default fund contributions	1,919	506
11 Exposures of the AI as clearing member or client to non-qualifying CCPs (total)		375
12 Default risk exposures to non-qualifying CCPs (excluding items disclosed in rows 17 to 20), of which:	5	5
14 (ii) exchange-traded derivative contracts	5	5
18 Unsegregated initial margin	80	80
19 Funded default fund contributions	23	289

Counterparty default risk under internal ratings-based approach

Table 47: 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
	EAD post-CRM HK\$m	Average PD %	Number of obligors	Average LGD %	Average maturity years	RWAs HK\$m	RWA density %
PD scale							
Portfolio (i) – Sovereign							
0.00 to < 0.15	40,224	0.01	52	44.8	0.29	739	2
0.15 to < 0.25	–	0.00	–	0.0	–	–	–
0.25 to < 0.50	13	0.37	1	45.0	1.00	6	44
0.50 to < 0.75	81	0.63	2	48.2	2.33	65	80
0.75 to < 2.50	38	0.92	1	45.0	0.17	23	60
2.50 to < 10.00	–	0.00	–	0.0	–	–	–
10.00 to < 100.00	–	0.00	–	0.0	–	–	–
100.00 (Default)	–	0.00	–	0.0	–	–	–
Sub-total at 31 Dec 2019	40,356	0.01	56	44.8	0.30	833	2
Portfolio (ii) – Bank							
0.00 to < 0.15	107,713	0.05	1,538	35.0	1.05	13,541	13
0.15 to < 0.25	8,571	0.22	134	40.3	0.84	2,945	34
0.25 to < 0.50	6,771	0.37	79	48.3	0.58	3,633	54
0.50 to < 0.75	1,753	0.63	26	36.7	1.30	1,153	66
0.75 to < 2.50	475	0.91	38	45.8	1.16	425	89
2.50 to < 10.00	17	3.32	7	45.7	1.19	22	133
10.00 to < 100.00	–	0.00	–	0.0	–	–	–
100.00 (Default)	–	100.00	1	45.0	1.00	–	–
Sub-total at 31 Dec 2019	125,300	0.09	1,823	36.1	1.01	21,719	17
Portfolio (iii) – Corporate							
0.00 to < 0.15	29,247	0.09	1,576	49.1	2.05	8,556	29
0.15 to < 0.25	10,947	0.22	542	49.1	1.00	4,491	41
0.25 to < 0.50	5,113	0.37	422	50.6	1.05	2,855	56
0.50 to < 0.75	2,071	0.63	326	52.6	1.34	1,660	80
0.75 to < 2.50	6,055	1.29	863	51.6	1.45	6,240	103
2.50 to < 10.00	902	3.66	194	48.9	1.45	1,221	135
10.00 to < 100.00	12	22.18	11	56.5	1.08	25	206
100.00 (Default)	–	0.00	–	0.0	–	–	–
Sub-total at 31 Dec 2019	54,347	0.36	3,934	49.6	1.64	25,048	46
Total (sum of all portfolios) at 31 Dec 2019	220,003	0.14	5,813	41.1	1.04	47,600	22

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 25 to 27 of this document.

The decrease in average RW% from 26% at 30 June 2019 to 22% at 31 December 2019 was mainly due to a decrease in the average PD in the counterparty credit risk exposures within the corporate portfolio.

Counterparty default risk under standardised approach

Table 48: 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	j
	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						
2 PSE exposures	1,243	927	451	–	–	2,621
2a of which: domestic PSEs	–	150	–	–	–	150
2b of which: foreign PSEs	1,243	777	451	–	–	2,471
4 Bank exposures	–	138	650	–	29	817
5 Securities firm exposures	–	–	57	–	–	57
6 Corporate exposures	–	3	–	–	6,192	6,195
8 Regulatory retail exposures	–	–	–	151	–	151
12 Total at 31 Dec 2019	1,243	1,068	1,158	151	6,221	9,841

Securitisation

Group 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.

Group 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. These are primarily legacy exposures.

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 40 to 41 of the group's *Annual Report and Accounts 2019*.

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 36 on the group's Financial Statements of the Annual Report and Accounts 2019.

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 securitisation banking book positions, we use 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 ECAs for each and all classes of securitisation exposures.

Analysis of securitisation exposures

The group's involvement in securitisation activities in the second half of 2019 reflects the following:

- 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\$13,453m of additional residential mortgages in the banking book into an existing SPE.

Banking Disclosure Statement at 31 December 2019

Table 49: 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 2019						
1 Retail (total) – of which:	51,894	–	51,894	40,357	–	40,357
2 <i>residential mortgage</i>	51,894	–	51,894	16,593	–	16,593
3 <i>credit card</i>	–	–	–	5,857	–	5,857
4 <i>other retail exposures</i>	–	–	–	17,907	–	17,907

Table 50: SEC2 – Securitisation exposures in trading book

	g	i
	Acting as investor	
	Traditional HK\$m	Sub-total HK\$m
At 31 Dec 2019		
1 Retail (total) – of which:	1,669	1,669
2 <i>residential mortgage</i>	435	435

Table 51: 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	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	SEC-ERBA (including IAA)	SEC-SA	SEC-ERBA (including IAA)	SEC-SA	SEC-ERBA (including IAA)	SEC-SA
	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
At 31 Dec 2019										
1 Total exposures	29,618	3,312	2,470	4,580	28,210	11,770	11,092	3,252	887	260
2 Traditional securitisation	29,618	3,312	2,470	4,580	28,210	11,770	11,092	3,252	887	260
3 <i>of which: securitisation</i>	29,618	3,312	2,470	4,580	28,210	11,770	11,092	3,252	887	260
4 <i>of which: retail</i>	29,618	3,312	2,470	4,580	28,210	11,770	11,092	3,252	887	260

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, stressed VaR ('SVaR') and incremental risk charge ('IRC') of HSBC and almost all trading VaR resides in GB&M. GB&M manages the group's market risk, using risk limits approved by the Risk Management Meeting of the Group Management Board ('GMB').

For a discussion on market risk governance and structure refer to the Annual Report and Accounts 2019.

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 risk type. Granular sensitivity limits are set primarily for trading desks with consideration of market liquidity, customer demand and capital constraints, amongst other factors.

Value at risk

Value at risk ('VaR') is a technique that estimates the potential losses on risk positions in the trading portfolio 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 integrated into market risk management and is calculated for all trading positions regardless of how we capitalises those exposures.

In addition, we calculate VaR for non-trading portfolios to have a complete picture of risk. Our models are predominantly based on historical simulation. VaR is calculated at a 99% confidence level for a one-day holding period.

Our VaR models use historical series of market rates and prices to assess tail risk, 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.

We use the past two years as the historical data set in our VaR models and the scenarios are updated on a fortnightly 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 should always be viewed in the context 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 HSBC trading book that are not captured well by the VaR model. Our VaR model is designed to capture significant basis risk, such as CDS versus bond, asset swap spreads and cross-currency basis. Other basis risks that are not completely covered in VaR, such as CCP swap basis risks, are complemented by our RNIV calculations and are integrated into our capital framework.

Risk factors are reviewed on a regular basis and 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 daily 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 less 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 requirement.

Stress testing

Stress testing is an important risk measure that is integrated into our market risk management framework to evaluate the potential

impact on portfolio values of more extreme, although plausible, events or movements in a set of financial variables. In such scenarios, losses can be greater than those predicted by VaR modelling.

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

Market risk reverse stress tests are designed to identify vulnerabilities in our portfolios by looking for scenarios that lead to loss levels considered severe for the relevant portfolio. These scenarios may be quite 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 the historical and hypothetical events.

Market risk under standardised approach

Table 52: MR1 – Market risk under STM approach

		a
		RWAs HK\$m
Outright product exposures		
2	Equity exposures (general and specific risk)	1,455
4	Commodity exposures	24
8	Securitisation exposures	184
9	Total at 31 Dec 2019	1,663

Market risk capital models

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

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

HSBC maintains a trading book policy, which defines the minimum requirements for trading book positions and the process for classifying positions as trading or 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

The trading books that received approval from the regulator to be covered via an internal model are used to calculate VaR for regulatory purposes. 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;
- 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 probabilities of default (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 53: MR3 – IMM approach values for market risk exposures

		Footnote	a HK\$m
At 31 Dec 2019			
VaR (10 day – one-tailed 99% confidence interval)			
1	Maximum Value	1	603
2	Average Value		456
3	Minimum Value		346
4	Period End		461
Stressed VaR (10 day – one-tailed 99% confidence interval)			
5	Maximum Value	1	738
6	Average Value		476
7	Minimum Value		240
8	Period End		572
Incremental risk charge ('IRC') (99.9% confidence interval)			
9	Maximum Value		3,487
10	Average Value		2,972
11	Minimum Value		2,093
12	Period End		2,698

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

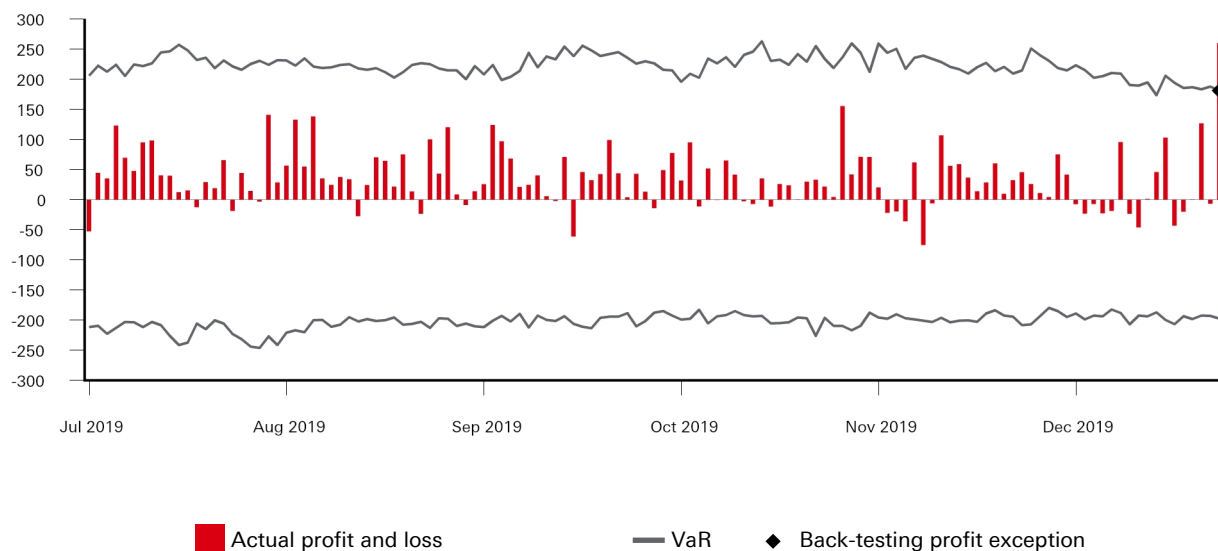
The group's trading VaR at 31 December 2019 was lower than 30 June 2019 due to the reduction in the interest rate trading VaR and credit trading VaR, which was driven by reduced inventory positions.

The increase of the group's trading Stressed VaR at 31 December 2019 compared to 30 June 2019 was mainly driven by the Stressed VaR period change.

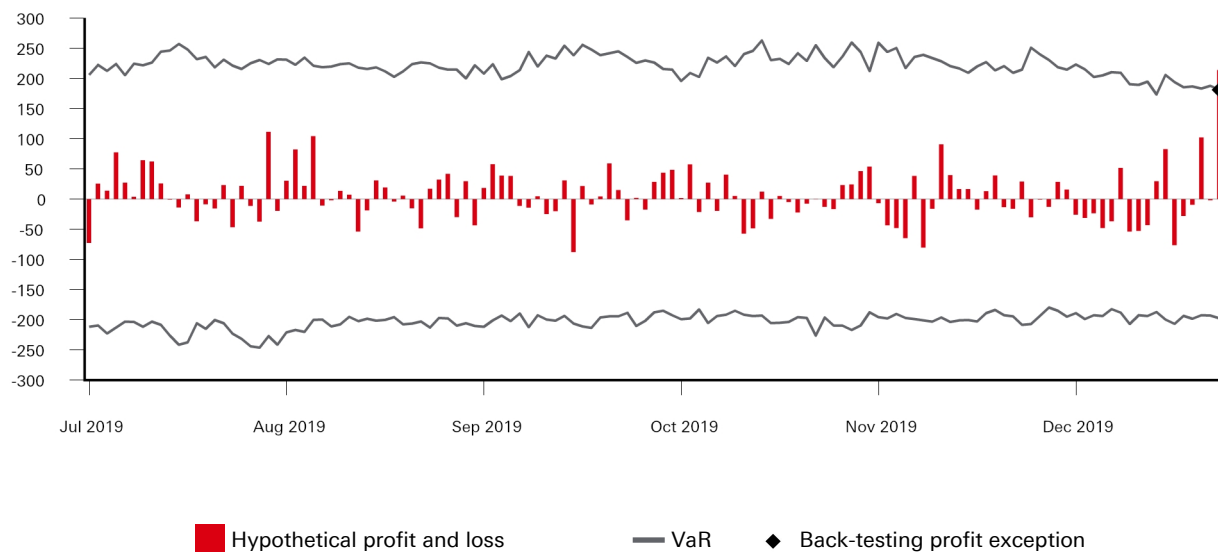
Trading IRC at 31 December 2019 was lower than 30 June 2019 due to the reduction in the trading bond inventory.

Table 54: 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)



The group experienced one profit exception in the fourth quarter of 2019 against both actual profit and loss and hypothetical profit

and loss, driven by gains across most asset classes, as the markets moved in favour of the positions.

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 ('close out') uncertainty, model risk, concentration, administrative cost, unearned credit spreads ('CVA') and investing and funding costs ('FFVA').

Table 55: PV1 – Prudent valuation adjustments

	a	b	c	d	e	f	g	h
	Equity HK\$m	Interest rates HK\$m	FX HK\$m	Credit HK\$m	Commodities 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	246	766	42	176	–	1,230	668	562
2 – of which:								
<i>Mid-market value</i>	153	371	10	68	–	602	262	340
3 <i>Close-out costs</i>	19	123	7	10	–	159	119	40
4 <i>Concentration</i>	74	272	25	98	–	469	287	182
5 Early termination	–	–	–	–	–	–	–	–
6 Model risk	54	16	–	–	–	70	70	–
7 Operational risks	18	63	3	9	–	93	52	41
8 Investing and funding costs	–	29	–	–	4	33	33	–
9 Unearned credit spreads	–	118	10	–	–	128	128	–
10 Future administrative costs	–	–	–	–	–	–	–	–
11 Other adjustments	–	–	–	–	–	–	–	–
12 Total adjustments at 31 Dec 2019	318	992	55	185	4	1,554	951	603

Liquidity information

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 56: LIQA – LCRs and NSFRs on three liquidity reporting bases

	At 31 Dec 2019	
	LCR %	NSFR %
Hong Kong Office	197.4	132.3
Unconsolidated	184.8	137.0
Consolidated	153.7	145.8

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 40 to 41 of the Risk Report of the group's *Annual Report and Accounts 2019*. The on- and off-balance sheet items, broken down into maturity buckets, is disclosed in Notes 27 and 28 in the group's *Annual Report and Accounts 2019*.

Table 57: LIQ1 – Liquidity coverage ratio – for category 1 institution

	a	b
	Quarter ended 31 Dec 2019	
	Unweighted value (average) HK\$m	Weighted value (average) HK\$m
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 2019 was 75.		
Basis of disclosure: consolidated		
A HQLA		
1 Total HQLA		1,619,870
B Cash outflows		
2 Retail deposits and small business funding, of which:	3,279,180	305,450
3 <i>Stable retail deposits and stable small business funding</i>	332,103	10,743
4 <i>Less stable retail deposits and less stable small business funding</i>	2,947,077	294,707
5 Unsecured wholesale funding (other than small business funding) and debt securities and prescribed instruments issued by the AI, of which:	2,204,234	1,062,050
6 <i>Operational deposits</i>	549,881	133,912
7 <i>Unsecured wholesale funding (other than small business funding) not covered in row 6</i>	1,644,178	917,963
8 <i>Debt securities and prescribed instruments issued by the AI and redeemable within the LCR period</i>	10,175	10,175
9 Secured funding transactions (including securities swap transactions)		3,956
10 Additional requirements, of which:	510,147	183,804
11 <i>Cash outflows arising from derivative contracts and other transactions, and additional liquidity needs arising from related collateral requirements</i>	134,012	133,795
12 <i>Cash outflows arising from obligations under structured financing transactions and repayment of funding obtained from such transactions</i>	1,502	1,502
13 <i>Potential drawdown of undrawn committed facilities (including committed credit facilities and committed liquidity facilities)</i>	374,633	48,507
14 Contractual lending obligations (not otherwise covered in Section B) and other contractual cash outflows	181,782	181,782
15 Other contingent funding obligations (whether contractual or non-contractual)	3,005,074	21,171
16 Total cash outflows		1,758,213
C Cash inflows		
17 Secured lending transactions (including securities swap transactions)	359,105	78,060
18 Secured and unsecured loans (other than secured lending transactions covered in row 17) and operational deposits placed at other financial institutions	673,211	467,648
19 Other cash inflows	239,630	221,712
20 Total cash inflows	1,271,946	767,420
D Liquidity coverage ratio (adjusted value)		
21 Total HQLA		1,619,870
22 Total net cash outflows		990,793
23 LCR (%)		163.5%

The average LCR increased by 13.8% from 149.7% for the quarter ended 30 September 2019 to 163.5% for the quarter ended 31 December 2019, mainly as a result of the growth in customer deposits.

Table 58: LIQ2 – Net stable funding ratio – for category 1 institution

		a	b	c	d	e
		Quarter ended 31 Dec 2019				
Basis of disclosure: consolidated		Unweighted value by residual maturity				
		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:	770,442	–	–	19,582	790,024
2	Regulatory capital	770,442	–	–	14,839	785,281
3	Other capital instruments	–	–	–	4,743	4,743
4	Retail deposits and small business funding:		3,311,783	–	–	2,996,892
5	Stable deposits		325,741	–	–	309,454
6	Less stable deposits		2,986,042	–	–	2,687,438
7	Wholesale funding:	–	2,621,736	45,262	9,988	964,196
8	Operational deposits		560,155	–	–	280,078
9	Other wholesale funding	–	2,061,581	45,262	9,988	684,118
10	Liabilities with matching interdependent assets	298,944	–	–	–	–
11	Other liabilities:	222,811	153,781	17,383	236,969	245,660
13	All other funding and liabilities not included in the above categories	222,811	153,781	17,383	236,969	245,660
14	Total ASF					4,996,772
B	Required stable funding ('RSF') item					
15	Total HQLA for NSFR purposes		1,832,131			69,053
17	Performing loans and securities:	320,804	1,764,041	322,831	2,529,564	2,955,938
18	Performing loans to financial institutions secured by Level 1 HQLA	–	421,304	7,832	–	46,047
19	Performing loans to financial institutions secured by non-Level 1 HQLA and unsecured performing loans to financial institutions	13,544	224,556	63,235	156,207	235,053
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:	125,025	936,925	199,633	1,370,974	1,810,945
21	With a risk-weight of less than or equal to 35% under the STC approach	1,198	5,239	493	9,915	10,090
22	Performing residential mortgages, of which:	–	12,481	13,177	933,555	637,595
23	With a risk-weight of less than or equal to 35% under the STC approach	–	9,343	9,189	843,782	557,724
24	Securities that are not in default and do not qualify as HQLA, including exchange-traded equities	182,235	168,775	38,954	68,828	226,298
25	Assets with matching interdependent liabilities	298,944	–	–	–	–
26	Other assets:	685,853	73,826	40	2,499	384,419
27	Physical traded commodities, including gold	18,871				16,040
28	Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs	44,151				37,528
29	Net derivative assets	21,841				21,841
30	Total derivative liabilities before deduction of variation margin posted	229,756				N/A
31	All other assets not included in the above categories	371,234	73,826	40	2,499	309,010
32	Off-balance sheet items			3,146,661		18,093
33	Total RSF					3,427,503
34	Net Stable Funding Ratio (%)					145.8

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Table 58: LIQ2 – Net stable funding ratio – for category 1 institution (continued)

		a	b	c	d	e
		Quarter ended 30 Sep 2019				
		Unweighted value by residual maturity				
Basis of disclosure: consolidated	Footnote	No specified term to maturity	<6 months or repayable on demand	6 months to < 12 months	12 months or more	Weighted amount
		HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
A	Available stable funding ('ASF') item					
1	Capital:	756,984	—	—	19,852	776,836
2	Regulatory capital	756,984	—	—	14,746	771,730
3	Other capital instruments	—	—	—	5,106	5,106
4	Retail deposits and small business funding:		3,233,774	—	—	2,926,649
5	Stable deposits		325,049	—	—	308,796
6	Less stable deposits		2,908,725	—	—	2,617,853
7	Wholesale funding:	—	2,572,223	55,951	12,895	947,909
8	Operational deposits		535,205	—	—	267,602
9	Other wholesale funding	—	2,037,018	55,951	12,895	680,307
10	Liabilities with matching interdependent assets	284,604	—	—	—	—
11	Other liabilities:	233,307	206,818	21,816	244,860	255,769
13	All other funding and liabilities not included in the above categories	233,307	206,818	21,816	244,860	255,769
14	Total ASF					4,907,163
B	Required stable funding ('RSF') item					
15	Total HQLA for NSFR purposes	¹	1,660,911			66,416
17	Performing loans and securities:	309,542	1,799,609	417,102	2,483,382	2,983,861
18	Performing loans to financial institutions secured by Level 1 HQLA	—	350,081	15,646	—	42,831
19	Performing loans to financial institutions secured by non-Level 1 HQLA and unsecured performing loans to financial institutions	17,553	297,641	77,986	179,333	280,525
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:	123,660	945,801	238,158	1,395,703	1,867,572
21	With a risk-weight of less than or equal to 35% under the STC approach	215	4,984	493	10,341	9,600
22	Performing residential mortgages, of which:	—	10,120	10,842	870,000	584,557
23	With a risk-weight of less than or equal to 35% under the STC approach	—	9,072	8,944	827,120	546,636
24	Securities that are not in default and do not qualify as HQLA, including exchange-traded equities	168,329	195,966	74,470	38,346	208,376
25	Assets with matching interdependent liabilities	284,604	—	—	—	—
26	Other assets:	728,806	137,219	126	1,073	384,997
27	Physical traded commodities, including gold	12,738				10,827
28	Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs	50,506				42,930
29	Net derivative assets	22,595				22,595
30	Total derivative liabilities before deduction of variation margin posted	261,168				N/A
31	All other assets not included in the above categories	381,799	137,219	126	1,073	308,645
32	Off-balance sheet items	¹		3,057,325		17,614
33	Total RSF					3,452,888
34	Net Stable Funding Ratio (%)					142.1

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 BSM to manage, in accordance with internal transfer pricing rules. In its management of IRRBB, the group aims to balance mitigating the effect of future interest rate movements which could reduce net interest income against the cost of hedging. The monitoring of the projected net interest income and economic value of equity ('EVE') sensitivity under varying interest rate scenarios is a key part of this.

Governance and structure

Group Treasury and Asset, Liability and Capital Management ('ALCM') monitor and control non-traded interest rate risk. This includes reviewing and challenging the business prior to the release of new products and in respect of proposed behavioural assumptions used for hedging activities. ALCM are 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 BSM.

The ALCO defines each operating entity's transfer pricing curve, 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 have to be formulated in line with the Group's behavioural policies and approved at least annually by local ALCOs. Non-traded assets and liabilities are transferred to BSM based on their repricing and maturity characteristics.

BSM manages the banking book interest rate positions transferred to it within the Market Risk limits approved by RMM.

Sensitivity of economic value of equity

An EVE Sensitivity is the extent to which the EVE will change due to a pre-specified movement in interest rates (six prescribed interest rate shock scenarios as per 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 ('OBS') 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

Net interest income ('NII') Sensitivity is the sensitivity of expected net interest income under varying interest rate scenarios, where all other economic variables are held constant. Sensitivity of net interest income reflects the authorised institution's ('AI') 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 an earnings is assessed over the next 12 months if the interest rates change by prescribed interest rate shock scenarios as per HKMA.

The EVE & NII sensitivity shown in the quantitative disclosures are indicative and based on scenarios and assumptions prescribed by HKMA under completion instruction for the Return of Interest Rate Risk in the banking book, which is completed and reported quarterly on consolidated.

Key modelling and parametric assumptions used in calculating Δ EVE and Δ NII in template IRRBB1 includes:

- i. for Δ EVE, commercial margins and other spread components have been excluded from the cash flows used in the computation and discount rate used;
- ii. 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;
- iii. no prepayment or early redemption risk assumed as AI does not have material long term fixed rate positions, majority of the loans are on a floating basis and average term for fixed rate deposits is one to three months therefore the risk is immaterial.

HSBC uses internal measurement system ('IMS') to generate EVE metric for purposes of internal assessment of capital adequacy which are different from the modelling assumptions prescribed for this disclosure, however they do not contribute to any material directional implications, this includes:

- i. behaviouralisation of non-maturity products, the extent to which can be driven by:
 - a. the amount of the current balance that can be assessed as stable under business-as-usual conditions; and
 - b. for managed rate balances the historic market interest rate re-pricing behaviour observed; or
 - c. 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 BSM to neutralize the risk through the use of fixed rate government bonds or interest rate derivatives, and for derivatives the availability of cash flow hedging capacity.
- ii. internal measurement consider aggregated results of all currencies and not only material currencies as prescribed by HKMA under completion instruction for the Return of Interest Rate Risk in the banking book (MA(BS)12A);
- iii. 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;
- iv. economic value gains weighted 50% and losses weighted 100% under internal measurement unlike modelling assumptions for this disclosure where economic value gains weights 0%.

Average and longest repricing maturity for non-maturity deposits ('NMDs') in 2019 was 1 day.

Quantitative information on interest rate risk in banking book

Table 59: IRRBB1 – Quantitative information on interest rate risk in banking book

	a	b	c	d
	ΔEVE		ΔNII	
	31 Dec 2019 HK\$m	31 Dec 2018 HK\$m	31 Dec 2019 HK\$m	31 Dec 2018 HK\$m
1 Parallel up	21,249	N/A	11,632	N/A
2 Parallel down	–	N/A	(12,040)	N/A
3 Steepener	17	N/A		
4 Flattener	8,550	N/A		
5 Short rate up	15,732	N/A		
6 Short rate down	–	N/A		
7 Maximum	21,249	N/A	11,632	N/A
Period	31 Dec 2019		31 Dec 2018	
8 Tier 1 capital	537,460		N/A	

The worst scenario for change in the economic value of equity is 'Parallel up'. The major contributors to the sensitivity is from the net gap positions for HKD, USD, INR and CNY currencies, further supplemented by currency specific shocks prescribed by the HKMA.

The worst scenario for change in the net interest income over the next twelve months is 'Parallel up'. The asymmetry between scenarios, 'parallel up' and 'parallel down', is due to flooring at -2% as prescribed by the HKMA.

The prior period information is not available as the new local IRRBB framework (in accordance with the HKMA Supervisory Policy IR1) was implemented from 1st July 2019.

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 60: Mainland activities

	On-balance sheet exposure	Off-balance sheet exposure	Total exposures
	HK\$m	HK\$m	HK\$m
At 31 Dec 2019			
Types of counterparties			
1 Central government, central government-owned entities and their subsidiaries and joint ventures ('JVs')	232,364	19,840	252,204
2 Local governments, local government-owned entities and their subsidiaries and JVs	55,328	6,991	62,319
3 People's Republic of China ('PRC') nationals residing in mainland China or other entities incorporated in mainland China and their subsidiaries and JVs	375,198	60,422	435,620
4 Other entities of central government not reported in item 1 above	14,331	4,211	18,542
5 Other entities of local governments not reported in item 2 above	6,857	2,557	9,414
6 PRC nationals residing outside mainland China or entities incorporated outside mainland China where the credit is granted for use in mainland China	37,247	3,554	40,801
7 Other counterparties where the exposures are considered by the reporting institution to be non-bank mainland China exposures	48,701	4,188	52,889
Total	770,026	101,763	871,789
Total assets after provision	5,144,923		
On-balance sheet exposures as percentage of total assets	14.97%		

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 61: International claims

	Banks HK\$m	Official sector HK\$m	Non-bank financial institutions HK\$m	Non-financial private sector HK\$m	Others HK\$m	Total HK\$m
At 31 Dec 2019						
Developed countries	447,519	478,211	300,419	453,254	149	1,679,552
– of which: Japan	157,217	132,164	17,102	52,531	–	359,014
– of which: United States	40,627	205,729	81,770	135,554	–	463,680
Offshore centres	58,868	36,179	121,968	472,944	50	690,009
– of which: Hong Kong	34,938	2,509	58,982	280,434	1	376,864
Developing Asia and Pacific	412,383	100,624	104,644	427,468	29	1,045,148
– of which: Mainland China	346,444	62,577	61,588	235,417	29	706,055

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 2019:

Table 62: Non-structural foreign currency positions

	United States dollars HK\$m
At 31 Dec 2019	
Spot assets	1,903,186
Spot liabilities	(2,378,117)
Forward purchases	12,049,537
Forward sales	(11,533,164)
Net options positions	(25,002)
Net long (net short) position	16,440

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

Remuneration

Remuneration policy

Our remuneration strategy is designed to reward competitively the achievement of long-term sustainable performance, and attract and motivate the very best people, regardless of gender, ethnicity, age, disability or any other factor unrelated to performance or experience with the Group. We believe that remuneration is an important tool for instilling the right behaviours, and driving and encouraging actions that are aligned to organisational values and the long-term interests of our stakeholders.

Our remuneration strategy, as approved by the Group Remuneration Committee and adopted subject to annual review by the Bank's Remuneration Committee, is based on the following principles:

- An alignment to performance at all levels (individual, business and Group) taking into account both 'what' has been achieved and 'how' it has been achieved. The 'how' helps ensure that performance is sustainable in the longer term, consistent with HSBC's values and risk and compliance standards;
- Being informed, but not driven by, market position and practice. Market benchmarks are sourced through independent specialists and provide an indication of the range of pay levels and employee benefits provided by our competitors;
- Considering the full-market range when making pay decisions for employees, taking into account the individual's and the Group's performance in any given year. An individual's pay will vary depending upon their performance;

- Compliance with relevant regulation across all of our countries and territories.

Based on these principles, our approach to determining remuneration is based on the following objectives:

- Offering our employees a competitive total reward package. This includes market competitive fixed pay levels, which ensure 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;
- Ensuring variable pay is awarded on a discretionary basis and dependent upon Group, business and individual performance in line with overall Group affordability;
- Offering employee benefits that are valued by a diverse workforce, 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; and
- Linking reward packages to performance and behaviour with no bias towards an individual's ethnicity, gender, age, or any other characteristic.

Please refer to the HSBC remuneration practices and governance at <http://www.hsbc.com/about-hsbc/corporate-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 policy 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 policy applicable to all Group employees. Following revisions to the HKMA's Supervisory Policy Manual CG-1 'Corporate Governance of Locally Incorporated Authorised Institutions', the Bank's Board established a Remuneration Committee with effect from 1 January 2018 which annually reviews the effectiveness and compliance of the Group's reward strategy. All members of the 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 and at least annually. The annual review for 2019 was commissioned externally to Deloitte LLP, and the results confirm that the Bank's remuneration policy as adopted from the Group policy is consistent with the principles set out in the Guideline.

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, Legal and Compliance) and Managers as registered with the HKMA. There were 35 members of senior management during 2019. This includes one member who has been a Director of, and remunerated by, HSBC Holdings plc and is consequently not included in the disclosures below.

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 2019 were 274 members.

Table 63: REM1 – Remuneration awarded during financial year

Remuneration amount and quantitative information	Footnotes	a	b
		2019	
		Senior Management	Key personnel
Fixed remuneration	1		
1 Number of employees		34	274
2 Total fixed remuneration (HK\$m)		298	1,170
3 Of which: cash-based		298	1,170
Variable remuneration	2		
9 Number of employees	3	34	274
10 Total variable remuneration (HK\$m)		304	975
11 Of which: cash-based		147	480
12 Of which: deferred		87	228
13 Of which: shares or other share-linked instruments		157	495
14 Of which: deferred		97	253
17 Total remuneration (HK\$m)		602	2,145

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.

Table 64: REM2 – Special payments

Special payments	a	b	c	d	e	f
	2019					
	Guaranteed bonuses		Sign-on awards		Severance payments	
	Number of employees	Total amount HK\$m	Number of employees	Total amount HK\$m	Number of employees	Total amount HK\$m
1 Senior management	1	6	–	–	–	–
2 Key personnel	4	25	–	–	13	49

Table 65: REM3 – Deferred remuneration

	a	b	c	d	e
2019					
		Of which: Total amount of outstanding deferred and retained remuneration exposed to ex post explicit and/or implicit adjustment			
Deferred and retained remuneration	Footnote	Total amount of outstanding deferred remuneration HK\$m	Total amount of amendment during the year due to ex post explicit adjustments HK\$m	Total amount of amendment during the year due to ex post implicit adjustments HK\$m	Total amount of deferred remuneration paid out in the financial year HK\$m
1 Senior management		455	455	–	(20)
2 Cash		186	186	–	61
3 Shares		269	269	–	(20)
6 Key personnel		1,166	1,166	–	(48)
7 Cash		447	447	–	–
8 Shares		712	712	–	(49)
10 Other	1	7	7	–	1
11 Total		1,621	1,621	–	(68)

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

Other information

Abbreviations

The following abbreviated terms are used throughout this document.

Currencies

HK\$m	Millions of Hong Kong dollars
HK\$b	Billions (thousands of millions) of Hong Kong dollars
LCYm	Millions of local currency
US\$m	Millions of United States dollars

A

AI	Authorised institution
ALCO	Asset and Liability Management Committee
ALCM	Asset, Liability and Capital Management
ASF	Available stable funding
AT1	Additional tier 1
AVA	Additional value adjustment

B

BCBS	Basel Committee on Banking Supervision
BCR	Banking (Capital) Rules
BDR	Banking (Disclosure) Rules
BLR	Banking (Liquidity) Rules
BSC	Basic approach
BSM	Balance Sheet Management

C

CCF	Credit conversion factor
CCP	Central counterparty
CCR ¹	Counterparty credit risk
CCyB ¹	Countercyclical capital buffer
CDS ¹	Credit default swap
CEM	Current exposure method
CET1 ¹	Common equity tier 1
CIS	Collective investment scheme
CMB	Commercial Banking, a global business
CRE ¹	Commercial real estate
CRM	Credit risk mitigation/mitigant
CRR ¹	Customer risk rating
CSA	Credit Support Annex
CVA	Credit valuation adjustment

D

D-SIB	Domestic systemically important authorised institution
DTAs	Deferred tax assets

E

EAD ¹	Exposure at default
EBA	European Banking Authority
ECA	Export Credit Agency
ECAI	External Credit Assessment Institution
ECL	Expected credit loss
EL ¹	Expected loss
EPE	Effective expected positive exposures
EVE	Economic value of equity

F

FFVA	Funding Fair Value Adjustment
FIRO	Financial Institutions (Resolution) Ordinance
FSB	Financial Stability Board
FX	Foreign exchange

G

GB&M	Global Banking and Markets, a global business
GMB	Group Management Board
GPB	Global Private Banking, a global business
Group	HSBC Holdings together with its subsidiary undertakings
group	The Hongkong and Shanghai Banking Corporation Limited together with its subsidiary undertakings
G-SIB ¹	Global systemically important authorised institution

H

HAHO	HSBC Asia Holdings Limited
HKFRS	Hong Kong Financial Reporting Standards
HKMA	Hong Kong Monetary Authority
Hong Kong	The Hong Kong Special Administrative Region of the People's Republic of China
HQLA	High-quality liquid assets
HSBC	HSBC Holdings together with its subsidiary
HVCRE	High volatility commercial real estate

I

IAA	Internal assessment approach
IMM ¹	Internal Models Method
IMM(CCR)	Internal models (counterparty credit risk)
IMS	Internal measurement system
IPRE	Income producing real estate
IRB ¹	Internal ratings-based approach
IRRBB	Interest rate risk in the banking book
IRC	Incremental risk charge

J

JCCyB	Jurisdictional countercyclical capital buffer
JVs	Joint ventures

L

LAC	Loss-absorbing capacity
LAC Rules	Financial Institutions (Resolution) (Loss-absorbing Capacity Requirements - Banking Sector) Rules
LCR	Liquidity Coverage Ratio
LGD ¹	Loss given default
Libor	London interbank offered rate
LR	Leverage ratio

M

MOC	Model Oversight Committee
MRTs	Identified Staff and Material Risk Takers
MSRs	Mortgage servicing rights

N

NII	Net interest income
NSFR	Net stable funding ratio
NMDs	Non-maturity and deposits

O

OBS	Off-balance sheet
OTC ¹	Over-the-counter

P

PD ¹	Probability of default
PF	Project finance
PFE	Potential future exposure
PRA	Prudential Regulation Authority
PRC	People's Republic of China
PSE	Public sector entities
PVA	Prudent valuation adjustments

Q

QRRE	Qualifying revolving retail exposures
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R

RC	Replacement cost
RAS	Risk appetite statement
RBWM	Retail Bank and Wealth Management, a global business
RMM	Risk Management Meeting
RMOC	Retail Banking and Wealth Management Risk Model Oversight Committee
RNIV	Risks not in VaR
RSF	Required stable funding

RTS	Regulatory Technical Standard
RW	Riskweight
RWA ¹	Risk-weighted asset/risk-weighted amount
S	
SA-CCR	Standardised approach for counterparty credit risk
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 ¹	Securities Financing Transactions
SME	Small and medium-sized enterprise
SPE ¹	Special Purpose Entity
SRW	Supervisory risk-weight
STC	Standardised (credit risk) approach
STM	Standardised (market 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	Total Loss-absorbing Capacity
V	
VaR ¹	Value at risk
W	
WMOC	Wholesale Model Oversight Committee

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

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