

The Hongkong and Shanghai Banking Corporation Limited

**Banking Disclosure Statement at 31 December 2018
(unaudited)**

Contents

	Page
Introduction	3
Purpose	3
Basis of preparation	3
The Banking Disclosure Statement	3
Overview of risk management	5
Linkage to the Annual Report and Accounts 2018	7
Basis of consolidation	7
Balance sheet reconciliation	8
Capital and RWAs	12
Regulatory capital disclosures	12
Countercyclical capital buffer ratio	15
Leverage ratio	16
Overview of RWAs and the minimum capital requirements	17
RWA flow statements	18
Credit risk	19
Credit risk management	19
Credit quality of assets	20
Credit risk under internal ratings-based approach	23
Credit risk under standardised approach	29
Credit risk mitigation	30
Model performance	33
Counterparty credit risk exposures	35
Counterparty credit risk management	35
Counterparty default risk under internal ratings-based approach	37
Counterparty default risk under standardised approach	38
Securitisation	39
Group securitisation strategy	39
Group securitisation activity	39
Monitoring of securitisation positions	39
Securitisation accounting treatment	39
Securitisation regulatory treatment	39
Analysis of securitisation exposures	39
Market risk	41
Overview and governance	41
Market risk measures	41
Market risk under standardised approach	42
Market risk capital models	42
Analysis of VaR, stressed VaR and incremental risk charge measures	43
Prudent valuation adjustment	45
Liquidity information	46
Other disclosures	49
Interest rate exposures in the banking book	49
Mainland activities	49
International claims	50
Foreign currency positions	50
Remuneration	50
Other information	53
Abbreviations	53

Tables

	Page		Page
1	4	35	31
2	7	36	32
3	8	37	32
4	10	38	33
5	11	39	36
6	12	40	36
7	15	41	36
8	15	42	36
9	16	43	37
10	16	44	37
11	17	45	38
12	18	46	40
13	18	47	40
14	18	48	40
15	20	49	42
16	20	50	43
17	20	51	44
18	20	52	45
19	20	53	46
20	21	54	46
21	21	55	47
22	21	56	49
23	22	57	49
24	22	58	50
25	22	59	50
26	23	60	51
27	23	61	51
28	24	62	52
29	25		
30	26		
31.1	27		
31.2	28		
31.3	29		
32	29		
33	29		
34	30		

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 2018*. The group's *Annual Report and Accounts 2018*, the Banking Disclosure Statement and the Regulatory Capital Instruments document, taken together, comply with the Banking (Disclosure) Rules ('BDR') made under section 60A of the Banking Ordinance.

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 2018 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 19 February 2019. 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 2018*, 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 Hong Kong Monetary Authority ('HKMA') has implemented the Basel Committee on Banking Supervision ('BCBS') standards on revised Pillar 3 disclosure requirements released in January 2015 ('January 2015 standard') since 2017. In June 2018, the HKMA has further amended the BDR to incorporate the BCBS Pillar 3 disclosure requirements – consolidated and enhanced framework finalised in March 2017 ('March 2017 standard'). The group has implemented the relevant updates and new requirements in accordance with the latest BDR.

According to the BDR, 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. The remainder of the disclosure requirements are covered in the group's *Annual Report and Accounts 2018* and Regulatory Capital Instruments 31 December 2018 document which can be found in the Regulatory Disclosure section of our website, www.hsbc.com.hk.

BDR requirements covered in the Regulatory Capital Instruments document:

- Section 16FE - CCA : Main features of the regulatory capital instruments

BDR requirements covered in the group's *Annual Report and Accounts 2018*:

	References:
• Section 16FJ - LIQA : Liquidity risk management	Page 32-33
• Section 16J - The group's definition of impaired and renegotiated and the methods adopted for determining impairments	Note 1.2(i)
• Section 29(5) - Net structural foreign currency exposures	Page 36
• Section 44 : Assets used as security	Note 13
• Section 46 - The general disclosure of the major business activities and product lines	Page 8, Note 3 & Note 33
• Section 52 - Corporate governance	Page 3-7

Table 1: KM1 – Key prudential ratios

		a	b	c	d	e
		At ¹				
	Footnotes	31 Dec 2018	30 Sep 2018	30 Jun 2018	31 Mar 2018	31 Dec 2017
Regulatory capital (HK\$m)						
1	Common Equity Tier 1 ('CET1')	463,774	436,665	428,578	429,683	438,693
2	Tier 1	501,503	472,590	464,537	465,593	468,021
3	Total capital	557,180	537,336	529,848	529,687	522,244
Risk-weighted assets ('RWAs') (HK\$m)						
4	Total RWAs	2,813,912	2,744,189	2,785,568	2,857,038	2,758,609
Risk-based regulatory capital ratios (as a percentage of RWA)						
5	CET1 ratio (%)	16.5	15.9	15.4	15.0	15.9
6	Tier 1 ratio (%)	17.8	17.2	16.7	16.3	17.0
7	Total capital ratio (%)	19.8	19.6	19.0	18.5	18.9
Additional CET1 buffer requirements (as a percentage of RWA)						
8	Capital conservation buffer requirement (%)	1.875	1.875	1.875	1.875	1.25
9	Countercyclical capital buffer requirement (%)	0.96	1.09	1.08	1.05	0.70
10	Higher loss absorbency requirement (%) (applicable only to G-SIBs or D-SIBs)	1.875	1.875	1.875	1.875	1.25
11	Total AI-specific CET1 buffer requirements (%)	4.71	4.84	4.83	4.80	3.20
12	CET1 available after meeting the AI's minimum capital requirements (%)	11.8	11.2	10.7	10.3	10.9
Basel III leverage ratio						
13	Total leverage ratio ('LR') exposure measure (HK\$m)	7,741,301	7,663,757	7,688,762	7,710,103	7,477,306
14	LR (%)	6.5	6.2	6.0	6.0	6.3
Liquidity Coverage Ratio ('LCR')						
15	Total high quality liquid assets ('HQLA') (HK\$m)	1,566,715	1,502,149	1,455,156	1,497,248	1,491,318
16	Total net cash outflows (HK\$m)	974,311	956,466	988,881	995,254	971,469
17	LCR (%)	161.0	157.2	147.2	150.5	153.6
Net Stable Funding Ratio ('NSFR')						
18	Total available stable funding (HK\$m)	4,789,003	4,675,909	4,693,322	4,747,483	N/A
19	Total required stable funding (HK\$m)	3,198,246	3,238,487	3,208,268	3,278,547	N/A
20	NSFR (%)	149.7	144.4	146.3	144.8	N/A

1 All figures reported in 2018 are under the new Hong Kong Financial Reporting Standard 9 ('HKFRS 9'). The expected credit loss provisioning under HKFRS 9 is on a fully-loaded basis as per the HKMA requirement. Figures reported at 31 December 2017 are under the Hong Kong Accounting Standard 39 ('HKAS 39').

2 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').

3 The Basel III leverage ratios in 2018 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. For the reporting period of 31 December 2017, the leverage ratio is disclosed in accordance with the 'Quarterly Template on Leverage Ratio' submitted to the HKMA during the parallel run period.

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. The requirements have been implemented with effect from 2018 reporting periods. Accordingly, the ratio at 31 December 2017 is not shown.

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 2018*. The management and mitigation of principal risks facing the group is described in our top and emerging risks on page 16 of the group's *Annual Report and Accounts 2018*.

Risk culture

HSBC has long recognised the importance of a strong risk culture, the fostering of which is a key responsibility of senior executives. Our risk culture is reinforced by the HSBC Values and our Global Standards programme. 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.

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 Risk Committee on risk appetite and its alignment with strategy, high-level risk related matters and risk governance.

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.

Our executive risk governance structures 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. In 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 on our risk management tools is set out on page 13 of the group's *Annual Report and Accounts 2018*. Details on the group's overarching risk appetite are set out on page 13 of the group's *Annual Report and Accounts 2018*.

Stress testing

HSBC operates a comprehensive stress testing programme that supports our risk management and capital planning. It includes execution of stress tests mandated by our regulators, as well as internal stress tests. 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. Stress testing 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, including sales and trading functions, helping to ensure balance in risk/return decisions. 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. A number of key initiatives and projects to enhance consistent data aggregation, reporting and management, and work towards meeting our Basel Committee data obligations are in progress. 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, including 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 model development and management, including rating, scoring, economic capital and stress testing models for different risk types and business segments. They 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.

Model governance is under the general oversight of the Global Model Oversight Committee ('MOC'). Global MOC is supported by specific global functional MOCs for wholesale credit risk, market risk, Retail Banking and Wealth Management ('RBWM'), Global Private Banking ('GPB'), Finance, regulatory compliance, operational risk, fraud risk and financial intelligence, pensions risk and financial crime risk, and has functional and/or regional and entity-level counterparts with comparable terms of reference where required.

Models are also subject to an independent model review and validation process led by the Independent Model Review team within Global Risk. The Independent Model Review team provides robust challenge to the modelling approaches used across the Group, and 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 2018

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 2018*.

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\$48,522m 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 2018.

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 2018.

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 2018, the effect of this requirement is to reduce the amount of reserves which can be distributed to shareholders by HK\$26,883m.

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

	Principal activities	At 31 Dec 2018	
		Total assets HK\$m	Total equity HK\$m
HSBC Broking Futures (Hong Kong) Ltd	Futures broking	4,582	600
HSBC Broking Services (Asia) Ltd and its subsidiaries	Broking services	12,843	2,773
HSBC Corporate Advisory (Malaysia) Sdn Bhd	Financial services	10	10
HSBC Corporate Finance (Hong Kong) Ltd ¹	Financial services	17	16
HSBC Global Asset Management Holdings (Bahamas) Ltd	Asset management	129	128
HSBC Global Asset Management (Hong Kong) Ltd	Asset management	1,153	851
HSBC Global Asset Management (Japan) K.K.	Asset management	233	123
HSBC Global Asset Management (Singapore) Ltd	Asset management	77	49
HSBC Insurance (Asia-Pacific) Holdings Ltd and its subsidiaries	Insurance	427,726	30,160
HSBC InvestDirect (India) Ltd and its subsidiaries	Financial services	937	581
HSBC Investment Funds (Hong Kong) Ltd	Asset management	553	255
HSBC Qianhai Securities Ltd	Securities services	1,926	1,708
HSBC Securities (Asia) Ltd and its subsidiary	Broking services	27	26
HSBC Securities (Japan) Ltd	Broking services	156,951	1,713
HSBC Securities (Singapore) Pte Ltd	Broking services	207	70
HSBC Securities Brokers (Asia) Ltd	Broking services	5,533	3,721
Hang Seng Futures Ltd	Futures broking	102	102
Hang Seng Insurance Co. Ltd and its subsidiaries	Insurance	135,763	12,533
Hang Seng Investment Management Ltd	Asset management	1,528	1,512
Hang Seng Investment Services Ltd	Investment services	9	9
Hang Seng Qianhai Fund Management Co. Ltd	Asset management	99	82
Hang Seng Securities Ltd	Broking services	2,253	1,039

¹ The entity is presented separately due to change in shareholding structure.

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 2018		
	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	205,660	204,348	
Items in the course of collection from other banks	25,380	25,380	
Hong Kong Government certificates of indebtedness	280,854	280,854	
Trading assets	558,838	548,770	
<i>of which: significant capital investments in financial sector entities exceeding 10% threshold</i>		9	1
<i>of which: significant capital investments in financial sector entities</i>		4	2
Derivatives	292,869	292,774	
Financial assets designated and otherwise mandatorily measured at fair value through profit or loss	132,859	6,618	
<i>of which: significant capital investments in financial sector entities exceeding 10% threshold</i>		4	3
Reverse repurchase agreements – non-trading	406,327	268,665	
Placings with and advances to banks	338,151	329,015	
Loans and advances to customers	3,528,702	3,525,587	
<i>of which: impairment allowances eligible for inclusion in Tier 2 capital</i>		(3,293)	4
Financial investments	1,871,026	1,501,572	
<i>of which: significant capital investments in financial sector entities exceeding 10% threshold</i>		1,290	5
Amounts due from Group companies	70,455	180,850	
<i>of which: significant capital investments in financial sector entities exceeding 10% threshold</i>		1,883	6
<i>of which: significant capital investments in financial sector entities</i>		5,497	7
Investments in subsidiaries	–	16,529	
<i>of which: significant capital investments in financial sector entities exceeding 10% threshold</i>		16,529	8
Interests in associates and joint ventures	142,885	139,763	
<i>of which: goodwill</i>		3,753	9
<i>of which: significant capital investments in financial sector entities exceeding 10% threshold</i>		79,692	10
Goodwill and intangible assets	65,104	15,067	
<i>of which: goodwill</i>		4,835	11
<i>of which: intangible assets</i>		10,232	12
Property, plant and equipment	112,080	105,703	
Deferred tax assets	2,315	2,258	
<i>of which: deferred tax assets net of related tax liabilities</i>		2,378	13
<i>of which: deferred tax liabilities related to goodwill</i>		(91)	14
<i>of which: deferred tax liabilities related to intangible assets</i>		(29)	15
Prepayments, accrued income and other assets	229,949	143,419	
<i>of which: defined benefit pension fund net assets</i>		26	16
Total assets	8,263,454	7,587,172	

Banking Disclosure Statement at 31 December 2018

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

	a	b	c
	At 31 Dec 2018		
	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	280,854	280,854	
Items in the course of transmission to other banks	33,806	33,806	
Repurchase agreements – non-trading	70,279	70,279	
Deposits by banks	164,664	164,664	
Customer accounts	5,207,666	5,204,267	
Trading liabilities	81,194	81,194	
Derivatives	295,553	296,011	
<i>of which: gains and losses due to changes in own credit risk on fair valued liabilities</i>		(496)	17
Financial liabilities designated at fair value	161,143	124,505	
<i>of which: gains and losses due to changes in own credit risk on fair valued liabilities</i>		(129)	18
Debt securities in issue	58,236	57,986	
Retirement benefit liabilities	3,369	3,369	
Amounts due to Group companies	396,487	375,728	
<i>of which: qualifying Tier 2 capital instruments</i>		13,944	19
<i>of which: gains and losses due to changes in own credit risk on fair valued liabilities</i>		427	20
Accruals and deferred income, other liabilities and provisions	196,665	137,469	
Liabilities under insurance contracts	468,589	–	
Current tax liabilities	3,337	3,084	
Deferred tax liabilities	24,513	15,886	
<i>of which: deferred tax liabilities related to goodwill</i>		4	21
<i>of which: deferred tax liabilities related to intangible assets</i>		1,481	22
<i>of which: deferred tax liabilities related to defined benefit pension fund net assets</i>		2	23
Subordinated liabilities	4,081	4,081	
<i>of which: portion eligible for Tier 2 capital instruments, subject to phase-out arrangements</i>		3,133	24
Preference shares	98	–	
Total liabilities	7,450,534	6,853,183	
Equity			
Share capital	172,335	172,335	
<i>of which: portion eligible for inclusion in CET1 capital</i>		170,881	25
<i>of which: revaluation reserve capitalisation issue</i>		1,454	26
Other equity instruments	35,879	35,879	
<i>of which: qualifying AT1 capital instruments</i>		35,879	27
Other reserves	114,949	112,525	28
<i>of which: fair value gains arising from revaluation of land and buildings</i>		55,905	29
<i>of which: cash flow hedging reserves</i>		(63)	30
<i>of which: valuation adjustment</i>		23	31
Retained earnings	429,595	362,404	32
<i>of which: regulatory reserve for general banking risks</i>		26,883	33
<i>of which: regulatory reserve eligible for inclusion in Tier 2 capital</i>		12,961	34
<i>of which: fair value gains arising from revaluation of land and buildings</i>		4,524	35
<i>of which: valuation adjustment</i>		1,576	36
Total shareholders' equity	752,758	683,143	
Non-controlling interests	60,162	50,846	
<i>of which: portion allowable in CET1 capital</i>		26,034	37
<i>of which: portion allowable in AT1 capital</i>		1,850	38
Total equity	812,920	733,989	
Total equity and liabilities	8,263,454	7,587,172	

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 sight balances at central banks	205,660	204,348	204,348	–	–	–	–
Items in the course of collection from other banks	25,380	25,380	25,380	–	–	–	–
Hong Kong Government certificates of indebtedness	280,854	280,854	280,854	–	–	–	–
Trading assets	² 558,838	548,770	760	12,556	–	548,010	–
Derivatives	² 292,869	292,774	–	292,774	–	292,774	–
Financial assets designated at fair value	132,859	6,618	1,178	5,437	–	–	3
Reverse repurchase agreements – non-trading	406,327	268,665	–	268,665	–	–	–
Placings with and advances to banks	338,151	329,015	328,029	986	–	–	–
Loans and advances to customers	3,528,702	3,525,587	3,486,241	185	36,536	–	2,625
Financial investments	1,871,026	1,501,572	1,500,282	–	–	–	1,290
Amounts due from Group companies	² 70,455	180,850	71,306	98,399	–	11,709	10,318
Investments in subsidiaries	–	16,529	–	–	–	–	16,529
Interests in associates and joint ventures	142,885	139,763	56,319	–	–	–	83,444
Goodwill and intangible assets	³ 65,104	15,067	–	–	–	–	13,582
Property, plant and equipment	112,080	105,703	105,703	–	–	–	–
Deferred tax assets	2,315	2,258	–	–	–	–	2,258
Prepayments, accrued income and other assets	^{3, 4} 229,949	143,419	107,822	30,825	11	–	4,759
Total assets at 31 Dec 2018	8,263,454	7,587,172	6,168,222	709,827	36,547	852,493	134,808
Liabilities							
Hong Kong currency notes in circulation	280,854	280,854	–	–	–	–	280,854
Items in the course of transmission to other banks	33,806	33,806	–	–	–	–	33,806
Repurchase agreements – non-trading	70,279	70,279	–	70,279	–	–	–
Deposits by banks	164,664	164,664	–	453	–	–	164,211
Customer accounts	5,207,666	5,204,267	–	491	–	–	5,203,776
Trading liabilities	² 81,194	81,194	–	1,934	–	81,194	–
Derivatives	² 295,553	296,011	–	296,011	–	296,011	–
Financial liabilities designated at fair value	161,143	124,505	–	–	–	106,292	18,213
Debt securities in issue	58,236	57,986	–	–	–	–	57,986
Retirement benefit liabilities	3,369	3,369	–	–	–	–	3,369
Amounts due to Group companies	² 396,487	375,728	–	4,947	–	111	370,759
Accruals and deferred income, other liabilities and provisions	³ 196,665	137,469	–	–	–	–	137,469
Liabilities under insurance contracts	468,589	–	–	–	–	–	–
Current tax liabilities	3,337	3,084	–	–	–	–	3,084
Deferred tax liabilities	24,513	15,886	–	–	–	–	15,886
Subordinated liabilities	4,081	4,081	–	–	–	–	4,081
Preference shares	98	–	–	–	–	–	–
Total liabilities at 31 Dec 2018	7,450,534	6,853,183	–	374,115	–	483,608	6,293,494

- 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	7,452,364	6,168,222	36,547	709,827	852,493
2	Liabilities carrying value amount under regulatory scope of consolidation (as per template LI1)	2	559,689	–	–	374,115	483,608
3	Total net amount under regulatory scope of consolidation		6,892,675	6,168,222	36,547	335,712	368,885
4	Off-balance sheet amounts and potential future exposure for counterparty risk		2,913,097	767,777	359	162,488	–
5	Differences in netting rules		(13,730)	(8,467)	–	(5,264)	–
6	Differences due to financial collateral on standardised approach		(121,564)	(121,564)	–	–	–
7	Differences due to impairments on IRB approach		14,426	14,426	–	–	–
8	Differences due to credit risk mitigation		(275,977)	–	–	(275,977)	–
9	Exposure amounts considered for regulatory purposes at 31 Dec 2018		9,408,927	6,820,394	36,906	216,959	368,885

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 and that differ both in terms of scope and measurement from HSBC's own quantification for disclosure purposes.

AVAs should consider at the minimum: market price uncertainty, close out costs, model risk, unearned credit spread, funding costs, concentration, future administration costs, early termination and operational risk.

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.

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 2018	Cross-referenced to Table 3	
	Component of regulatory capital	Source based on reference numbers/ letters of the balance sheet under the regulatory scope of consolidation	
	HK\$m		
CET1 capital: instruments and reserves			
1	Directly issued qualifying CET1 capital instruments plus any related share premium	170,881	25
2	Retained earnings	362,404	32
3	Disclosed reserves	112,525	28
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)	26,034	37
6	CET1 capital before regulatory adjustments	671,844	
CET1 capital: regulatory deductions			
7	Valuation adjustments	1,599	31+36
8	Goodwill (net of associated deferred tax liabilities)	8,493	9+11+14-21
9	Other intangible assets (net of associated deferred tax liabilities)	8,722	12+15-22
10	Deferred tax assets (net of associated deferred tax liabilities)	2,378	13
11	Cash flow hedge reserve	(63)	30
14	Gains and losses due to changes in own credit risk on fair valued liabilities	198	-(17+18+20)
15	Defined benefit pension fund net assets (net of associated deferred tax liabilities)	24	16-23
19	Significant capital investments in CET1 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation (amount above 10% threshold)	99,407	1+3+5+6+8+10
26	National specific regulatory adjustments applied to CET1 capital	87,312	
26a	Cumulative fair value gains arising from the revaluation of land and buildings (own-use and investment properties)	60,429	29+35
26b	Regulatory reserve for general banking risks	26,883	33
28	Total regulatory deductions to CET1 capital	208,070	
29	CET1 capital	463,774	
AT1 capital: instruments			
30	Qualifying AT1 capital instruments plus any related share premium	35,879	27
31	<i>of which: classified as equity under applicable accounting standards</i>	35,879	27
34	AT1 capital instruments issued by consolidated bank subsidiaries and held by third parties (amount allowed in AT1 capital of the consolidated group)	1,850	38
36	AT1 capital before regulatory deductions	37,729	
44	AT1 capital	37,729	
45	Tier 1 capital (T1 = CET1 + AT1)	501,503	
Tier 2 capital: instruments and provisions			
46	Qualifying Tier 2 capital instruments plus any related share premium	13,944	19
47	Capital instruments subject to phase-out arrangements from Tier 2 capital	3,133	24
50	Collective provisions and regulatory reserve for general banking risks eligible for inclusion in Tier 2 capital	16,254	34-4
51	Tier 2 capital before regulatory deductions	33,331	
Tier 2 capital: regulatory deductions			
55	Significant capital investments in Tier 2 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation (net of eligible short positions)	5,501	2+7
56	National specific regulatory adjustments applied to Tier 2 capital	(27,847)	
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	(27,847)	(26+29+35)x45%
57	Total regulatory adjustments to Tier 2 capital	(22,346)	
58	Tier 2 capital (T2)	55,677	
59	Total regulatory capital (TC = T1 + T2)	557,180	
60	Total RWAs	2,813,912	

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

	a	b
	At 31 Dec 2018	
	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	16.48%	
62	17.82%	
63	19.80%	
64	4.71%	
65	1.875%	
66	0.96%	
67	1.875%	
68	11.80%	
National minima (if different from Basel 3 minimum)		
Amounts below the thresholds for deduction (before risk weighting)		
72	14,949	
73	56,318	
Applicable caps on the inclusion of provisions in Tier 2 capital		
76	4,599	
77	3,792	
78	19,929	
79	12,462	
Capital instruments subject to phase-out arrangements (only applicable between 1 Jan 2018 and 1 Jan 2022)		
84	18,231	

At 31 December 2018, our CET1 capital ratio increased to 16.48% from 15.39% at 30 June 2018.

CET1 capital increased in the second half of 2018 by HK\$35.2bn, mainly due to:

- HK\$29bn of capital generated through profits, net of dividends;
- the realisation of property revaluation gains of HK\$11bn;
- a HK\$4.8bn decrease in threshold deductions as a result of a decrease in the value of our significant capital investments and an increase in the CET1 capital base; partially offset by
- unfavourable foreign currency translation differences of HK\$9.6bn.

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

Notes to the template:

		At 31 Dec 2018	
		Hong Kong basis	Basel III basis
		HK\$m	HK\$m
10	Deferred tax assets (net of associated deferred tax liabilities)	2,378	39

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 2018	
		Hong Kong basis	Basel III basis
		HK\$m	HK\$m
19	Significant capital investments in CET1 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation (amount above 10% threshold)	99,407	97,524

Explanation:

For the purpose of determining the total amount of significant capital 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% thresholds mentioned above 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.

Banking Disclosure Statement at 31 December 2018

The following is a summary of the group's common equity tier 1 ('CET1') capital, additional tier 1 ('AT1') capital and tier 2 capital instruments.

Table 7: CCA – Capital instruments

	At 31 Dec 2018	
	Total amount	Amount recognised in regulatory capital HK\$m
CET1 capital instruments		
Ordinary shares	HK\$172,335m	170,881
AT1 capital instruments		
Floating rate perpetual subordinated loans, callable from 2019	US\$1,900m	14,737
Floating rate perpetual subordinated loans, callable from 2023	US\$2,100m	16,444
Floating rate perpetual subordinated loans, callable from 2024	US\$600m	4,698
Tier 2 capital instruments		
Primary capital undated floating rate notes	US\$400m	3,133
Subordinated loan due 2024, callable from 2019	US\$1,600m	12,534
Subordinated loan due 2025, callable from 2020	US\$180m	1,410

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 2018			
		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		1.875	1,066,939		
2 Czech Republic		1.000	1		
3 Norway		2.000	124		
4 Slovakia		1.250	1		
5 Sweden		2.000	425		
6 United Kingdom		1.000	15,702		
7 Sum	1		1,083,192		
8 Total	2		2,093,325	0.96	27,014

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

2 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 major driver for the movement of the AI-specific CCyB ratio during the reporting period is due to a change in reporting methodology.

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 2018	30 Sep 2018
	HK\$m	HK\$m
On-balance sheet exposures		
1 On-balance sheet exposures (excluding those arising from derivative contracts and SFTs, but including collateral)	6,595,305	6,555,022
2 Less: Asset amounts deducted in determining Tier 1 capital	(209,326)	(211,008)
3 Total on-balance sheet exposures (excluding derivative contracts and SFTs)	6,385,979	6,344,014
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)	40,215	59,584
5 Add-on amounts for PFE associated with all derivative contracts	347,179	350,741
8 Less: Exempted CCP leg of client-cleared trade exposures	(16,431)	(5,621)
9 Adjusted effective notional amount of written credit derivative contracts	446,279	549,182
10 Less: Adjusted effective notional offsets and add-on deductions for written credit derivative contracts	(440,677)	(538,059)
11 Total exposures arising from derivative contracts	376,565	415,827
Exposures arising from SFTs		
12 Gross SFT assets (with no recognition of netting), after adjusting for sale accounting transactions	425,427	366,225
14 CCR exposure for SFT assets	14,128	5,027
16 Total exposures arising from SFTs	439,555	371,252
Other off-balance sheet exposures		
17 Off-balance sheet exposure at gross notional amount	2,913,097	2,863,881
18 Less: Adjustments for conversion to credit equivalent amounts	(2,356,534)	(2,313,534)
19 Off-balance sheet items	556,563	550,347
Capital and total exposures		
20 Tier 1 capital	501,503	472,590
20a Total exposures before adjustments for specific and collective provisions	7,758,662	7,681,440
20b Adjustments for specific and collective provisions	(17,361)	(17,683)
21 Total exposures after adjustments for specific and collective provisions	7,741,301	7,663,757
Leverage ratio		
22 Leverage ratio	6.5%	6.2%

The leverage ratio was 6.5% at 31 December 2018, up from 6.2% at 30 September 2018, mainly driven by an increase in Tier 1 capital.

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

	a
	Value under the LR framework
	31 Dec 2018
	HK\$m
1 Total consolidated assets as per published financial statements	8,263,454
2 Adjustment for investments in banking, financial, insurance or commercial entities that are consolidated for accounting purposes but outside the scope of regulatory consolidation	(630,759)
4 Adjustments for derivative contracts	83,791
5 Adjustment for SFTs (i.e. repos and similar secured lending)	14,128
6 Adjustment for off-balance sheet ('OBS') items (i.e. conversion to credit equivalent amounts of OBS exposures)	556,563
6a Adjustments for collective provisions and specific provisions that are allowed to be excluded from exposure measure	(771)
7 Other adjustments	(545,105)
8 Leverage ratio exposure measure	7,741,301

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		Minimum ² capital requirements
	31 Dec 2018 HK\$m	30 Sep 2018 HK\$m	31 Dec 2018 HK\$m
1 Credit risk for non-securitisation exposures	2,032,816	1,976,558	171,048
2 <i>Of which standardised credit risk ('STC') approach</i>	277,942	272,114	22,235
4 <i>Of which supervisory slotting criteria approach</i>	57,783	56,153	4,900
5 <i>Of which advanced internal ratings-based ('IRB') approach</i>	1,697,091	1,648,291	143,913
6 Counterparty default risk and default fund contributions	54,441	58,488	4,576
7a <i>Of which current exposure method ('CEM')</i>	13,801	16,931	1,162
8 <i>Of which internal models (counterparty credit risk) ('IMM(CCR)') approach</i>	30,915	32,391	2,604
9 <i>Of which Others</i>	9,725	9,166	810
10 Credit valuation adjustment ('CVA') Risk	22,750	22,305	1,820
11 Equity positions in banking book under the simple risk-weight method and the internal models method	18,769	26,270	1,592
15 Settlement risk	33	60	3
16 Securitisation exposures in banking book	18,342	16,476	1,467
18 <i>Of which securitisation external ratings-based approach ('SEC-ERBA')</i>	18,342	16,476	1,467
20 Market risk	117,823	116,828	9,426
21 <i>Of which standardised market risk ('STM') approach</i>	2,865	2,294	229
22 <i>Of which internal models ('IMM') approach</i>	114,958	114,534	9,197
24 Operational risk	325,344	315,986	26,028
25 Amounts below the thresholds for deduction (subject to 250% RW)	140,797	133,804	11,940
26a Deduction to RWAs	34,841	37,538	2,787
26b <i>Of which portion of regulatory reserve for general banking risks and collective provisions which is not included in Tier 2 Capital</i>	806	711	64
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>	34,035	36,827	2,723
27 Total	2,696,274	2,629,237	225,113

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 increased by HK\$56,258m in the fourth quarter, including an increase of HK\$3,463m due to foreign currency translation differences. The remaining increase was due to:

- an internal methodology and policy change in reporting RWAs for defaulted exposures of HK\$30,800m; and
- HK\$23,013m driven by loan growth in Hong Kong.

Operational risk

Operational risk RWAs increased by HK\$9,358m in the fourth quarter mainly due to growth in both Commercial Banking and Retail Banking and Wealth Management.

RWA flow statements

RWA flow statement for credit risk

Table 12: CR8 – RWA flow statement of credit risk¹ exposures under IRB approach

	a
	HK\$m
1 RWAs as at 30 Sep 2018	1,704,444
2 Asset size	23,013
3 Asset quality	(8,165)
4 Model updates	4,057
5 Methodology and policy	28,715
7 Foreign exchange movements	2,810
9 RWAs as at 31 Dec 2018	1,754,874

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

Credit risk RWAs under the IRB approach increased by HK\$50,430m in the fourth quarter mainly due to:

- an internal methodology and policy change in reporting RWAs for defaulted exposures of HK\$30,800m; and
- HK\$23,013m driven by loan growth in Hong Kong.

RWA flow statement for counterparty credit risk

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

	a
	HK\$m
1 RWAs as at 30 Sep 2018	32,391
2 Asset size	(1,367)
3 Credit quality of counterparties	(146)
7 Foreign exchange movements	37
9 RWAs as at 31 Dec 2018	30,915

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 2018	24,053	30,563	36,470	23,448	114,534
2 Movement in risk levels	(4,012)	7,461	(7,279)	4,122	292
6 Foreign exchange movements	28	35	42	27	132
8 RWAs as at 31 Dec 2018	20,069	38,059	29,233	27,597	114,958

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 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 18 of the group's Annual Report and Accounts 2018.

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.

Credit risk operates 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 product types, 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 loan impairments, 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 23 to 26.

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 33.

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 more fully on page 23.

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 15 to 19 analyse credit exposures between defaulted and non-defaulted, changes in defaulted loans and debt securities, exposures by geographical locations, 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 15: CR1 – Credit quality of exposures

	a	b	c	d
	Gross carrying amounts of			
	Defaulted exposures	Non-defaulted exposures	Allowances/impairments	Net values
	HK\$m	HK\$m	HK\$m	HK\$m
1 Loans	20,593	4,143,710	16,590	4,147,713
2 Debt securities	–	1,475,934	45	1,475,889
3 Off-balance sheet exposures	3,467	2,908,912	728	2,911,651
4 Total at 31 Dec 2018	24,060	8,528,556	17,363	8,535,253

Table 16: CR2 – Changes in defaulted loans and debt securities

	a
	HK\$m
1 Defaulted loans and debt securities at 30 Jun 2018	19,215
2 Loans and debt securities that have defaulted since 30 Jun 2018	5,909
3 Returned to non-defaulted status	(337)
4 Amounts written off	(2,991)
5 Other changes	(1,203)
6 Defaulted loans and debt securities at 31 Dec 2018	20,593

1 Other changes include repayment and foreign exchange movements.

Table 17: CRB1 – Exposures by geographical location

	Gross carrying amounts at 31 Dec 2018
	HK\$m
Hong Kong	5,103,170
Mainland China	894,401
Others	2,555,045
Total	8,552,616

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

Table 18: CRB2 – Exposures by industry

	Gross carrying amounts at 31 Dec 2018
	HK\$m
Property development and investment	945,209
Financial concerns	1,591,085
Individuals	2,122,899
Others	3,893,423
Total	8,552,616

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

Table 19: CRB3 – Exposures by residual maturity

	Gross carrying amounts at 31 Dec 2018
	HK\$m
Less than 1 year	4,153,372
Between 1 and 5 years	2,392,097
More than 5 years	1,995,871
Undated	11,276
Total	8,552,616

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

Tables 20 to 23 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' and 'renegotiated' are

explained in Note 1.2(i) of the group's *Annual Report and Accounts 2018*. The accounting definition of credit impaired and the regulatory definition of default are generally aligned.

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

	Footnotes	Total gross loans and advances to customers ¹	Gross credit-impaired loans and advances	Specific provisions ²	Collective provisions ²	Net new impairment allowances	Advances written-off in a year
		HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
At 31 Dec 2018							
Residential mortgages		937,666	1,782	(195)	(154)	(468)	82
Real Estate		626,068	228	(11)	(516)	(104)	–
Wholesale and retail trade		433,734	5,402	(3,406)	(617)	1,878	1,140
Manufacturing		424,806	4,095	(2,558)	(539)	530	962
Others	3	1,119,868	8,237	(3,659)	(4,899)	2,788	2,795
Total		3,542,142	19,744	(9,829)	(6,725)	4,624	4,979

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

	Total gross loans and advances to customers ¹	Gross credit-impaired loans and advances	Specific provisions ²	Collective provisions ²	Net new impairment allowances	Advances written-off in a year
	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
At 31 Dec 2018						
Hong Kong	2,280,583	7,566	(3,815)	(3,475)	1,616	2,302
Mainland China	307,148	1,353	(966)	(891)	1,089	883
Others	954,411	10,825	(5,048)	(2,359)	1,919	1,794
Total	3,542,142	19,744	(9,829)	(6,725)	4,624	4,979

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. According to the completion instructions, impairment provisions classified into Stage 1 and Stage 2 under HKFRS 9 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.

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

	Up to 29 days	30-59 days	60-89 days	Total
	HK\$m	HK\$m	HK\$m	HK\$m
At 31 Dec 2018				
Loans and advances to customers held at amortised cost	27,503	2,043	1,690	31,236
– personal	14,086	2,004	1,439	17,529
– corporate and commercial	12,622	39	41	12,702
– non-bank financial institutions	795	–	210	1,005
Total	27,503	2,043	1,690	31,236

Table 23: CRB7 – Breakdown of renegotiated loans between credit impaired and not credit impaired

	31 Dec 2018 HK\$m
Not credit impaired	563
Credit impaired	6,208
Total	6,771

Loans and advances to customers

Tables 24 to 26 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. As a result, the total gross loans and advances to customers in tables 24 and 25 are different from those in tables 20 and 21.

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 24: 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 2018				
Gross loans and advances to customers	1,871,848	1,389,674	283,736	3,545,258

Tables 25 and 26 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 25: Loans and advances to customers by industry

	Gross Advances at 31 Dec 2018 HK\$m	Collateral and other security at 31 Dec 2018 HK\$m
Industrial, commercial and financial	1,023,174	461,808
– property development	172,771	47,611
– property investment	305,968	204,281
– financial concerns	93,625	54,659
– stockbrokers	9,837	1,305
– wholesale and retail trade	118,837	30,823
– manufacturing	59,772	12,172
– transport and transport equipment	57,441	30,093
– recreational activities	1,313	191
– information technology	35,094	996
– others	168,516	79,677
Individuals	759,186	655,300
– advances for the purchase of flats under the Hong Kong Government's Home Ownership Scheme, Private Sector Participation Scheme and Tenants Purchase Scheme	42,915	42,915
– advances for the purchase of other residential properties	553,441	553,441
– credit card advances	62,605	–
– others	100,225	58,944
Gross loans and advances to customers for use in Hong Kong	1,782,360	1,117,108
Trade Finance	167,097	33,396
Gross loans and advances to customers for use outside Hong Kong	1,595,801	573,919
Gross loans and advances to customers	3,545,258	1,724,423

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 11 in the group's *Annual Report and Accounts 2018*. The geographical information shown above 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.

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 26: Overdue and rescheduled loans and advances to customers

	Footnotes	Hong Kong		Rest of Asia-Pacific		Total	
		HK\$m	% ¹	HK\$m	% ¹	HK\$m	% ¹
At 31 Dec 2018							
Gross amounts which have been overdue with respect to either principal or interest for:							
– more than three months but not more than six months		782	–	1,872	0.1	2,654	0.1
– more than six months but not more than one year		386	–	1,276	0.1	1,662	–
– more than one year		3,148	0.1	3,785	0.3	6,933	0.2
Total		4,316	0.2	6,933	0.5	11,249	0.3
Specific provisions made in respect of amounts overdue	2	(1,823)		(4,161)		(5,984)	
Fair value of collateral held in respect of amounts overdue		1,521		2,771		4,292	
Rescheduled loans and advances to customers		390	–	2,495	0.2	2,885	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 2 under table 21 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 27: Off-balance sheet exposures other than derivative transactions

	31 Dec 2018 HK\$m
Contract amounts	
Direct credit substitutes	61,503
Transaction-related contingencies	192,708
Trade-related contingencies	106,838
Forward asset purchases	6,222
Forward forward deposits placed	66
Commitments that are unconditionally cancellable without prior notice	2,204,346
Commitments which have an original maturity of not more than one year	68,166
Commitments which have an original maturity of more than one year	273,248
Total	2,913,097
Risk-weighted amounts	306,678

Credit risk under internal ratings-based approach

The internal ratings system and its risk components

Model governance

Model governance is under the general oversight of group WMOC and RMOC. The group WMOC and RMOC are supported by credit risk, businesses, Finance and Independent Model Review team with comparable terms of reference where required.

The group WMOC and RMOC meet regularly and report to both group RMM as well as Global MOC. The Global MOC is chaired by the Global Risk function, and its membership is drawn from Risk, Finance and businesses. Its primary responsibilities are to oversee the framework for the management of model risk, bring a strategic approach to model-related issues across the region, and to oversee the governance of our risk rating models, their consistency and approval, within the regulatory framework. Through its oversight of the functional MOCs, it identifies emerging risks for all aspects of the risk rating system, ensuring that model risk is managed within our risk appetite statement, and formally advises RMM on any material model-related issues.

The MOCs are responsible for model risk management. The approval of models/model changes is the responsibility of

individual approvers. Model Owner/Technical Expert ensures that the model is technically sound, has been developed robustly and follows the relevant modelling policies, standards, internal and regulatory requirements. Whereas the Model User/Steward for the function ensures that the model makes sense to the business or function where it will be used and that the model satisfies the requirements from the business, function and regulators.

Models are also subject to an independent model review and validation process led by the Independent Model Review team. The Independent Model Review team provides robust challenge to the modelling approaches used across the region, and ensures that the performance of those models is transparent and that their limitations are visible to key stakeholders.

Internal Audit, or a comparable independent model review unit, conducts regular reviews of the risk rating model application by the global businesses.

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 2018, 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 28: 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)	94%	90%
Sovereign exposures	97%	100%
Bank exposures (including securities firms)	100%	99%
Residential mortgage loans	86%	73%
Other retail exposures	81%	53%
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, 99% for bank exposures and 79% 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 risk 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.

Banking Disclosure Statement at 31 December 2018

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

Table 29: 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	12	The corporate models use financial information, macroeconomic information and market-driven data, and is complemented by a qualitative assessment. The NBFIs models which are the predominantly statistical models that combine quantitative analysis on financial information with expert inputs.	>= 10	0.03%
	LGD	1	Regional statistical model covering all corporates, developed using historical loss/recovery data and various data inputs, including collateral information, facility seniority and customer geography.	>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 30: 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 by segment.	>10	0.03%
	LGD	3	1 component based model and 2 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	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 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	1	Rule-based calculation based on current balance which continues to be a conservative estimate for EAD or 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

Banking Disclosure Statement at 31 December 2018

Table 31.1: CR6 – Credit risk exposures by portfolio and PD range – for IRB approach (Wholesale)

	a	b	c	d	e	f	g	h	i	j	k	l
PD scale	Original on-balance sheet gross exposure HK\$m	Off-balance sheet exposures pre-CCF HK\$m	Average CCF %	EAD post-CRM and post-CCF HK\$m	Average PD %	Number of obligors	Average LGD %	Average maturity years	RWAs HK\$m	RWA density %	EL HK\$m	Provisions HK\$m
Portfolio (i) – Sovereign												
0.00 to < 0.15	1,568,079	4,901	29.5	1,569,526	0.02	563	35.8	1.42	87,792	6	114	
0.15 to < 0.25	232	34	50.0	249	0.22	15	45.0	1.42	115	46	–	
0.25 to < 0.50	3,061	–	20.0	3,061	0.37	19	45.0	1.00	1,347	44	5	
0.50 to < 0.75	14,128	1,184	93.4	15,234	0.63	15	45.0	1.09	9,147	60	43	
0.75 to < 2.50	7,456	684	30.0	7,661	1.15	17	45.0	1.93	6,794	89	40	
2.50 to < 10.00	290	–	–	290	4.20	4	45.0	3.08	432	149	5	
10.00 to <100.00	–	–	–	–	–	–	–	–	–	–	–	
100.00 (Default)	–	–	–	–	–	–	–	–	–	–	–	
Sub-total at 31 Dec 2018	1,593,246	6,803	40.8	1,596,021	0.03	633	36.0	1.42	105,627	7	207	1,717
Portfolio (ii) – Bank												
0.00 to < 0.15	422,351	38,207	33.7	435,221	0.04	12,428	40.5	1.23	54,020	12	76	
0.15 to < 0.25	21,746	5,315	38.2	23,778	0.22	1,102	41.6	0.84	8,695	37	22	
0.25 to < 0.50	19,899	974	31.2	20,203	0.37	423	30.9	1.08	7,250	36	23	
0.50 to < 0.75	4,118	540	33.7	4,300	0.63	332	44.0	0.46	2,687	62	12	
0.75 to < 2.50	6,316	1,597	40.8	6,968	1.09	472	46.1	0.51	5,049	72	34	
2.50 to < 10.00	935	560	24.5	1,072	3.94	86	59.8	0.33	1,603	150	25	
10.00 to <100.00	8	3	20.0	8	12.81	7	51.1	0.94	18	219	1	
100.00 (Default)	207	–	–	207	100.00	2	61.1	0.54	677	328	92	
Sub-total at 31 Dec 2018	475,580	47,196	34.3	491,757	0.14	14,852	40.3	1.19	79,999	16	285	1,395
Portfolio (iii) – Corporate – small- and - medium-sized corporates												
0.00 to < 0.15	18,010	22,451	37.2	26,645	0.10	897	33.3	2.17	4,425	17	9	
0.15 to < 0.25	27,991	16,697	32.0	33,327	0.22	1,170	33.5	2.56	9,662	29	25	
0.25 to < 0.50	44,415	15,692	26.4	48,562	0.37	1,486	28.7	2.54	15,231	31	52	
0.50 to < 0.75	57,068	20,647	31.4	63,556	0.63	1,559	28.9	2.16	24,794	39	116	
0.75 to < 2.50	119,518	57,352	26.0	134,453	1.43	5,113	31.1	2.01	72,967	54	591	
2.50 to < 10.00	17,264	8,779	26.6	19,599	3.86	1,057	34.4	1.66	15,995	82	268	
10.00 to <100.00	809	1,515	32.5	1,302	22.03	93	40.8	1.45	2,078	160	119	
100.00 (Default)	1,366	76	19.2	1,381	100.00	72	50.4	1.18	2,658	192	694	
Sub-total at 31 Dec 2018	286,441	143,209	29.4	328,825	1.53	11,447	31.1	2.16	147,810	45	1,874	3,530
Portfolio (iv) – Corporate – other												
0.00 to < 0.15	641,538	591,223	32.3	832,152	0.08	15,367	47.0	1.97	196,838	24	326	
0.15 to < 0.25	189,278	223,555	32.2	261,169	0.22	5,039	44.4	1.65	98,605	38	255	
0.25 to < 0.50	167,876	196,819	27.5	221,518	0.37	3,946	43.2	1.77	108,966	49	354	
0.50 to < 0.75	160,170	126,159	26.5	193,655	0.63	3,292	42.5	1.74	123,252	64	519	
0.75 to < 2.50	359,185	304,273	25.6	429,101	1.40	8,634	41.5	1.50	347,636	81	2,464	
2.50 to < 10.00	57,520	69,842	23.9	74,240	4.05	2,317	45.9	1.12	93,585	126	1,388	
10.00 to <100.00	4,509	2,639	25.3	5,178	20.71	177	44.4	0.90	9,587	185	423	
100.00 (Default)	11,526	2,249	41.3	12,455	100.00	483	49.8	1.42	24,628	198	6,362	
Sub-total at 31 Dec 2018	1,591,602	1,516,759	29.4	2,029,468	1.27	39,255	44.6	1.75	1,003,097	49	12,091	24,499

Table 31.2: 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	29,983	374,509	34.9	160,545	0.06	3,892,079	100.2	–	6,217	4	97	
0.15 to < 0.25	3,023	16,556	46.0	10,646	0.22	254,731	100.1	–	1,247	12	24	
0.25 to < 0.50	10,237	33,363	36.7	22,471	0.39	414,525	95.6	–	3,923	17	84	
0.50 to < 0.75	7,430	8,290	47.9	11,402	0.58	117,844	96.7	–	2,771	24	64	
0.75 to < 2.50	20,796	38,940	37.8	35,497	1.36	415,853	95.9	–	16,310	46	464	
2.50 to < 10.00	11,731	6,521	55.0	15,319	4.57	156,250	90.6	–	15,788	103	641	
10.00 to < 100.00	4,643	1,626	56.2	5,557	20.61	59,694	87.4	–	10,851	195	1,019	
100.00 (Default)	162	44	2.8	163	100.00	2,280	98.4	–	271	166	139	
Sub-total at 31 Dec 2018	88,005	479,849	36.2	261,600	1.06	5,313,256	98.2	–	57,378	22	2,532	3,815
Portfolio (vi) – Retail – Residential mortgage exposures												
0.00 to < 0.15	346,031	27,867	63.4	363,688	0.09	152,260	13.5	–	56,526	16	43	
0.15 to < 0.25	147,194	3,865	58.3	149,447	0.19	74,213	11.9	–	20,787	14	34	
0.25 to < 0.50	107,794	1,177	62.3	108,528	0.34	53,115	10.2	–	16,701	15	38	
0.50 to < 0.75	69,397	844	69.7	69,986	0.56	34,679	11.7	–	11,330	16	45	
0.75 to < 2.50	114,092	2,822	87.6	116,563	1.10	62,457	14.4	–	24,352	21	171	
2.50 to < 10.00	34,877	108	97.4	34,982	4.48	15,028	12.0	–	13,057	37	190	
10.00 to < 100.00	6,745	813	99.9	7,557	16.06	10,288	13.2	–	5,292	70	162	
100.00 (Default)	2,339	9	–	2,339	100.00	2,846	12.3	–	2,721	116	271	
Sub-total at 31 Dec 2018	828,469	37,505	65.6	853,090	0.91	404,886	12.7	–	150,766	18	954	2,621
Portfolio (vii) – Retail – small business retail exposures												
0.00 to < 0.15	2,568	7	100.0	2,575	0.08	1,056	8.2	–	44	2	–	
0.15 to < 0.25	602	3	100.0	605	0.19	159	15.4	–	37	6	–	
0.25 to < 0.50	516	1	100.0	517	0.37	102	29.0	–	87	17	1	
0.50 to < 0.75	563	–	–	563	0.58	183	8.8	–	42	7	–	
0.75 to < 2.50	180	1	100.0	182	1.19	46	18.7	–	37	20	–	
2.50 to < 10.00	472	1	100.0	472	6.10	167	5.8	–	42	9	2	
10.00 to < 100.00	–	–	–	–	–	–	–	–	–	–	–	
100.00 (Default)	–	–	–	–	–	–	–	–	–	–	–	
Sub-total at 31 Dec 2018	4,901	13	100.0	4,914	0.80	1,713	11.5	–	289	6	3	4
Portfolio (viii) – Other retail exposures to individuals												
0.00 to < 0.15	4,675	42,292	29.8	17,271	0.08	180,660	6.5	–	218	1	1	
0.15 to < 0.25	2,878	27,790	32.8	11,990	0.21	116,797	18.0	–	965	8	5	
0.25 to < 0.50	5,696	12,178	35.8	10,060	0.37	69,917	29.4	–	1,829	18	11	
0.50 to < 0.75	7,967	5,386	43.4	10,305	0.62	45,674	35.2	–	2,730	26	20	
0.75 to < 2.50	5,024	1,834	32.5	5,621	1.61	39,863	61.0	–	4,138	74	59	
2.50 to < 10.00	7,802	3,927	42.6	9,474	3.42	53,262	38.8	–	5,266	56	149	
10.00 to < 100.00	789	9	118.4	800	15.83	7,000	68.9	–	1,075	134	88	
100.00 (Default)	76	27	20.4	81	100.00	1,648	103.7	–	39	48	81	
Sub-total at 31 Dec 2018	34,907	93,443	32.8	65,602	1.16	514,821	26.8	–	16,260	25	414	463

Banking Disclosure Statement at 31 December 2018

Table 31.3: 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 2018	4,903,151	2,324,777	31.7	5,631,277	0.77	6,300,863	38.4	1.60	1,561,226	28	18,360	38,044

¹ The average maturity is relevant to wholesale portfolios only.

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

The general increase in risk weights in corporate and retail portfolios in the second half of 2018 is mainly due to an internal methodology and policy change in reporting RWAs for defaulted exposures.

Table 32: CR10 – Specialised Lending under supervisory slotting criteria approach – Other than HVCRE

Supervisory Rating Grade	Remaining Maturity	a	b	c	d			e	f
		On-balance sheet exposure amount	Off-balance sheet exposure amount	SRW	EAD amount			RWAs	Expected loss amount
					PF	IPRE	Total		
HK\$m	HK\$m	%	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	
Strong [^]	Less than 2.5 years	19,686	3,539	50	1,692	19,014	20,706	10,353	–
Strong	Less than 2.5 years	7,124	2,888	70	458	7,693	8,151	5,706	33
Strong [^]	Equal to or more than 2.5 years	7,129	1,022	50	7,493	–	7,493	3,746	–
Strong	Equal to or more than 2.5 years	27,320	550	70	7,010	20,534	27,544	19,281	110
Good [^]	Less than 2.5 years	3,682	332	70	306	3,477	3,783	2,648	15
Good	Less than 2.5 years	2,838	952	90	–	3,200	3,200	2,880	26
Good [^]	Equal to or more than 2.5 years	1,210	244	70	1,271	–	1,271	890	5
Good	Equal to or more than 2.5 years	4,953	1,915	90	–	5,627	5,627	5,064	45
Satisfactory		3,554	151	115	2,527	1,080	3,607	4,148	101
Weak		1,183	126	250	1,227	–	1,227	3,067	98
Default		188	–	–	188	–	188	–	94
Total at 31 Dec 2018		78,867	11,719		22,172	60,625	82,797	57,783	527

[^] Use of preferential risk-weights.

Table 33: 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	71	300	71	214
All other equity exposures	4,639	400	4,639	18,555
Total at 31 Dec 2018	4,710		4,710	18,769

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

	a	c	d	e	f	g	h	j
Risk Weight	0%	20%	35%	50%	75%	100%	150%	Total credit risk exposures amount (post CCF and post CRM)
Exposure class	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
1 Sovereign exposures	46,434	1,208	–	32	–	–	–	47,674
2 PSE exposures	89,739	16,651	–	11,287	–	5,450	–	123,127
2a Of which: domestic PSEs	–	5,559	–	–	–	–	–	5,559
2b Of which: foreign PSEs	89,739	11,092	–	11,287	–	5,450	–	117,568
4 Bank exposures	–	475	–	766	–	122	10	1,373
6 Corporate exposures	–	12,078	–	2,093	–	136,347	1	150,519
10 Regulatory retail exposures	–	–	–	–	58,203	–	–	58,203
11 Residential mortgage loans	–	–	113,533	6,745	8,127	6,100	57	134,562
12 Other exposures which are not past due exposures	–	–	–	–	–	18,427	–	18,427
13 Past due exposures	95	5	–	1	–	252	3,401	3,754
15 Total at 31 Dec 2018	136,268	30,417	113,533	20,946	66,330	166,698	3,469	537,661

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. Specifically, detailed policies cover the acceptability, structuring and terms with regard to the availability of credit risk mitigation; for example 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 SMEs are commonly granted against guarantees given by their owners and/or directors.

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

Financial collateral

Charges over financial instruments, such as cash, debt securities and equities are taken in some instances. It must be ensured that these financial instruments are liquid, tangible and documentation and processes provide adequate protection and the ability to realise the value of security with certainty and within a reasonable timeframe.

In the non-trading book, we provide customers with working capital management products. Some of these products have loans and advances to customers, and customer accounts where we have rights of offset and comply with the regulatory requirements for on-balance sheet netting. Under on-balance sheet netting, the customer accounts are treated as cash collateral and the effects of

this collateral are incorporated in our LGD estimates. For risk management purposes, the net amounts of such exposures are subject to limits and the relevant customer agreements are subject to review to ensure the legal right of offset remains appropriate.

Other forms of credit risk mitigation

Our Global Banking and Markets ('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. Where collateral is subject to high volatility, valuation is frequent; where stable, less so. For residential mortgages, 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. It is assumed that the guarantor’s performance materially informs the PD of the guaranteed entity. 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 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; and
- 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, attracts the risk weight of the protection provider. The uncovered portion attracts the risk weight of the obligor. For exposures fully or partially covered by eligible financial collateral, the value of the exposure 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, in the case of eligible debt securities, their credit quality) and its liquidation period. The adjusted exposure value is subject to the risk weight of the obligor.

Table 35: 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	1,911,014	2,236,699	1,779,878	456,001	820
2	Debt securities	1,427,956	47,933	2	47,931	–
3	Total at 31 Dec 2018	3,338,970	2,284,632	1,779,880	503,932	820
4	<i>Of which defaulted</i>	<i>6,133</i>	<i>5,368</i>	<i>5,246</i>	<i>121</i>	<i>–</i>

Table 36: 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)	16,897	16,897
4 Corporate – Specialised lending under supervisory slotting criteria approach (income-producing real estate)	40,886	40,886
6 Corporate – Small- and medium-sized corporates	147,810	147,810
7 Corporate – Other corporates	1,003,129	1,003,097
8 Sovereigns	102,701	102,701
10 Multilateral development banks	2,926	2,926
11 Bank exposures – Banks	76,222	76,222
12 Bank exposures – Securities firms	3,777	3,777
14 Retail – Small business retail exposures	289	289
15 Retail – Residential mortgages to individuals	146,514	146,514
16 Retail – Residential mortgages to property-holding shell companies	4,252	4,252
17 Retail – Qualifying revolving retail exposures ('QRRE')	57,378	57,378
18 Retail – Other retail exposures to individuals	16,260	16,260
19 Equity – Equity exposures under market-based approach (simple risk-weight method)	18,769	18,769
26 Other – Cash items	2,473	2,473
27 Other – Other items	133,424	133,424
28 Total (under the IRB calculation approaches) at 31 Dec 2018	1,773,707	1,773,675

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 37: 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	133	–	47,592	82	258	1
2 PSE exposures	173,826	7,960	120,368	2,759	14,424	12
2a <i>Of which: domestic PSEs</i>	4,357	2,036	4,767	792	1,112	20
2b <i>Of which: foreign PSEs</i>	169,469	5,924	115,601	1,967	13,312	11
4 Bank exposures	643	541	1,089	284	615	45
5 Securities firm exposures	22	14	22	–	11	50
6 Corporate exposures	206,701	229,024	142,756	7,763	139,810	93
10 Regulatory retail exposures	61,476	263,358	57,716	487	43,651	75
11 Residential mortgage loans	132,581	11,260	132,042	2,520	55,389	41
12 Other exposures which are not past due exposures	59,549	56,443	16,776	1,651	18,428	100
13 Past due exposures	3,260	1,062	3,259	495	5,356	143
15 Total at 31 Dec 2018	638,191	569,662	521,620	16,041	277,942	52

Banking Disclosure Statement at 31 December 2018

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 38: CR9 – Back-testing of PD per portfolio

b	c(i)	c(ii)	c(iii)	d	e	f		g	h	i
PD range	External rating equivalent (S&P)	External rating equivalent (Moody's)	External rating equivalent (Fitch)	Weighted average PD %	Arithmetic average PD by obligors %	Number of obligors ^{1,2}		Defaulted obligors in the year	Of which: new defaulted obligors in the year	Average historical annual default rate %
						End of previous year	End of the year			
Sovereigns										
0.00 to <0.15	AAA to BBB	Aaa to Baa2	AAA to BBB	0.02	0.03	42	45	–	–	–
0.15 to <0.25	BBB-	Baa3	BBB-	0.00	–	–	2	–	–	–
0.25 to <0.50	BBB-	Baa3	BBB-	0.37	0.37	2	2	–	–	–
0.50 to <0.75	BB+ to BB	Ba1 to Ba2	BB+ to BB	0.63	0.63	1	2	–	–	–
0.75 to <2.50	BB- to B+	Ba3 to B2	BB- to B-	0.91	0.98	3	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	0.08	164	167	–	–	–
0.15 to <0.25	BBB+	Baa2	BBB	0.22	0.22	36	34	–	–	–
0.25 to <0.50	BBB	Baa3	BBB-	0.37	0.37	30	34	–	–	–
0.50 to <0.75	BBB-	Baa3	BBB-	0.63	0.63	28	26	–	–	–
0.75 to <2.50	BB+ to BB-	Ba1 to B1	BB+ to B+	1.39	1.42	45	37	–	–	–
2.5 to <10.00	B+ to B-	B2 to Caa1	B to CCC+	3.63	4.52	27	16	–	–	–
10.00 to <100.00	CCC+ to C	Caa1 to C	CCC to C	12.57	11.50	4	2	–	–	–
Corporate – small- and medium sized corporates										
0.00 to <0.15	AAA to A-	Aaa to Baa1	AAA to BBB+	0.10	0.11	714	713	1	–	0.04
0.15 to <0.25	BBB+	Baa2	BBB	0.22	0.22	845	949	1	–	0.21
0.25 to <0.50	BBB	Baa3	BBB-	0.37	0.37	1,266	1,269	5	–	0.30
0.50 to <0.75	BBB-	Baa3	BBB-	0.63	0.63	1,270	1,358	1	–	0.32
0.75 to <2.50	BB+ to BB-	Ba1 to B1	BB+ to B+	1.49	1.51	4,287	4,513	30	–	0.60
2.5 to <10.00	B+ to B-	B2 to Caa1	B to CCC+	3.78	3.98	813	888	17	–	1.64
10.00 to <100.00	CCC+ to C	Caa1 to C	CCC to C	21.48	16.78	51	67	9	–	11.99
Corporate – other³										
0.00 to <0.15	AAA to A-	Aaa to Baa1	AAA to BBB+	0.09	0.10	3,806	3,759	2	–	0.02
0.15 to <0.25	BBB+	Baa2	BBB	0.22	0.22	2,157	2,262	1	–	0.05
0.25 to <0.50	BBB	Baa3	BBB-	0.37	0.37	2,189	2,172	–	–	0.09
0.50 to <0.75	BBB-	Baa3	BBB-	0.63	0.63	2,016	1,903	6	–	0.31
0.75 to <2.50	BB+ to BB-	Ba1 to B1	BB+ to B+	1.36	1.50	5,434	5,098	37	–	0.56
2.5 to <10.00	B+ to B-	B2 to Caa1	B to CCC+	4.03	4.24	1,348	1,260	33	–	1.60
10.00 to <100.00	CCC+ to C	Caa1 to C	CCC to C	13.88	16.10	68	87	6	–	8.23

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.

Table 38: 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	4,108,585	4,283,398	1,755	16	0.05
0.15 to < 0.25	0.22	0.22	247,378	252,917	307	1	0.13
0.25 to < 0.50	0.39	0.40	421,806	426,103	1,016	29	0.25
0.50 to < 0.75	0.58	0.59	118,578	117,687	520	25	0.45
0.75 to < 2.50	1.36	1.33	556,729	572,251	3,579	137	0.78
2.50 to < 10.00	4.58	4.50	183,265	179,547	4,921	71	3.00
10.00 to < 100.00	20.83	23.20	72,815	64,758	7,325	17	11.40
Retail – Residential mortgage exposures							
0.00 to < 0.15	0.07	0.06	188,195	160,786	122	5	0.07
0.15 to < 0.25	0.20	0.20	49,282	79,151	66	6	0.12
0.25 to < 0.50	0.36	0.36	61,315	56,981	186	1	0.31
0.50 to < 0.75	0.64	0.62	31,865	36,832	206	1	0.69
0.75 to < 2.50	1.32	1.35	61,656	66,003	348	–	0.59
2.50 to < 10.00	4.46	4.44	14,185	15,894	147	2	0.97
10.00 to < 100.00	16.43	17.00	8,624	10,564	1,429	8	15.03
Retail – small business retail exposures							
0.00 to < 0.15	0.07	0.07	1,350	1,226	–	–	–
0.15 to < 0.25	0.17	0.17	116	188	–	–	–
0.25 to < 0.50	0.36	0.36	38	137	–	–	–
0.50 to < 0.75	0.54	0.54	160	222	–	–	–
0.75 to < 2.50	1.18	1.19	248	56	–	–	0.18
2.50 to < 10.00	5.22	5.25	206	204	–	–	0.11
10.00 to < 100.00	–	–	–	–	–	–	–
Other retail exposures to individuals							
0.00 to < 0.15	0.08	0.09	94,294	92,926	40	–	0.09
0.15 to < 0.25	0.21	0.21	60,685	58,754	47	–	0.15
0.25 to < 0.50	0.37	0.38	38,167	42,610	55	3	0.30
0.50 to < 0.75	0.63	0.59	32,168	34,778	93	2	1.03
0.75 to < 2.50	1.62	1.65	31,825	32,208	270	25	1.40
2.50 to < 10.00	3.46	4.34	40,873	44,889	780	83	2.66
10.00 to < 100.00	15.90	15.98	8,642	7,351	806	11	11.01

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.

Two approaches may be used to calculate derivative exposure values for CCR: current exposure method ('CEM') or the internal models (counterparty credit risk) approach ('IMM'). Exposure values calculated under these approaches are used to determine RWAs. Across the group, we use the CEM and IMM approaches.

Under the CEM 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 exposure is derived from simulation, pricing and aggregation internal models approved by HKMA. The IMM model is subject to ongoing model validation including monthly model performance monitoring.

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

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 trading undertaken with the counterparty.

The Regional Markets Risk Model Oversight Committee provides oversight on model risk management related matters including models used in the calculation of CCR. 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') risk is the risk of adverse moves in the CVAs taken for expected credit losses on derivative transactions. Where we have both specific risk VaR approval and IMM approval for a product, the CVA VaR approach has been used to calculate the CVA capital charge. Where we do not hold both approvals, the standardised approach has been applied.

Collateral arrangements

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

Eligible collateral types are controlled under a policy to ensure price transparency, price stability, liquidity, enforceability, independence, reusability and eligibility for regulatory purposes. A valuation 'haircut' policy reflects the fact that collateral may fall in value between the date the collateral was called and the date of liquidation or enforcement. Approximately 97% 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 in Note 32 of the group's Annual Report and Accounts 2018.

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 2018, the potential value of the additional collateral pertaining to International Swaps and Derivatives Association CSA downgrade thresholds that we would need to post with counterparties in the event of a one-notch downgrade of our rating was HK\$117m and for a two-notch downgrade was HK\$251m.

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.

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.

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. This is to address an implication of the regulations that the group's risk will be transferred from being distributed among individual, bilateral counterparties to a significant level of risk concentration on CCPs. We have developed a risk appetite framework to manage risk accordingly, on an individual CCP and global basis.

Table 39: CCR1 – Analysis of counterparty default risk exposures (other than those to CCPs) by approaches

	a	b	c	d	e	f
	Replacement cost ('RC') HK\$m	PFE HK\$m	Effective expected positive exposures (EPE) HK\$m	Alpha (α) used for computing default risk exposure HK\$m	Default risk exposure after CRM HK\$m	RWAs HK\$m
1a CEM	14,159	30,474			44,460	13,801
2 IMM (CCR) approach			63,039	1.4	88,255	30,915
4 Comprehensive Approach (for SFTs)					61,412	7,360
6 Total at 31 Dec 2018						52,076

Table 40: CCR2 – CVA capital charge

	a	b
	EAD post CRM HK\$m	RWAs HK\$m
Netting sets for which CVA capital charge is calculated by the advanced CVA method	88,255	19,686
1 (i) VaR (after application of multiplication factor if applicable)		3,502
2 (ii) Stressed VaR (after application of multiplication factor if applicable)		16,184
3 Netting sets for which CVA capital charge is calculated by the standardised CVA method	44,733	3,064
4 Total at 31 Dec 2018	44,733	22,750

Table 41: CCR6 – Credit-related derivatives contracts

	a	b
	Protection bought HK\$m	Protection sold HK\$m
At 31 Dec 2018		
Notional amounts		
Single-name credit default swaps	329,844	306,633
Index credit default swaps	144,126	139,509
Total return swaps	8,926	–
Total notional amounts	482,896	446,142
Fair values		
Positive fair value (asset)	1,465	4,549
Negative fair value (liability)	(4,833)	(1,069)

Table 42: CCR5 – Composition of collateral for counterparty default risk exposures (including those for contracts or transactions cleared through CCPs)

	Derivative contracts				SFTs	
	Fair value of recognised collateral received		Fair value of posted collateral		Fair value of recognised collateral received	Fair value of posted collateral
	Segregated HK\$m	Unsegregated HK\$m	Segregated HK\$m	Unsegregated HK\$m	HK\$m	HK\$m
Cash – domestic currency	–	2,480	–	1,955	57,489	50,917
Cash – other currencies	–	52,594	–	35,682	400,280	384,583
Domestic sovereign debt	–	912	–	330	27	21,279
Other sovereign debt	–	4,369	5,906	27,314	48,162	94,795
Corporate bonds	–	2,418	–	60	27,092	28,703
Equity securities	–	–	–	–	2,630	16,225
Other collateral	5,844	–	7,774	–	–	–
Total at 31 Dec 2018	5,844	62,773	13,680	65,341	535,680	596,502

Banking Disclosure Statement at 31 December 2018

Table 43: CCR8 – Exposures to CCPs

		a	b
		Exposure after CRM HK\$m	RWAs HK\$m
At 31 Dec 2018			
1	Exposures of the AI as clearing member or client to qualifying CCPs (total)		1,975
2	Default risk exposures to qualifying CCPs (excluding items disclosed in rows 7 to 10), of which:	7,932	159
3	(i) OTC derivative transactions	2,923	59
4	(ii) exchange-traded derivative contracts	5,009	100
7	Segregated initial margin	5,906	
8	Unsegregated initial margin	13,110	1,278
9	Funded default fund contributions	1,687	538
11	Exposures of the AI as clearing member or client to non-qualifying CCPs (total)		390
12	Default risk exposures to non-qualifying CCPs (excluding items disclosed in rows 17 to 20), of which:	19	19
14	(ii) exchange-traded derivative contracts	19	19
18	Unsegregated initial margin	60	60
19	Funded default fund contributions	25	311

Counterparty default risk under internal ratings-based approach

Table 44: 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	38,620	0.01	48	44.6	0.28	697	2
0.25 to < 0.50	21	0.37	1	45.0	1.00	9	44
0.75 to < 2.50	120	0.94	2	45.7	1.12	89	74
Sub-total at 31 Dec 2018	38,761	0.02	51	44.6	0.29	795	2
Portfolio (ii) – Bank							
0.00 to < 0.15	83,349	0.06	1,417	37.8	1.34	13,141	16
0.15 to < 0.25	5,845	0.22	206	47.7	1.10	2,609	45
0.25 to < 0.50	2,725	0.37	61	44.6	1.12	1,573	58
0.50 to < 0.75	2,736	0.63	50	44.0	0.97	1,991	73
0.75 to < 2.50	1,109	1.26	47	47.6	1.10	1,084	98
2.50 to < 10.00	6	3.05	4	45.6	1.00	8	137
Sub-total at 31 Dec 2018	95,770	0.10	1,785	38.9	1.30	20,406	21
Portfolio (iii) – Corporate							
0.00 to < 0.15	25,990	0.09	1,281	49.7	2.17	7,712	30
0.15 to < 0.25	8,712	0.22	529	50.1	1.12	3,741	43
0.25 to < 0.50	4,471	0.37	393	51.7	1.27	2,648	59
0.50 to < 0.75	2,446	0.63	371	51.7	1.39	1,859	76
0.75 to < 2.50	5,591	1.38	682	51.3	1.49	5,844	105
2.50 to < 10.00	802	3.47	198	52.2	1.70	1,169	146
10.00 to < 100.00	–	10.16	4	70.3	1.00	–	246
100.00 (Default)	–	100.00	1	46.0	1.00	–	–
Sub-total at 31 Dec 2018	48,012	0.37	3,459	50.3	1.77	22,973	48
Total (sum of all portfolios) at 31 Dec 2018	182,543	0.15	5,295	43.1	1.21	44,174	24

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 23 to 26 of this document.

Counterparty default risk under standardised approach

Table 45: 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	1,297	1,501	614	–	–	3,412
2a <i>Of which: domestic PSEs</i>	–	184	6	–	–	190
2b <i>Of which: foreign PSEs</i>	1,297	1,317	608	–	–	3,222
4 Bank exposures	–	76	263	–	56	395
5 Securities firm exposures	–	–	58	–	–	58
6 Corporate exposures	–	–	–	–	6,246	6,246
8 Regulatory retail exposures	–	–	–	23	–	23
12 Total at 31 Dec 2018	1,297	1,577	935	23	6,302	10,134

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 32 to 33 of the group's *Annual Report and Accounts 2018*.

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 37 on the group's Financial Statements of the Annual Report and Accounts 2018.

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 2018 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\$13,139m of additional residential mortgages in the banking book into an existing SPE where we consolidated and transferred HK\$482m of loan assets in the banking book to a third-party securitisation.

Table 46: SEC1 – Securitisation exposures in banking book

		a	c	g	i
		Acting as originator (excluding sponsor)		Acting as investor	
		Traditional HK\$m	Sub-total HK\$m	Traditional HK\$m	Sub-total HK\$m
At 31 Dec 2018					
1	Retail (total) – of which:	41,949	41,949	27,943	27,943
2	<i>residential mortgage</i>	41,949	41,949	11,216	11,216
3	<i>credit card</i>	–	–	5,200	5,200
4	<i>other retail exposures</i>	–	–	11,527	11,527
6	Wholesale (total) – of which:	–	–	9,322	9,322
10	<i>other wholesale</i>	–	–	9,322	9,322

Table 47: SEC2 – Securitisation exposures in trading book

		g	i
		Acting as investor	
		Traditional HK\$m	Sub-total HK\$m
At 31 Dec 2018			
1	Retail (total) – of which:	5	5
2	<i>residential mortgage</i>	5	5

Table 48: SEC4 – Securitisation exposures in banking book and associated capital requirements – where AI acts as investor

		a	b	c	d	g	k	o
		Exposure values (by RW bands)				Exposure values (by regulatory approach)	RWAs (by regulatory approach)	Capital charges after cap
		≤20% RW HK\$m	>20% to 50% RW HK\$m	>50% to 100% RW HK\$m	>100% to <1250% RW HK\$m	SEC-ERBA HK\$m	SEC-ERBA HK\$m	SEC-ERBA HK\$m
At 31 Dec 2018								
1	Total exposures	24,140	3,003	931	8,832	36,906	18,342	1,467
2	Traditional securitisation	24,140	3,003	931	8,832	36,906	18,342	1,467
3	<i>Of which: securitisation</i>	24,140	3,003	931	8,832	36,906	18,342	1,467
4	<i>Of which: retail</i>	24,140	3,003	–	441	27,584	6,459	517
5	<i>Of which: wholesale</i>	–	–	931	8,391	9,322	11,883	950

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 comprise positions arising from market-making.
- Non-trading portfolios 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.

The diagram below illustrates the main business areas where trading and non-trading market risks reside and market risk measures to monitor and limit exposures.

	Trading Risk	Non-Trading Risk			
Risk Types	<ul style="list-style-type: none"> – Foreign exchange & Commodities – Interest rates – Credit spreads – Equities 	<ul style="list-style-type: none"> – Structural foreign exchange – Interest rates – Credit spreads 			
Global Business	GB&M, incl BSM	GB&M, incl BSM	GPB	CMB	RBWM
Risk Measure	VaR / Sensitivity / Stress testing	VaR / Sensitivity / Stress testing			

Balance Sheet Management ('BSM') department, for external reporting purposes, forms part of Corporate Centre while daily operations and risk are managed within GB&M.

Where appropriate, the group applies similar risk management policies and measurement techniques to both trading and non-trading portfolios. The group's objective is to manage and control market risk exposures in order to optimise return on risk while maintaining a market profile consistent within the group's established risk appetite.

The nature of the hedging and risk mitigation strategies performed across the Group corresponds to the market risk management instruments available within each operating jurisdiction. These strategies range from the use of traditional market instruments, such as interest rate swaps, to more sophisticated hedging strategies to address a combination of risk factors arising at portfolio level.

Market risk governance

Market risk is managed and controlled through limits approved by the Risk Management Meeting of the Group Management Board ('GMB') for HSBC Holdings plc and the various global businesses. These limits are allocated across business lines and to the Group's legal entities. The management of market risk is principally undertaken in Global Markets through risk limits. Value at Risk ('VaR') limits are set for portfolios, products and risk types, with market liquidity and business need being the primary factors in determining the level of limits set.

Each major operating entity has an independent market risk management and control function that is responsible for measuring market risk exposures in accordance with the policies defined by Group Risk, and monitoring and reporting these exposures against the prescribed limits on a daily basis.

Each operating entity is required to assess the market risks arising on each product in its business and to transfer them to either its

local Markets unit for management, or to separate books managed under the supervision of the local Asset and Liability Management Committee ('ALCO').

Our aim is to ensure that all market risks are consolidated within operations that have the necessary skills, tools, management and governance to manage them. In certain cases where the market risks cannot be fully transferred, we identify the impact of varying scenarios on valuations or on net interest income resulting from any residual risk positions.

The Regional Markets Risk Model Oversight Committee provides oversight on model risk management related matters including models used in the calculation of Market Risk. Models are subject to ongoing monitoring and validation. Additionally, they are subject to independent review at inception and annually thereafter.

Our control of market risk in the trading and non-trading portfolios is based on a policy of restricting individual operations to trading within a list of permissible instruments authorised for each site by Group Risk, of enforcing new product approval procedures, and of restricting trading in the more complex derivative products only to sites with appropriate levels of product expertise and robust control systems.

Market risk measures

Monitoring and limiting market risk exposures

Our objective is to manage and control market risk exposures while maintaining a market 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. Sensitivity limits are set for portfolios, products and risk types, with the depth of the market being one of the principal factors in determining the level of limits set.

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 the Group capitalises those exposures. Where there is no approved internal model, the Group uses the appropriate local rules to capitalise exposures locally.

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. Where we do not calculate VaR explicitly, we use alternative tools as described in the Stress testing section below.

Our VaR models derive plausible future scenarios from past series of recorded market rates and prices, taking into account inter-relationships between different markets and rates such as interest rates and foreign exchange rates. Our models use a mixed approach when applying changes in market rates and prices:

- For equity, credit and foreign exchange risk factors, the potential movements are typically represented on a relative return basis.
- For interest rates, a mixed approach is used. Curve movements are typically absolute, whereas volatilities are on a relative return basis.

We use the past two years as the data set in our VaR models, which is updated on a fortnightly basis and these scenarios are then applied to the market baselines and trading positions on a daily basis. The models also incorporate the effect of option features on the underlying exposures.

The valuation approach used in our models values:

- non-linear instruments using a full revaluation approach; and
- linear instruments, such as bonds and swaps, using 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 holding period assumes that all positions can be liquidated or the risks offset during that period. This may not fully reflect the market risk arising at times of severe illiquidity, when the holding period may be insufficient to liquidate or hedge all positions fully;
- 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 which are not completely covered in VaR, such as the London interbank offered rate ('Libor') tenor basis, 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. 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 routinely validate the accuracy of our VaR models by back-testing them against both actual, and hypothetical profit and loss against the trading VaR numbers. Hypothetical profit and loss excludes non-modelled items, such as fees, commissions and revenues of intra-day transactions.

The actual number of profits or losses in excess of VaR over this period can therefore be used to gauge how well the models are performing.

We back-test VaR at various levels which reflect a full legal entity scope of the group, including entities that do not have local permission to use VaR for regulatory purposes. 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 procedure that is integrated into our market risk management tool 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 much 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. Scenarios are tailored to capture the relevant events or market movements at each level. The risk appetite around potential stress losses for the region is set and monitored against referral limits.

Market risk reverse stress tests are undertaken based on the premise that there is a fixed loss. The stress testing process identifies which scenarios lead to this loss. The rationale behind the reverse stress test is to understand scenarios that are beyond normal business settings that could have contagion and systemic implications.

Stressed VaR and stress testing, together with reverse stress testing and the management of gap risk, 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 49: MR1 – Market risk under STM approach

		a
		RWAs HK\$m
Outright product exposures		
1	Interest rate exposures (general and specific risk)	889
2	Equity exposures (general and specific risk)	1,884
4	Commodity exposures	33
8	Securitisation exposures	59
9	Total at 31 Dec 2018	2,865

Market risk capital models

There are a number of measures that HSBC has permission to use in calculating regulatory capital, which are listed below.

For regulatory purposes, the trading book comprises all positions in financial instruments and commodities that are held with trading intent, which are taken with the intention of benefiting from short-term gains or 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.

HSBC maintains a Trading Book Policy that 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, computed using regulatory approved models. Otherwise, the market risk capital is calculated using the Standardised approach.

Banking Disclosure Statement at 31 December 2018

If any of the policy criteria are not met, then the position is categorised as a banking book 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 ('SVaR') 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 for the following:

- 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 IRC measures the default and migration risk of issuers of traded instruments.

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

The IRC is a stand-alone charge generating no diversification benefit with other charges. We do not use weighted averages for calculating the liquidity horizon for the IRC measure. 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 Ratings) as the starting point, in combination with internal rules for flooring. The average of the three matrices is computed for each sector, ignoring zero transition probabilities. The PDs are then floored: sovereign PDs are consistent with IRB, while a 3bp 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 50: MR3 – IMM approach values for market risk exposures

	Footnotes	a HK\$m
At 31 Dec 2018		
VaR (10 day – one-tailed 99% confidence interval)		
1 Maximum Value		713
2 Average Value		541
3 Minimum Value		390
4 Period End		503
Stressed VaR (10 day – one-tailed 99% confidence interval)		
5 Maximum Value	1	959
6 Average Value		663
7 Minimum Value		439
8 Period End		872
Incremental risk charge (IRC) (99.9% confidence interval)		
9 Maximum Value		4,126
10 Average Value		3,065
11 Minimum Value		1,963
12 Period End		2,339

1 The total VaR excludes VaR RNIV.

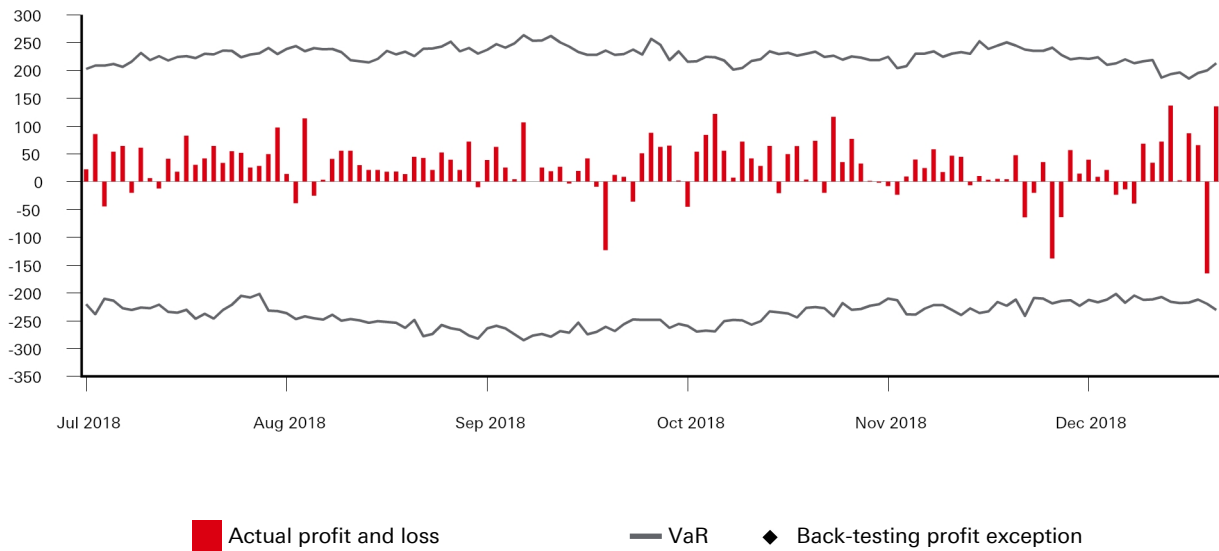
The group's trading VaR at 31 December 2018 was lower than 30 June 2018 due to the reduction in the interest rate trading VaR, which was driven by reduced inventory positions.

The group's trading Stressed VaR at 31 December 2018 was higher than 30 June 2018 due to the increase in trading position under the equities business.

Trading IRC at 31 December 2018 was lower than 30 June 2018 due to the reduction in the trading bond inventory.

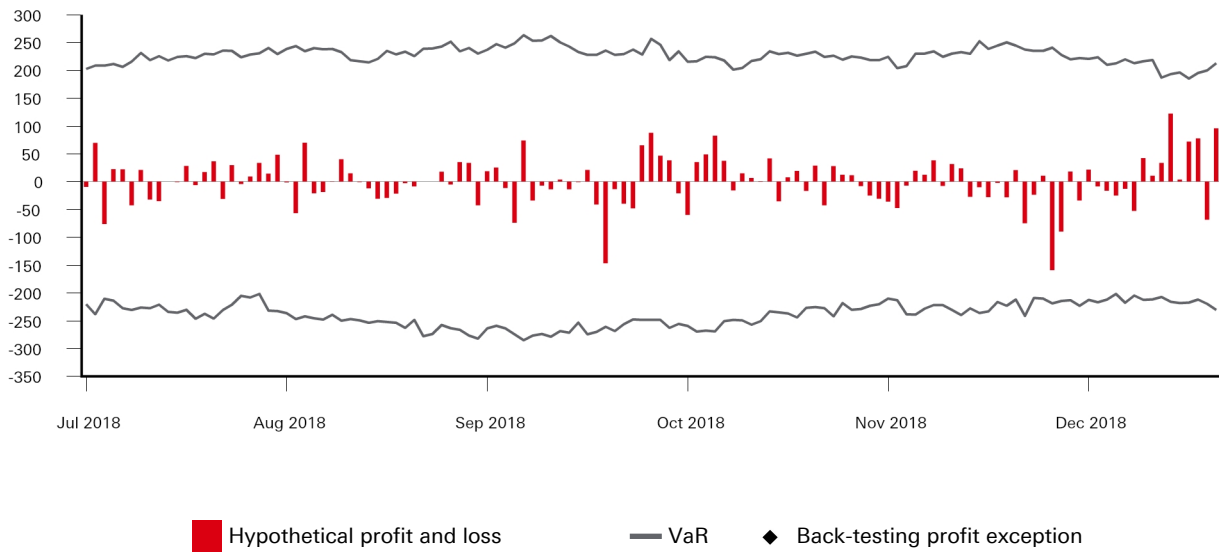
Table 51: MR4 – Comparison of VaR estimates with gains or losses

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



There was no VaR back-testing exception against actual profit and loss in the second half year of 2018.

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



There was no VaR back-testing exception against hypothetical profit and loss in the second half year of 2018.

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 52: 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	(168)	(917)	(66)	(157)	(1)	(1,309)	(630)	(679)
– of which:								
2 Mid-market value	(108)	(423)	(19)	(58)	(1)	(609)	(226)	(383)
3 Close-out costs	(15)	(131)	(7)	(9)	–	(162)	(121)	(41)
4 Concentration	(45)	(363)	(40)	(90)	–	(538)	(283)	(255)
6 Model risk	(18)	(22)	–	–	–	(40)	(40)	–
7 Operational risks	(13)	(66)	(4)	(7)	(1)	(91)	(48)	(43)
8 Investing and funding costs	–	(22)	(1)	–	–	(23)	(23)	–
9 Unearned credit spreads	(1)	(112)	(14)	–	(9)	(136)	(136)	–
Total adjustments at 12 31 Dec 2018	(200)	(1,139)	(85)	(164)	(11)	(1,599)	(877)	(722)

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

	At 31 Dec 2018	
	LCR %	NSFR %
Hong Kong Office	180.5	137.2
Unconsolidated	177.0	140.5
Consolidated	146.8	149.7

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 32 to 33 of the Risk Report of the group's *Annual Report and Accounts 2018*. The on- and off- balance sheet items, broken down into maturity buckets, is disclosed in Notes 28 and 29 in the group's *Annual Report and Accounts 2018*.

Table 54: LIQ1 – Liquidity coverage ratio – for category 1 institution

Number of data points used in calculating the average value of the LCR and related components set out in this table for the quarters ending on 31 December 2018 was 75. Basis of disclosure: consolidated	a	b
	Quarter ended 31 Dec 2018	
	Unweighted value (average) HK\$m	Weighted value (average) HK\$m
A HQLA		
1 Total HQLA		1,566,715
B Cash outflows		
2 Retail deposits and small business funding, of which:	3,150,403	293,337
3 <i>Stable retail deposits and stable small business funding</i>	318,608	10,157
4 <i>Less stable retail deposits and less stable small business funding</i>	2,831,795	283,180
5 Unsecured wholesale funding (other than small business funding) and debt securities and prescribed instruments issued by the AI, of which:	2,097,184	1,012,916
6 <i>Operational deposits</i>	585,154	142,828
7 <i>Unsecured wholesale funding (other than small business funding) not covered in row 6</i>	1,504,631	862,689
8 <i>Debt securities and prescribed instruments issued by the AI and redeemable within the LCR period</i>	7,399	7,399
9 Secured funding transactions (including securities swap transactions)		2,719
10 Additional requirements, of which:	511,631	171,381
11 <i>Cash outflows arising from derivative contracts and other transactions, and additional liquidity needs arising from related collateral requirements</i>	119,225	119,220
12 <i>Cash outflows arising from obligations under structured financing transactions and repayment of funding obtained from such transactions</i>	1,679	1,679
13 <i>Potential drawdown of undrawn committed facilities (including committed credit facilities and committed liquidity facilities)</i>	390,727	50,482
14 Contractual lending obligations (not otherwise covered in Section B) and other contractual cash outflows	190,853	190,853
15 Other contingent funding obligations (whether contractual or non-contractual)	2,674,095	16,645
16 Total cash outflows		1,687,851
C Cash inflows		
17 Secured lending transactions (including securities swap transactions)	288,350	66,493
18 Secured and unsecured loans (other than secured lending transactions covered in row 17) and operational deposits placed at other financial institutions	646,621	458,115
19 Other cash inflows	208,617	188,932
20 Total cash inflows	1,143,588	713,540
D Liquidity coverage ratio (adjusted value)		
21 Total HQLA		1,566,715
22 Total net cash outflows		974,311
23 LCR (%)		161.0%

Banking Disclosure Statement at 31 December 2018

Table 55: LIQ2 – Net stable funding ratio – for category 1 institution

Basis of disclosure: consolidated	Footnotes	a	b	c	d	e
		Quarter ended 31 Dec 2018				
		Unweighted value by residual maturity				
	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	
E Available stable funding ('ASF') item						
1 Capital:		711,742	–	–	18,920	730,662
2 <i>Regulatory capital</i>		711,742	–	–	13,944	725,686
3 <i>Other capital instruments</i>		–	–	–	4,976	4,976
4 Retail deposits and small business funding:			3,190,363	–	–	2,887,309
5 <i>Stable deposits</i>			319,644	–	–	303,662
6 <i>Less stable deposits</i>			2,870,719	–	–	2,583,647
7 Wholesale funding:		–	2,580,269	51,869	189,766	1,103,210
8 <i>Operational deposits</i>			593,980	–	–	296,990
9 <i>Other wholesale funding</i>		–	1,986,289	51,869	189,766	806,220
10 Liabilities with matching interdependent assets		280,854	–	–	–	–
11 Other liabilities:		192,849	129,199	5,756	64,944	67,822
13 <i>All other funding and liabilities not included in the above categories</i>		192,849	129,199	5,756	64,944	67,822
14 Total ASF						4,789,003
F Required stable funding ('RSF') item						
15 Total HQLA for NSFR purposes	1		1,865,038			68,810
17 Performing loans and securities:		274,503	1,781,411	358,987	2,308,492	2,777,186
18 <i>Performing loans to financial institutions secured by Level 1 HQLA</i>		–	350,372	–	15,895	50,932
19 <i>Performing loans to financial institutions secured by non-Level 1 HQLA and unsecured performing loans to financial institutions</i>		9,530	332,521	82,294	153,298	253,853
20 <i>Performing loans, other than performing residential mortgage, to non-financial corporate clients, retail and small business customers, sovereigns, the Monetary Authority for the account of the Exchange Fund, central banks and PSEs, of which:</i>		141,567	955,506	230,809	1,235,672	1,725,807
21 <i>With a risk-weight of less than or equal to 35% under the STC approach</i>		13	5,142	339	2,741	4,530
22 <i>Performing residential mortgages, of which:</i>		–	17,192	16,717	833,542	567,134
23 <i>With a risk-weight of less than or equal to 35% under the STC approach</i>		–	16,103	15,791	791,661	530,527
24 <i>Securities that are not in default and do not qualify as HQLA, including exchange-traded equities</i>		123,406	125,820	29,167	70,085	179,460
25 Assets with matching interdependent liabilities		280,854	–	–	–	–
26 Other assets:		598,851	72,294	49	1,113	334,493
27 <i>Physical traded commodities, including gold</i>		10,886				9,253
28 <i>Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs</i>		33,296				28,302
29 <i>Net derivative assets</i>		786				786
30 <i>Total derivative liabilities before deduction of variation margin posted</i>		185,715				N/A
31 <i>All other assets not included in the above categories</i>		368,168	72,294	49	1,113	296,152
32 Off-balance sheet items	1			2,870,332		17,757
33 Total RSF						3,198,246
34 Net Stable Funding Ratio (%)						149.7

Table 55: LIQ2 – Net stable funding ratio – for category 1 institution (continued)

	a	b	c	d	e					
						Quarter ended				
						30 Sep 2018				
Basis of disclosure: consolidated	Unweighted value by residual maturity									
	No specified term to maturity	<6 months or repayable on demand	6 months to < 12 months	12 months or more	Weighted amount					
	Footnotes	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m				
E Available stable funding ('ASF') item										
1 Capital:		664,321	5,476	—	17,995	682,316				
2 <i>Regulatory capital</i>		664,321	5,476	—	12,360	676,681				
3 <i>Other capital instruments</i>		—	—	—	5,635	5,635				
4 Retail deposits and small business funding:			3,156,949	—	—	2,857,325				
5 <i>Stable deposits</i>			321,408	—	—	305,338				
6 <i>Less stable deposits</i>			2,835,541	—	—	2,551,987				
7 Wholesale funding:		—	2,525,247	35,456	176,104	1,065,930				
8 <i>Operational deposits</i>			578,335	—	—	289,167				
9 <i>Other wholesale funding</i>		—	1,946,912	35,456	176,104	776,763				
10 Liabilities with matching interdependent assets		276,254	—	—	—	—				
11 Other liabilities:		186,384	205,550	11,037	64,819	70,338				
13 <i>All other funding and liabilities not included in the above categories</i>		186,384	205,550	11,037	64,819	70,338				
14 Total ASF						4,675,909				
F Required stable funding ('RSF') item										
15 Total HQLA for NSFR purposes	¹		1,553,889			56,607				
17 Performing loans and securities:		306,463	1,924,545	331,573	2,271,974	2,794,177				
18 <i>Performing loans to financial institutions secured by Level 1 HQLA</i>		—	230,238	—	15,579	38,603				
19 <i>Performing loans to financial institutions secured by non-Level 1 HQLA and unsecured performing loans to financial institutions</i>		12,808	452,442	50,482	180,536	286,451				
20 <i>Performing loans, other than performing residential mortgage, to non-financial corporate clients, retail and small business customers, sovereigns, the Monetary Authority for the account of the Exchange Fund, central banks and PSEs, of which:</i>		125,263	1,031,718	240,126	1,188,195	1,688,683				
21 <i>With a risk-weight of less than or equal to 35% under the STC approach</i>		7	4,064	85	2,767	3,878				
22 <i>Performing residential mortgages, of which:</i>		—	17,287	17,491	814,523	559,509				
23 <i>With a risk-weight of less than or equal to 35% under the STC approach</i>		—	15,876	15,505	751,128	503,923				
24 <i>Securities that are not in default and do not qualify as HQLA, including exchange-traded equities</i>		168,392	192,860	23,474	73,141	220,931				
25 Assets with matching interdependent liabilities		276,254	—	—	—	—				
26 Other assets:		653,434	152,787	22	1,150	368,289				
27 <i>Physical traded commodities, including gold</i>		10,731				9,122				
28 <i>Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs</i>		37,907				32,221				
29 <i>Net derivative assets</i>		24,833				24,833				
30 <i>Total derivative liabilities before deduction of variation margin posted</i>		189,401				N/A				
31 <i>All other assets not included in the above categories</i>		390,562	152,787	22	1,150	302,113				
32 Off-balance sheet items	¹			2,785,537		19,414				
33 Total RSF						3,238,487				
34 Net Stable Funding Ratio (%)						144.4				

¹ The unweighted values disclosed in these rows are not required to 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 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 policies 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.

Quantitative disclosure

An EVE Sensitivity is the extent to which the EVE will change due to a pre-specified movement in interest rates, where all other economic variables are held constant. The EVE sensitivity shown below is indicative and based on scenarios and assumptions prescribed by HKMA under completion instruction for the Return of Interest Rate Risk Exposures (MA(BS)12), which is completed and reported quarterly on a solo basis according to MA(BS)12. The HKMA applies a standardised 200-basis-point parallel rate shock* to institutions' interest rate risk exposures to measure the EVE impact of the shock.

All the positions captured by this return are slotted into the appropriate time bands according to the earliest interest repricing date (as per MA(BS)12).

* *Multiplying the net position by the corresponding weighting factors which are designed to reflect the sensitivity of positions in different time bands to an assumed parallel shift of 200 basis points throughout the time spectrum.*

Table 56: IRRBB – Sensitivity analysis

At 31 Dec 2018	Footnotes	Economic value sensitivity ²				
		Total	Material Currencies			
			HKD	USD	CNY	JPY
		HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
Parallel up		10,394	2,911	7,238	44	201
Total Capital Base	1	282,946				

1 The Total Capital Base is as of 30 September 2018.

2 The EVE sensitivity is reported on solo basis according to the Return of Interest Rate Risk Exposures (MA(BS)12) submitted to the HKMA.

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 57: Mainland activities

At 31 Dec 2018	Types of counterparties	On-balance sheet exposure	Off-balance sheet exposure	Total exposures
		HK\$m	HK\$m	HK\$m
1	Central government, central government-owned entities and their subsidiaries and joint ventures ('JVs')	251,245	16,242	267,487
2	Local governments, local government-owned entities and their subsidiaries and JVs	46,451	4,982	51,433
3	People's Republic of China ('PRC') nationals residing in mainland China or other entities incorporated in mainland China and their subsidiaries and JVs	349,846	57,554	407,400
4	Other entities of central government not reported in item 1 above	13,857	2,394	16,251
5	Other entities of local governments not reported in item 2 above	6,395	801	7,196
6	PRC nationals residing outside mainland China or entities incorporated outside mainland China where the credit is granted for use in mainland China	38,452	3,820	42,272
7	Other counterparties where the exposures are considered by the reporting institution to be non-bank mainland China exposures	46,784	3,163	49,947
	Total	753,030	88,956	841,986
	Total assets after provision	5,043,067		
	On-balance sheet exposures as percentage of total assets	14.93%		

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 58: International claims

	Banks	Official sector	Non-bank financial institutions	Non-financial private sector	Others	Total
	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m	HK\$m
At 31 Dec 2018						
Developed countries	444,846	498,631	265,527	397,977	89	1,607,070
– of which: United States	25,335	188,139	81,970	133,784	–	429,228
Offshore centres	87,096	42,922	97,456	442,821	1,879	672,174
– of which: Hong Kong	61,427	2,166	42,733	259,584	1,853	367,763
Developing Asia and Pacific	444,551	90,281	84,286	419,407	–	1,038,525
– of which: Mainland China	338,579	42,998	50,037	238,142	–	669,756

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 2018:

Table 59: Non-structural foreign currency positions

	United States dollars	Renminbi
	HK\$m	HK\$m
At 31 Dec 2018		
Spot assets	1,944,805	703,465
Spot liabilities	(2,347,681)	(657,604)
Forward purchases	11,409,512	2,037,159
Forward sales	(10,950,837)	(2,102,552)
Net options positions	(14,191)	13,292
Net long (net short) position	41,608	(6,240)

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, 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;
- 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.

The group annually reviews, adopts and follows the remuneration policy and frameworks of HSBC Holdings plc. Please refer to the HSBC remuneration practices and governance at <http://www.hsbc.com/about-hsbc/corporate-governance/remuneration> and the Capital and Risk Management Pillar 3 Disclosures of HSBC Holdings plc for details of the major design characteristics of the remuneration system 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 group'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 group Board.

An annual review of the group's remuneration strategy and its operation is commissioned externally and carried out independently of management. The review conducted by Deloitte LLP confirms that the Bank's remuneration policy is consistent with the principles set out in the HKMA Supervisory Policy Manual CG-5 'Guideline on a Sound Remuneration System'.

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 34 members of senior management during 2018. This includes two members who have been a Directors of, and remunerated by, HSBC Holdings plc and are 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 2018 were 279 members.

Table 60: REM1 – Remuneration awarded during financial year

		Footnotes	a	b
			2018	
Remuneration amount and quantitative information			Senior Management	Key personnel
Fixed remuneration				
1	Number of employees		32	279
2	Total fixed remuneration (HK\$m)		276	1,170
3	Of which: cash-based		276	1,170
Variable remuneration				
9	Number of employees	1	32	279
10	Total variable remuneration (HK\$m)	2	294	1,071
11	Of which: cash-based		142	526
12	Of which: deferred		83	249
13	Of which: shares or other share-linked instruments		152	542
14	Of which: deferred		93	274
15	Of which: other forms	3	–	3
16	Of which: deferred		–	2
17	Total remuneration (HK\$m)		570	2,241

1 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.

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

3 Other forms of variable remuneration refer to index cash awards.

Table 61: REM2 – Special payments

		a	b	e	f
Special payments		Number of employees	Total amount HK\$m	Number of employees	Total amount HK\$m
2	Key personnel	6	33	5	16

Table 62: REM3 – Deferred remuneration

		a	b	d	e
		2018			
		Total amount of outstanding deferred remuneration	Of which: Total amount of outstanding deferred and retained remuneration exposed to ex post explicit and/or implicit adjustment	Total amount of amendment during the year due to ex post implicit adjustments	Total amount of deferred remuneration paid out in the financial year
Deferred and retained remuneration		HK\$m	HK\$m	HK\$m	HK\$m
1	Senior management	434	434	(48)	267
2	Cash	154	154	–	83
3	Shares	280	280	(48)	184
6	Key personnel	1,094	1,094	(102)	697
7	Cash	425	425	–	173
8	Shares	665	665	(102)	522
10	Other	4	4	–	2
	<i>Footnotes</i>				
11	Total	1,528	1,528	(150)	964

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
US\$m	Millions of United States dollars

A

AFS	Available-for-sale
AI	Authorised institution
ALCO	Asset and Liability Management Committee
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
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
CF	Commodity finance
CIS	Collective investment scheme
CMB	Commercial Banking, a global business
CRC	Comprehensive risk charge
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 bank
DTAs	Deferred tax assets

E

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

F

FFVA	Funding Fair Value Adjustment
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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
group	The Hongkong and Shanghai Banking Corporation Limited together with its subsidiary undertakings
G-SIB ¹	Global systemically important bank

H

HKAS 39	Hong Kong Accounting Standards 39
HKFRS 9	Hong Kong Financial Reporting Standards 9
HKMA	Hong Kong Monetary Authority

Hong Kong	The Hong Kong Special Administrative Region of the People's Republic of China
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HQLA	High-quality liquid assets
HSBC	HSBC Holdings together with its subsidiary
HVCRE	High volatility commercial real estate

I

IMM ¹	Internal Models Method
IMM(CCR)	Internal models (counterparty credit risk)
IPRE	Income producing real estate
IRB ¹	Internal ratings-based approach
IRC	Incremental risk charge
ISDA	International Swaps and Derivatives Association

J

JCCyB	Jurisdictional countercyclical buffer
JVs	Joint ventures

L

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

NSFR	Net stable funding ratio
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O

OBS	Off-balance sheet
OF	Object finance
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
RBM	Ratings Based Method
RBWM	Retail Bank and Wealth Management, a global
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	Risk-weight
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
STC(S)	Standardised (securitisation) 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
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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