Regulatory Disclosures

31 December 2019

中國銀行(香港)有限公司
BANK OF CHINA (HONG KONG) LIMITED

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BANK OF CHINA (HONG KONG) LIMITED

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1. Key prudential ratios, overview of risk management and RWA

KM1: Key prudential ratios

		(a)	(b)	(c)	(d)	(e)
		At 31 December 2019	**At 30 September 2019**	**At 30 June 2019**	**At 31 March 2019**	**At 31 December 2018**
		HK$'m	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**
	Regulatory capital					
1	Common Equity Tier 1 (CET1)	195,039	197,089	193,987	185,025	180,202
2	Tier 1	218,515	220,566	217,450	208,502	203,678
3	Total capital	251,370	253,552	250,015	240,595	238,071
	RWA					
4	Total RWA	1,098,018	1,098,572	1,086,888	1,070,971	1,030,815
	Risk-based regulatory capital ratios (as a percentage of RWA)					
5	CET1 ratio (%)	17.76%	17.94%	17.85%	17.28%	17.48%
6	Tier 1 ratio (%)	19.90%	20.08%	20.01%	19.47%	19.76%
7	Total capital ratio (%)	22.89%	23.08%	23.00%	22.47%	23.10%
	Additional CET1 buffer requirements (as a percentage of RWA)					
8	Capital conservation buffer requirement (%)	2.500%	2.500%	2.500%	2.500%	1.875%
9	Countercyclical capital buffer requirement (%)	1.552%	1.928%	1.907%	1.912%	1.418%
10	Higher loss absorbency requirements (%) (applicable only to G-SIBs or D-SIBs)	1.500%	1.500%	1.500%	1.500%	1.125%
11	Total AI-specific CET1 buffer requirements (%)	5.552%	5.928%	5.907%	5.912%	4.418%
12	CET1 available after meeting the AI's minimum capital requirements (%)	13.26%	13.44%	13.35%	12.78%	12.98%
	Basel III leverage ratio					
13	Total leverage ratio (LR) exposure measure	2,799,606	2,764,612	2,756,823	2,691,882	2,733,653
14	LR (%)	7.81%	7.98%	7.89%	7.75%	7.45%
	Liquidity Coverage Ratio (LCR)/Liquidity Maintenance Ratio (LMR)					
	Applicable to category 1 institution only:					
15	Total high quality liquid assets (HQLA)	645,105	612,820	652,196	588,804	492,674
16	Total net cash outflows	452,123	440,675	431,814	343,513	314,666
17	LCR (%)	143.00%	139.27%	151.47%	178.67%	159.05%
	Applicable to category 2 institution only:					
17a	LMR (%)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
	Net Stable Funding Ratio (NSFR)/Core Funding Ratio (CFR)					
	Applicable to category 1 institution only:					
18	Total available stable funding	1,595,457	1,592,902	1,604,533	1,591,465	1,541,356
19	Total required stable funding	1,363,567	1,377,442	1,358,331	1,325,423	1,239,852
20	NSFR (%)	117.01%	115.64%	118.13%	120.07%	124.32%
	Applicable to category 2A institution only:					
20a	CFR (%)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

1. Key prudential ratios, overview of risk management and RWA (continued)

OVA: Overview of risk management

The Group conducts risk assessment in daily operations based on its business activities, sets up risk appetite, and sets risk adjusted return targets as well as different levels of risk limits and KRIs under the overall risk appetite framework. Via such risk limits and KRIs, the risk appetite is cascaded to business units into corresponding performance indicators, so as to supervise business units to make proper adjustments to the Bank's operations based on current risk status.

The Group conducts regular assessment on risk management status and risk governance based on regulatory requirements and assesses the Bank's level of internal capital adequacy accordingly. The key types of risk inherent in the Group's business include: credit risk, market risk, interest rate risk, liquidity risk, operational risk, technology risk, legal and compliance risk (including anti-money laundering risk), reputation risk and strategic risk.

The Group's risk governance structure covers 3 layers: the Board of Directors and its subordinate committees, the senior management and the management level committees, the three lines of defence risk management functions.

- Board of Directors: The Board of Directors represents the interests of shareholders, and is the highest decision making authority of the Group and has the ultimate responsibility for the oversight of risk management. The Board with the assistance of its committees has the primary responsibilities for the determination of risk management strategies, risk appetite and risk culture, and for ensuring that the Group has an effective risk management system to implement these risk management strategies.

- Senior management: Chief Executive ("CE") is responsible for managing the various types of risks that the Group is exposed to, and approving material risk exposures or transactions within his authority delegated by the Board. The Deputy Chief Executives ("DCEs") assist the Chief Executives ("CE") in fulfilling his responsibilities on day-to-day management of various types of risk and are responsible for approving material risk exposures or transactions within their authorities delegated by the CE. The Chief Risk Officer ("CRO") assists the CE in fulfilling his responsibilities on day-to-day management of various types of risks. The CRO is also responsible for initiating new risk management strategies, projects and measures that would better monitor and manage new risk issues or areas, whether arising from new businesses, products and operating environment, or in response to regulatory changes, and reviewing material risk exposures or transactions within his delegated authority.

1. Key prudential ratios, overview of risk management and RWA (continued)

OVA: Overview of risk management (continued)

- Individual business units (front office): Act as the first line of defence of risk management and are responsible for soliciting business in compliance with the risk management policies and procedures and within various risk limits, and for assessing and monitoring the risk of their business, and ensuring risk data is correctly entered, kept current and aligned with the data definitions.

- Various risk management units (middle office) and supporting units (back office): Act as the second line of defence of risk management. Various risk management units (middle office), which are independent from the business units, are responsible for day-to-day management of different kinds of risks. They have the primary responsibilities for conducting an independent due diligence through identifying, measuring, monitoring and controlling risk to ensure an effective check and balance, as well as drafting various risk management policies and procedures. They are also responsible for reporting the implementation of risk management policies and risk profiles to the Board and the Management and for providing supports and recommendations for their decision-making. Supporting units (back office) are responsible for providing proper day-to-day operations support to ensure that there are adequate human resources and systems to support risk management.

- Group Audit: Acts as the third line of defence of risk management, which is responsible for conducting independent checking, and reporting to the Board on the quality of risk management supervision, the adequacy and the compliance of internal policies and procedures.

The Group develops various codes of conduct and has sound management systems in place to enforce them. The standards of conduct are laid down in its risk management policies, and other operating principles and guidelines. All staff is required to follow them when conducting business.

The Group makes use of appropriate training programmes, remuneration, incentive, reward and penalty schemes, assessment and feedback mechanism to guide and drive staff to conduct business in a responsible, honest, practical and proper manner.

The Group's risk management measurement system covers comprehensive quantitative and qualitative indicators of the 8 major risk categories as required by regulator.

Under such system, the Group sets risk appetite and regularly reviews and monitors risk appetite and risk limits based on operating conditions and risk status, and reports regularly to senior management and the Board.

1. Key prudential ratios, overview of risk management and RWA (continued)

OVA: Overview of risk management (continued)

Regular risk reporting is made to the senior management and the Board, and such regular reporting covers:

- Implementation status of Group Risk Appetite, risk limits and KRIs
- Risk status of major risk types, portfolios and exposures
- Major regulatory compliance requirements and implementation status
- Significant risk, compliance and internal control incidents/events
- Matters of concern and main tasks

Ad hoc reporting to senior management and the Board is also conducted based on business needs of risk management and internal control.

Based on regulatory requirements, the Group conducts a variety of stress tests on individual risks and integrated risks each year. The Group also conducts special scenario analysis, sensitivity analysis and stress testing according to emerging issues or by specific areas or businesses. Each stress testing scenario takes into account 3 levels of severity, i.e. mild, moderate, and severe, while different probabilities are applied based on level of severity. Impacts on macroeconomic and market will be evaluated under different scenarios, and impact on Group's risk indicators are also assessed accordingly.

The Bank shall apply stress testing results to various management decisions, including decisions made on strategic businesses, preparation of the business and capital planning, setting of the risk appetite, setting and adjustment of the risk limit, inclusion in the internal capital adequacy assessment process ("ICAAP"), performance of liquidity assessment, implementation of remedial actions and recovery plan, etc.

The strategies and processes to manage, hedge and mitigate risks that arise from the AI's business model include:

1. Establishing clear risk management strategies and ensuring that a comprehensive risk management system is in place to identify, assess, monitor and control various kinds of risks.

2. Establishing risk management units with clear responsibilities to perform independent risk management and control.

3. Establishing effective communication system that enables the "tone of the top" on risk management are communicated to and understood by every employee so that they could comply with BOCHK's risk management strategies.

1. Key prudential ratios, overview of risk management and RWA (continued)

OVA: Overview of risk management (continued)

4. Putting in place supporting policies and procedures as well as clear authority structure that guide employees' behaviors and set clear boundaries for actions.

5. Setting the risk appetite of the Group. Empirical and/or quantitative models shall be used to set limits for quantifiable risks (including credit risk, market risk, interest rate risk and liquidity risk) to ensure that exposures to such risks are controlled within acceptable risk levels.

6. Continuously strengthen risk data aggregation capabilities, establishing a comprehensive risk management information system that provides regular and sufficiently detailed reports for the Board and the Management to facilitate their continuous monitoring of the risk profile of the Group as well as the implementation of risk management policies (especially exceptions).

7. Establishing independent internal audit, review and accountability system so as to review and evaluate the implementation of risk management system.

The Group has established various risk limits and early warning indicators of different types and different approval levels, and regularly monitors and reports implementation status to senior management and the Board. If such indicators approach or breach the early warning level or pre-set limits, timely assessment will be conducted by relevant function units and reported to corresponding approval level, and appropriate mitigation actions will be taken accordingly.

1. Key prudential ratios, overview of risk management and RWA (continued)

OV1: Overview of RWA

		(a)	(b)	(c)
		RWA		Minimum capital requirements
		At 31 December 2019	At 30 September 2019	At 31 December 2019
		HK$'m	HK$'m	HK$'m
1	Credit risk for non-securitization exposures	942,993	942,608	79,511
2	Of which STC approach	94,760	91,338	7,581
2a	Of which BSC approach	-	-	-
3	Of which foundation IRB approach	847,607	850,897	71,877
4	Of which supervisory slotting criteria approach	626	373	53
5	Of which advanced IRB approach	-	-	-
6	Counterparty default risk and default fund contributions	10,695	12,714	900
7	Of which SA-CCR	Not applicable	Not applicable	Not applicable
7a	Of which CEM	10,142	11,974	855
8	Of which IMM(CCR) approach	-	-	-
9	Of which others	553	740	45
10	CVA risk	6,221	7,462	498
11	Equity positions in banking book under the simple risk-weight method and internal models method	-	-	-
12	Collective investment scheme ("CIS") exposures – LTA	Not applicable	Not applicable	Not applicable
13	CIS exposures – MBA	Not applicable	Not applicable	Not applicable
14	CIS exposures – FBA	Not applicable	Not applicable	Not applicable
14a	CIS exposures – combination of approaches	Not applicable	Not applicable	Not applicable
15	Settlement risk	-	-	-
16	Securitization exposures in banking book	-	-	-
17	Of which SEC-IRBA	-	-	-
18	Of which SEC-ERBA (including IAA)	-	-	-
19	Of which SEC-SA	-	-	-
19a	Of which SEC-FBA	-	-	-
20	Market risk	13,062	12,659	1,045
21	Of which STM approach	2,381	2,762	190
22	Of which IMM approach	10,681	9,897	855
23	Capital charge for switch between exposures in trading book and banking book (not applicable before the revised market risk framework takes effect)	Not applicable	Not applicable	Not applicable
24	Operational risk	95,594	95,777	7,647
24a	Sovereign concentration risk	-	-	-
25	Amounts below the thresholds for deduction (subject to 250% RW)	7,261	5,034	581
26	Capital floor adjustment	-	-	-
26a	Deduction to RWA	29,263	29,431	2,341
26b	Of which portion of regulatory reserve for general banking risks and collective provisions which is not included in Tier 2 Capital	411	371	33
26c	Of which portion of cumulative fair value gains arising from the revaluation of land and buildings which is not included in Tier 2 Capital	28,852	29,060	2,308
27	Total	1,046,563	1,046,823	87,841

In this table, RWAs for credit risk calculated under the IRB approach are before the application of the 1.06 scaling factor. Minimum capital requirement represents the amount of capital required to be held for that risk based on its RWAs after any applicable scaling factor multiplied by 8%.

Compared with 30 September 2019, the 15% decrease in counterparty default risk and default fund contributions (of which CEM) was mainly due to the decrease in outstanding amount of derivative transactions.

2. Linkages between financial statements and regulatory exposures

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

	At 31 December 2019						
	(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 the securitization framework	subject to market risk framework	not subject to capital requirements or subject to deduction from capital
	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m
Assets							
Cash and balances and placements with banks and other financial institutions	366,636	366,066	365,326	740	-	-	-
Financial assets at fair value through profit or loss	46,662	46,426	3,738	5,297	-	37,391	-
Derivative financial instruments	31,167	31,167	-	31,095	-	30,837	81
Hong Kong SAR Government certificates of indebtedness	163,840	163,840	163,840	-	-	-	-
Advances and other accounts	1,412,501	1,412,501	1,412,501	-	-	-	-
Investment in securities	739,335	739,329	739,329	60,562	-	-	-
Interests in subsidiaries	-	805	805	-	-	-	-
Interests in associates and joint ventures	619	619	619	-	-	-	-
Investment properties	20,428	20,364	20,364	-	-	-	-
Properties, plant and equipment	51,173	50,609	50,609	-	-	-	-
Current tax assets	45	44	-	-	-	-	44
Deferred tax assets	63	62	-	-	-	-	62
Other assets	42,085	42,035	32,196	9,839	-	9,261	-
Total assets	**2,874,554**	**2,873,867**	**2,789,327**	**107,533**	**-**	**77,489**	**187**

2. Linkages between financial statements and regulatory exposures (continued)

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

	At 31 December 2019						
	(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 the securitization framework	subject to market risk framework	not subject to capital requirements or subject to deduction from capital
	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m
Liabilities							
Hong Kong SAR currency notes in circulation	163,840	163,840	-	-	-	-	163,840
Deposits and balances from banks and other financial institutions	267,657	267,657	-	-	-	-	267,657
Financial liabilities at fair value through profit or loss	19,206	19,206	-	-	-	19,206	-
Derivative financial instruments	32,833	32,833	-	32,770	-	30,201	55
Deposits from customers	2,014,092	2,014,526	-	-	-	-	2,014,526
Debt securities and certificates of deposit in issue	116	116	-	-	-	-	116
Other accounts and provisions	66,945	66,733	-	-	-	-	66,733
Current tax liabilities	7,906	7,839	-	-	-	-	7,839
Deferred tax liabilities	6,375	6,222	-	-	-	-	6,222
Subordinated liabilities	12,954	12,954	-	-	-	-	12,954
Total liabilities	**2,591,924**	**2,591,926**	**-**	**32,770**	**-**	**49,407**	**2,539,942**

2. Linkages between financial statements and regulatory exposures (continued)

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

		At 31 December 2019				
		(a)	(b)	(c)	(d)	(e)
			Items subject to:			
		Total	**credit risk framework**	**securitization framework**	**counterparty credit risk framework**	**market risk framework**
		HK$'m	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**
1	Asset carrying value amount under scope of regulatory consolidation (as per template LI1)	2,873,680	2,789,327	-	107,533	77,489
2	Liabilities carrying value amount under regulatory scope of consolidation (as per template LI1)	51,984	-	-	32,770	49,407
3	Total net amount under regulatory scope of consolidation	2,821,696	2,789,327	-	74,763	28,082
4	Off-balance sheet amounts	686,037	147,022	-	-	-
5	Differences due to PFE	17,717	-	-	17,717	-
6	Differences due to different netting rules, other than those already included in row 2	17,099	-	-	16,769	-
7	Differences due to consideration of provisions	6,814	6,814	-	-	-
8	Differences in valuations	212	-	-	212	-
9	Differences due to CRM and others	(2,302)	57,686	-	(59,988)	-
10	**Exposure amounts considered for regulatory purposes**	**3,547,273**	**3,000,849**	**-**	**49,473**	**28,082**

2. Linkages between financial statements and regulatory exposures (continued)

LIA: Explanations of differences between accounting and regulatory exposure amounts

The main driver for the differences between accounting values and amounts considered for regulatory purposes is off-balance sheet amounts, which contribute to exposure amounts considered for regulatory purposes but not the carrying value amount under scope of regulatory consolidation.

The Group has an established governance structure and controls framework to ensure that fair values are either determined or validated by control units independent of the front offices. Control units have overall responsibility for independent verification of valuation results from front line businesses and all other significant fair value measurements. Specific controls include verification of observable pricing inputs; review and approval for new models and changes to models; calibration and back-testing of models against observed market transactions; analysis and investigation of significant daily valuation movements; review of significant unobservable inputs and valuation adjustments. Significant valuation issues are reported to senior management, Risk Committee ("RMC") and Audit Committee.

The Group chooses appropriate valuation methodologies in corresponding to the nature, position and complexity of treasury products and derivatives. They can be classified into marking-to-market and marking-to-model.

Marking-to-market is valuation of positions by adopting readily available and observable close out prices in the market. If market quotation is not available, marking-to-model should be adopted. Marking-to-model is valuation which has to be benchmarked, extrapolated or otherwise derived from market data inputs.

For marking-to-market, the Group uses the price within the bid-offer spread that is most representative of the fair value of financial instruments, where appropriate, includes using on the residual of the net offsetting risk position of portfolios of financial assets and financial liabilities in cases the Group manages such groups of financial assets and liabilities according to their net market risk exposures.

If the market for assets or liabilities is not active, the Group uses valuation techniques, including the use of recent arm's length transactions, discounted cash flow analysis, option pricing models and other valuation techniques commonly used by market participants, that are appropriate in the circumstances and for which sufficient data are available to measure fair value, maximising the use of relevant observable inputs and minimising the use of unobservable inputs.

2. Linkages between financial statements and regulatory exposures (continued)

LIA: Explanations of differences between accounting and regulatory exposure amounts (continued)

Control units independently verify the results of fair value measurements. They source observable data from external independent parties, and compare them to the pricing inputs used in valuation for the financial instruments measured at fair value. If the difference is within a certain pre-set threshold, the selected input is considered as reasonable and can represent current market situation, which supports the conclusion that valuation is reliable.

On top of accounting valuation, the Group conducts liquidity risk adjustments for risk management and regulatory capital adequacy purpose in order to arrive at a prudent value. The Group has continued to consider the liquidity risk adjustment to valuation of less liquid product positions. The appropriateness of the valuation adjustments is reviewed regularly.

2. Linkages between financial statements and regulatory exposures (continued)

PV1: Prudent valuation adjustments

		At 31 December 2019							
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
		Equity	**Interest rates**	**FX**	**Credit**	**Commodities**	**Total**	**Of which: In the trading book**	**Of which: In the banking book**
		HK$'m	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**
1	Close-out uncertainty, of which:	-	65	-	-	-	65	-	65
2	*Mid-market value*	-	-	-	-	-	-	-	-
3	*Close-out costs*	-	-	-	-	-	-	-	-
4	*Concentration*	-	*65*	-	-	-	*65*	-	*65*
5	Early termination	-	-	-	-	-	-	-	-
6	Model risk	-	-	-	-	-	-	-	-
7	Operational risks	-	-	-	-	-	-	-	-
8	Investing and funding costs						-	-	-
9	Unearned credit spreads						-	-	-
10	Future administrative costs	-	-	-	-	-	-	-	-
11	Other adjustments	-	-	-	-	-	-	-	-
12	**Total adjustments**	**-**	**65**	**-**	**-**	**-**	**65**	**-**	**65**

The Group has basically considered close-out uncertainty, model risk and unearned credit spreads in valuation. Assessment of valuation adjustment attributed to early termination, operational risks, investing and funding costs and future administrative costs is not performed.

3. Composition of regulatory capital

CC1: Composition of regulatory capital

		At 31 December 2019	
		(a)	(b)
		HK$'m	Source based on reference numbers/letters of the balance sheet under the regulatory scope of consolidation
	CET1 capital: instruments and reserves		
1	Directly issued qualifying CET1 capital instruments plus any related share premium	43,043	(6)
2	Retained earnings	164,113	(7)
3	Disclosed reserves	51,309	(9)+(10)+(11)+(12)+(13)
4	*Directly issued capital subject to phase-out arrangements from CET1 (only applicable to non-joint stock companies)*	Not applicable	Not applicable
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)	-	
6	**CET1 capital before regulatory deductions**	**258,465**	
	CET1 capital: regulatory deductions		
7	Valuation adjustments	65	Not applicable
8	Goodwill (net of associated deferred tax liabilities)	-	
9	Other intangible assets (net of associated deferred tax liabilities)	-	
10	Deferred tax assets (net of associated deferred tax liabilities)	62	(2)
11	Cash flow hedge reserve	-	
12	Excess of total EL amount over total eligible provisions under the IRB approach	-	
13	Credit-enhancing interest-only strip, and any gain-on-sale and other increase in the CET1 capital arising from securitization transactions	-	
14	Gains and losses due to changes in own credit risk on fair valued liabilities	(237)	(1)+(3)+(5)
15	Defined benefit pension fund net assets (net of associated deferred tax liabilities)	-	
16	Investments in own CET1 capital instruments (if not already netted off paid-in capital on reported balance sheet)	-	
17	Reciprocal cross-holdings in CET1 capital instruments	-	
18	Insignificant LAC investments in CET1 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation (amount above 10% threshold)	-	
19	Significant LAC investments in CET1 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation (amount above 10% threshold)	-	
20	Mortgage servicing rights (net of associated deferred tax liabilities)	Not applicable	Not applicable
21	Deferred tax assets arising from temporary differences (net of associated deferred tax liabilities)	Not applicable	Not applicable
22	Amount exceeding the 15% threshold	Not applicable	Not applicable
23	of which: significant investments in the ordinary share of financial sector entities	Not applicable	Not applicable
24	of which: mortgage servicing rights	Not applicable	Not applicable
25	of which: deferred tax assets arising from temporary differences	Not applicable	Not applicable
26	National specific regulatory adjustments applied to CET1 capital	63,536	
26a	Cumulative fair value gains arising from the revaluation of land and buildings (own-use and investment properties)	52,459	(8)+(9)
26b	Regulatory reserve for general banking risks	11,077	(12)
26c	Securitization exposures specified in a notice given by the MA	-	
26d	Cumulative losses below depreciated cost arising from the institution's holdings of land and buildings	-	
26e	Capital shortfall of regulated non-bank subsidiaries	-	
26f	Capital investment in a connected company which is a commercial entity (amount above 15% of the reporting institution's capital base)	-	

3. Composition of regulatory capital (continued)

CC1: Composition of regulatory capital (continued)

		At 31 December 2019	
		(a)	(b)
		HK$'m	**Source based on reference numbers/letters of the balance sheet under the regulatory scope of consolidation**
27	Regulatory deductions applied to CET1 capital due to insufficient AT1 capital and Tier 2 capital to cover deductions	-	
28	**Total regulatory deductions to CET1 capital**	**63,426**	
29	**CET1 capital**	**195,039**	
	AT1 capital: instruments		
30	Qualifying AT1 capital instruments plus any related share premium	23,476	
31	of which: classified as equity under applicable accounting standards	23,476	(14)
32	of which: classified as liabilities under applicable accounting standards	-	
33	*Capital instruments subject to phase-out arrangements from AT1 capital*	-	
34	AT1 capital instruments issued by consolidated bank subsidiaries and held by third parties (amount allowed in AT1 capital of the consolidation group)	-	
35	*of which: AT1 capital instruments issued by subsidiaries subject to phase-out arrangements*	-	
36	**AT1 capital before regulatory deductions**	**23,476**	
	AT1 capital: regulatory deductions		
37	Investments in own AT1 capital instruments	-	
38	Reciprocal cross-holdings in AT1 capital instruments	-	
39	Insignificant LAC investments in AT1 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation (amount above 10% threshold)	-	
40	Significant LAC investments in AT1 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation	-	
41	National specific regulatory adjustments applied to AT1 capital	-	
42	Regulatory deductions applied to AT1 capital due to insufficient Tier 2 capital to cover deductions	-	
43	**Total regulatory deductions to AT1 capital**	**-**	
44	**AT1 capital**	**23,476**	
45	**Tier 1 capital (T1 = CET1 + AT1)**	**218,515**	
	Tier 2 capital: instruments and provisions		
46	Qualifying Tier 2 capital instruments plus any related share premium	-	
47	*Capital instruments subject to phase-out arrangements from Tier 2 capital*	2,505	(4)
48	Tier 2 capital instruments issued by consolidated bank subsidiaries and held by third parties (amount allowed in Tier 2 capital of the consolidation group)	-	
49	*of which: capital instruments issued by subsidiaries subject to phase-out arrangements*	-	
50	Collective provisions and regulatory reserve for general banking risks eligible for inclusion in Tier 2 capital	6,743	Not applicable
51	**Tier 2 capital before regulatory deductions**	**9,248**	
	Tier 2 capital: regulatory deductions		
52	Investments in own Tier 2 capital instruments	-	
53	Reciprocal cross-holdings in Tier 2 capital instruments and non-capital LAC liabilities	-	

3. Composition of regulatory capital (continued)

CC1: Composition of regulatory capital (continued)

		At 31 December 2019	
		(a)	(b)
		HK$'m	Source based on reference numbers/letters of the balance sheet under the regulatory scope of consolidation
54	Insignificant LAC investments in Tier 2 capital instruments issued by, and non-capital LAC liabilities of, financial sector entities that are outside the scope of regulatory consolidation (amount above 10% threshold and, where applicable, 5% threshold)	-	
54a	Insignificant LAC investments in non-capital LAC liabilities of financial sector entities that are outside the scope of regulatory consolidation (amount formerly designated for the 5% threshold but no longer meets the conditions) (for institutions defined as "section 2 institution" under §2(1) of Schedule 4F to BCR only)	-	
55	Significant LAC investments in Tier 2 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation (net of eligible short positions)	-	
55a	Significant LAC investments in non-capital LAC liabilities of financial sector entities that are outside the scope of regulatory consolidation (net of eligible short positions)	-	
56	National specific regulatory adjustments applied to Tier 2 capital	(23,607)	
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	(23,607)	[(8)+(9)]*45%
56b	Regulatory deductions applied to Tier 2 capital to cover the required deductions falling within §48(1)(g) of BCR	-	
57	**Total regulatory adjustments to Tier 2 capital**	**(23,607)**	
58	**Tier 2 capital (T2)**	**32,855**	
59	**Total regulatory capital (TC = T1 + T2)**	**251,370**	
60	**Total RWA**	**1,098,018**	
	Capital ratios (as a percentage of RWA)		
61	**CET1 capital ratio**	**17.76%**	
62	**Tier 1 capital ratio**	**19.90%**	
63	**Total capital ratio**	**22.89%**	
64	**Institution-specific buffer requirement (capital conservation buffer plus countercyclical capital buffer plus higher loss absorbency requirements)**	**5.552%**	
65	of which: capital conservation buffer requirement	2.500%	
66	of which: bank specific countercyclical capital buffer requirement	1.552%	
67	of which: higher loss absorbency requirement	1.500%	
68	CET1 (as a percentage of RWA) available after meeting minimum capital requirements	13.26%	
	National minima (if different from Basel 3 minimum)		
69	National CET1 minimum ratio	Not applicable	Not applicable
70	National Tier 1 minimum ratio	Not applicable	Not applicable
71	National Total capital minimum ratio	Not applicable	Not applicable
	Amounts below the thresholds for deduction (before risk weighting)		
72	Insignificant LAC investments in CET1, AT1 and Tier 2 capital instruments issued by, and non-capital LAC liabilities of, financial sector entities that are outside the scope of regulatory consolidation	18,921	
73	Significant LAC investments in CET1 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation	2,904	
74	Mortgage servicing rights (net of associated deferred tax liabilities)	Not applicable	Not applicable
75	Deferred tax assets arising from temporary differences (net of associated deferred tax liabilities)	Not applicable	Not applicable

3. Composition of regulatory capital (continued)

CC1: Composition of regulatory capital (continued)

		At 31 December 2019	
		(a)	(b)
		HK$'m	**Source based on reference numbers/letters of the balance sheet under the regulatory scope of consolidation**
	Applicable caps on the inclusion of provisions in Tier 2 capital		
76	Provisions eligible for inclusion in Tier 2 in respect of exposures subject to the BSC approach, or the STC approach and SEC-ERBA, SEC-SA and SEC-FBA (prior to application of cap)	1,699	
77	Cap on inclusion of provisions in Tier 2 under the BSC approach, or the STC approach, and SEC-ERBA, SEC-SA and SEC-FBA	1,288	
78	Provisions eligible for inclusion in Tier 2 in respect of exposures subject to the IRB approach and SEC-IRBA (prior to application of cap)	10,787	
79	Cap for inclusion of provisions in Tier 2 under the IRB approach and SEC-IRBA	5,455	
	Capital instruments subject to phase-out arrangements (only applicable between 1 Jan 2018 and 1 Jan 2022)		
80	*Current cap on CET1 capital instruments subject to phase-out arrangements*	Not applicable	Not applicable
81	*Amount excluded from CET1 due to cap (excess over cap after redemptions and maturities)*	Not applicable	Not applicable
82	*Current cap on AT1 capital instruments subject to phase-out arrangements*	-	
83	*Amount excluded from AT1 capital due to cap (excess over cap after redemptions and maturities)*	-	
84	*Current cap on Tier 2 capital instruments subject to phase-out arrangements*	7,813	
85	*Amount excluded from Tier 2 capital due to cap (excess over cap after redemptions and maturities)*	-	

3. Composition of regulatory capital (continued)

CC1: Composition of regulatory capital (continued)

Notes to the Template

Row No.	Description	Hong Kong basis HK$'m	Basel III basis HK$'m
9	**Other intangible assets (net of associated deferred tax liabilities)**	-	-
	Explanation As set out in paragraph 87 of the Basel III text issued by the Basel Committee (December 2010), mortgage servicing rights ("MSRs") may be given limited recognition in CET1 capital (and hence be excluded from deduction from CET1 capital up to the specified threshold). In Hong Kong, an AI is required to follow the accounting treatment of including MSRs as part of intangible assets reported in the AI's financial statements and to deduct MSRs in full from CET1 capital. Therefore, the amount to be deducted as reported in row 9 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 9 (i.e. the amount reported under the "Hong Kong basis") adjusted by reducing the amount of MSRs to be deducted to the extent not in excess of the 10% threshold set for MSRs and the aggregate 15% threshold set for 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.		
10	**Deferred tax assets (net of associated deferred tax liabilities)**	62	-
	Explanation As set out in paragraphs 69 and 87 of the Basel III text issued by the Basel Committee (December 2010), DTAs of the bank to be realized are to be deducted, whereas DTAs which relate to temporary differences may be given limited recognition in CET1 capital (and hence be excluded from deduction from CET1 capital up to the specified threshold). In Hong Kong, an AI is required to deduct all DTAs in full, irrespective of their origin, from CET1 capital. Therefore, the amount to be deducted as reported in row 10 may be greater than that required under Basel III. The amount reported under the column "Basel III basis" in this box represents the amount reported in row 10 (i.e. the amount reported under the "Hong Kong basis") adjusted by reducing the amount of DTAs to be deducted which relate to temporary differences to the extent not in excess of the 10% threshold set for DTAs arising from temporary differences and the aggregate 15% threshold set for 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.		
18	**Insignificant LAC investments in CET1 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation (amount above 10% threshold)**	-	-
	Explanation For the purpose of determining the total amount of insignificant LAC investments in CET1 capital instruments issued by financial sector entities, an AI is required to aggregate any amount of loans, facilities or other credit exposures provided by it to any of its connected companies, where the connected company is a financial sector entity, as if such loans, facilities or other credit exposures were direct holdings, indirect holdings or synthetic holdings of the AI in the capital instruments of the financial sector entity, except where the AI demonstrates to the satisfaction of the MA 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 18 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 18 (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.		
19	**Significant LAC investments in CET1 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation (amount above 10% threshold)**	-	-
	Explanation For the purpose of determining the total amount of significant LAC investments in CET1 capital instruments issued by financial sector entities, an AI is required to aggregate any amount of loans, facilities or other credit exposures provided by it to any of its connected companies, where the connected company is a financial sector entity, as if such loans, facilities or other credit exposures were direct holdings, indirect holdings or synthetic holdings of the AI in the capital instruments of the financial sector entity, except where the AI demonstrates to the satisfaction of the MA 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.		

3. Composition of regulatory capital (continued)

CC1: Composition of regulatory capital (continued)

Row No.	Description	Hong Kong basis HK$'m	Basel III basis HK$'m
39	**Insignificant LAC investments in AT1 capital instruments issued by financial sector entities that are outside the scope of regulatory consolidation (amount above 10% threshold)**	-	-
	Explanation The effect of treating loans, facilities or other credit exposures to connected companies which are financial sector entities as CET1 capital instruments for the purpose of considering deductions to be made in calculating the capital base (see note re row 18 to the template above) will mean the headroom within the threshold available for the exemption from capital deduction of other insignificant LAC investments in AT1 capital instruments may be smaller. Therefore, the amount to be deducted as reported in row 39 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 39 (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.		
54	**Insignificant LAC investments in Tier 2 capital instruments issued by, and non-capital LAC liabilities of, financial sector entities that are outside the scope of regulatory consolidation (amount above 10% threshold and, where applicable, 5% threshold)**	-	-
	Explanation The effect of treating loans, facilities or other credit exposures to connected companies which are financial sector entities as CET1 capital instruments for the purpose of considering deductions to be made in calculating the capital base (see note re row 18 to the template above) will mean the headroom within the threshold available for the exemption from capital deduction of other insignificant LAC investments in Tier 2 capital instruments and non-capital LAC liabilities may be smaller. Therefore, the amount to be deducted as reported in row 54 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 54 (i.e. the amount reported under the "Hong Kong basis") adjusted by excluding the aggregate amount of loans, facilities or other credit exposures to the AI's connected companies which were subject to deduction under the Hong Kong approach.		
Remarks: The amount of the 10% threshold and 5% threshold 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.			

Abbreviations:

CET1: Common Equity Tier 1
AT1: Additional Tier 1

3. Composition of regulatory capital (continued)

CC2: Reconciliation of regulatory capital to balance sheet

	(a) Balance sheet as in published financial statements as at 31 December 2019	(b) Under regulatory scope of consolidation as at 31 December 2019	(c) Reference
	HK$'m	HK$'m	
ASSETS			
Cash and balances and placements with banks and other financial institutions	366,636	366,066	
Financial assets at fair value through profit or loss	46,662	46,426	
Derivative financial instruments	31,167	31,167	
- of which: debit valuation adjustments in respect of derivative contracts		*9*	(1)
Hong Kong SAR Government certificates of indebtedness	163,840	163,840	
Advances and other accounts	1,412,501	1,412,501	
Investment in securities	739,335	739,329	
Interests in subsidiaries	-	805	
Interests in associates and joint ventures	619	619	
Investment properties	20,428	20,364	
Properties, plant and equipment	51,173	50,609	
Current tax assets	45	44	
Deferred tax assets	63	62	(2)
Other assets	42,085	42,035	
Total assets	**2,874,554**	**2,873,867**	
LIABILITIES			
Hong Kong SAR currency notes in circulation	163,840	163,840	
Deposits and balances from banks and other financial institutions	267,657	267,657	
Financial liabilities at fair value through profit or loss	19,206	19,206	
Derivative financial instruments	32,833	32,833	
- of which: debit valuation adjustments in respect of derivative contracts		*(8)*	(3)
Deposits from customers	2,014,092	2,014,526	
Debt securities and certificates of deposit in issue	116	116	
Other accounts and provisions	66,945	66,733	
Current tax liabilities	7,906	7,839	
Deferred tax liabilities	6,375	6,222	
Subordinated liabilities	12,954	12,954	
- of which: eligible for inclusion in regulatory capital subject to phase out arrangements		*2,505*	(4)
- of which: gains and losses due to changes in own credit risk on fair valued liabilities		*254*	(5)
Total liabilities	**2,591,924**	**2,591,926**	

3. Composition of regulatory capital (continued)

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

	(a) Balance sheet as in published financial statements as at 31 December 2019	(b) Under regulatory scope of consolidation as at 31 December 2019	(c) Reference
	HK$'m	HK$'m	
EQUITY			
Share capital	**43,043**	**43,043**	(6)
Reserves	**215,829**	**215,422**	
- Retained earnings	163,525	164,113	(7)
- of which: cumulative fair value gains arising from the revaluation of investment properties		*13,957*	(8)
- Premises revaluation reserve	39,505	38,502	(9)
- Reserve for fair value changes	2,336	2,339	(10)
- Reserve for own credit risk	(33)	(33)	(11)
- Regulatory reserve	11,077	11,077	(12)
- Translation reserve	(581)	(576)	(13)
Capital and reserves attributable to equity holders of the Bank	**258,872**	**258,465**	
Other equity instruments of the Bank	**23,476**	**23,476**	(14)
Non-controlling interests	**282**	**-**	
Total equity	**282,630**	**281,941**	
Total liabilities and equity	**2,874,554**	**2,873,867**	

3. Composition of regulatory capital (continued)

CCA: Main features of regulatory capital instruments

		(a)		
		CET1 Capital Ordinary shares	**Additional Tier 1 Capital Subordinated capital securities**	**Tier 2 Capital Subordinated notes**
Main features of regulatory capital instruments				
1	Issuer	Bank of China (Hong Kong) Limited	Bank of China (Hong Kong) Limited	Bank of China (Hong Kong) Limited
2	Unique identifier (e.g. CUSIP, ISIN or Bloomberg identifier for private placement)	Not applicable	Rule 144A: CUSIP - 06428JAA7 ISIN - US06428JAA79 Regulation S: CUSIP - 06428YAA4 ISIN - US06428YAA47	Rule 144A: CUSIP - 061199AA3 ISIN - US061199AA35 Regulation S: CUSIP - Y1391CAJ0 ISIN - USY1391CAJ00
3	Governing law(s) of the instrument	Hong Kong law	English law, except that the provisions of the Capital Securities relating to subordination shall be governed by Hong Kong law	New York law (other than the provisions of the indenture relating to subordination, which are governed by Hong Kong law)
	Regulatory treatment			
4	Transitional Basel III rules[1]	Not applicable	Not applicable	Tier 2
5	Post-transitional Basel III rules[2]	Common Equity Tier 1	Additional Tier 1	Ineligible
6	Eligible at solo*/group/solo and group	Solo and Group	Solo and Group	Solo and Group
7	Instrument type (types to be specified by each jurisdiction)	Ordinary shares	Perpetual debt instruments	Other Tier 2 instruments
8	Amount recognised in regulatory capital (currency in millions, as of most recent reporting date)	HK$43,043m (as of 31 December 2019)	HK$23,476m (as of 31 December 2019)	HK$2,505m (as of 31 December 2019)
9	Par value of instrument	No par value (refer to Note 1 for details)	USD3,000m	USD1,623m
10	Accounting classification	Shareholders' equity	Shareholders' equity	Liability - fair value option
11	Original date of issuance	1 October 2001 (refer to Note 2 for details)	14 September 2018	11 February 2010
12	Perpetual or dated	Perpetual	Perpetual	Dated
13	Original maturity date	No maturity date	No maturity date	11 February 2020 (unless previously redeemed or purchased and cancelled with the prior written approval of the HKMA)
14	Issuer call subject to prior supervisory approval	No	Yes	Yes
15	Optional call date, contingent call dates and redemption amount	Not applicable	First call date: 14 September 2023 The issuer may redeem all but not some only of the Capital Securities then outstanding Also early redemption for tax reasons; tax deduction reasons; capital event; at the option of the issuer etc (please refer to "Terms & Conditions of the Capital Securities" at p.100 of the Supplemental Offering Circular dated 11 September 2018 for further details on call dates and redemption amounts)	Early redemption for tax reasons; purchases of Notes by the issuer (please refer to "Description of the Notes" in Offering Memorandum dated 12 April 2010 for further details on call dates and redemption amounts)
16	Subsequent call dates, if applicable	Not applicable	Any distribution payment date after the first call date	Ditto

3. Composition of regulatory capital (continued)

CCA: Main features of regulatory capital instruments (continued)

			(a)	
		CET1 Capital Ordinary shares	**Additional Tier 1 Capital Subordinated capital securities**	**Tier 2 Capital Subordinated notes**
Main features of regulatory capital instruments				
	Coupons/dividends			
17	Fixed or floating dividend/coupon	Floating	Fixed	Fixed
18	Coupon rate and any related index	Not applicable	Years 1-5: 5.90% per annum payable semi-annually in arrear; Year 5 onwards: resettable on year 5 and every 5 years thereafter at the then prevailing 5-year US Treasury rate plus 3.036% p.a.	5.55%
19	Existence of a dividend stopper	No	Yes	No
20	Fully discretionary, partially discretionary or mandatory	Fully discretionary	Fully discretionary	Mandatory
21	Existence of step-up or other incentive to redeem	No	No	No
22	Non-cumulative or cumulative	Non-cumulative	Non-cumulative	Non-cumulative
23	Convertible or non-convertible	Non-convertible	Non-convertible (refer to Note 3 for details)	Non-convertible
24	If convertible, conversion trigger(s)	Not applicable	Not applicable	Not applicable
25	If convertible, fully or partially	Not applicable	Not applicable	Not applicable
26	If convertible, conversion rate	Not applicable	Not applicable	Not applicable
27	If convertible, mandatory or optional conversion	Not applicable	Not applicable	Not applicable
28	If convertible, specify instrument type convertible into	Not applicable	Not applicable	Not applicable
29	If convertible, specify issuer of instrument it converts into	Not applicable	Not applicable	Not applicable
30	Write-down feature	No	Yes	No
31	If write-down, write-down trigger(s)	Not applicable	Upon the occurrence of a Non-Viability Event	Not applicable
32	If write-down, full or partial	Not applicable	Full or Partial	Not applicable
33	If write-down, permanent or temporary	Not applicable	Permanent	Not applicable
34	If temporary write-down, description of write-up mechanism	Not applicable	Not applicable	Not applicable
35	Position in subordination hierarchy in liquidation (specify instrument type immediately senior to instrument in the insolvency creditor hierarchy of the legal entity concerned)	Subordinated capital securities mentioned in the second and third columns of this main features table	(i) Subordinate to (a) all unsubordinated creditors of the issuer (including its depositors), (b) creditors in respect of Tier 2 Capital Securities, and (c) all other subordinated creditors whose claims are stated to rank senior to the Capital Securities; (ii) Pari passu to parity obligations; and (iii) Senior to junior obligations (Please refer to Condition 3(B) of the "Terms & Conditions of the Capital Securities")	Upon the occurrence of a Subordination Event (refer to Note 4 for details), subordinated to the claims of depositors and all other unsubordinated creditors of the issuer
36	Non-compliant transitioned features	No	No	Yes

3. Composition of regulatory capital (continued)

CCA: Main features of regulatory capital instruments (continued)

		(a)		
		CET1 Capital Ordinary shares	**Additional Tier 1 Capital Subordinated capital securities**	**Tier 2 Capital Subordinated notes**
Main features of regulatory capital instruments				
37	If yes, specify non-compliant features	Not applicable	Not applicable	Does not contain provision to be written down, or converted into ordinary shares, at the point of non-viability
Full terms and conditions of regulatory capital instruments		Click here to download	Click here to download	Click here to download

Footnote:

[1] *Regulatory treatment of capital instruments subject to transitional arrangements provided for in Schedule 4H of the Banking (Capital) Rules*

[2] *Regulatory treatment of capital instruments not subject to transitional arrangements provided for in Schedule 4H of the Banking (Capital) Rules*

* *Include solo-consolidated*

Note 1:

Pursuant to the Hong Kong Companies Ordinance (Chapter 622) which commenced operation on 3 March 2014, all shares issued by a company incorporated in Hong Kong before, on and after that commencement date shall have no par value and the relevant concept of authorised share capital is abolished.

Note 2:

- The authorised share capital of Bank of China (Hong Kong) Limited ("BOCHK"), comprising 4 million ordinary shares of HK$100 each, was subdivided into 400 million ordinary shares of HK$1 each pursuant to shareholders written resolution of BOCHK passed on 3 September 2001.
- On 30 September 2001, 400 million shares in the capital of BOCHK were transferred from Bank of China Limited to BOC Hong Kong (Holdings) Limited ("BOCHK Holdings") pursuant to Supplemental Merger Agreement.
- BOCHK then issued a total of 42,642,840,858 ordinary shares at par value of HK$1 each to BOCHK Holdings on 1 October 2001. Hence, the total issued and paid-up share capital of BOCHK was HK$43,042,840,858 since 2001.
- The concepts of par value for shares and authorised share capital have been abolished following the commencement of the Hong Kong Companies Ordinance (Chapter 622) as mentioned in Note 1.

Note 3:

Contractually, the Additional Tier 1 capital securities are non-convertible.

Note 4:

"Subordination Event" shall occur if an order is made or an effective resolution is passed for the winding-up, liquidation or dissolution or similar proceeding of the issuer in Hong Kong (except for the purposes of a reconstruction, amalgamation or reorganisation, the terms of which have previously been approved by a resolution of the noteholders passed at a meeting duly convened and held in accordance with the indenture by a majority of at least 66⅔% of the votes cast).

4. Macroprudential supervisory measures

GSIB1: G-SIB indicators

Not applicable.

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

		At 31 December 2019			
		(a)	(c)	(d)	(e)
	Geographical breakdown by Jurisdiction (J)	Applicable JCCyB ratio in effect	RWA used in computation of CCyB ratio	AI-specific CCyB ratio	CCyB amount
		%	HK$'m	%	HK$'m
1	Hong Kong SAR	2.000%	604,614		
2	France	0.250%	39		
3	United Kingdom	1.000%	3,662		
	Sum		**608,315**		
	Total		**781,682**	**1.552%**	**17,041**

5. Leverage ratio

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

		At 31 December 2019
		(a)
	Item	**Value under the LR framework**
		HK$'m
1	Total consolidated assets as per published financial statements	2,874,554
2	Adjustment for investments in banking, financial, insurance or commercial entities that are consolidated for accounting purposes but outside the scope of regulatory consolidation	3,195
3	Adjustment for fiduciary assets recognised on the balance sheet pursuant to the applicable accounting standard but excluded from the LR exposure measure	-
4	Adjustments for derivative contracts	(3,761)
5	Adjustment for SFTs (i.e. repos and similar secured lending)	164
6	Adjustment for off-balance sheet ("OBS") items (i.e. conversion to credit equivalent amounts of OBS exposures)	153,542
6a	Adjustment for specific and collective provisions that are allowed to be excluded from exposure measure	(577)
7	Other adjustments	(227,511)
	of which: Hong Kong SAR Government certificates of indebtedness	*(163,840)*
8	**Leverage ratio exposure measure**	**2,799,606**

5. Leverage ratio (continued)

LR2: Leverage ratio

		At 31 December 2019	At 30 September 2019
		(a)	(b)
		HK$'m	HK$'m
On-balance sheet exposures			
1	On-balance sheet exposures (excluding those arising from derivative contracts and SFTs, but including collateral)	2,623,367	2,595,356
2	Less: Asset amounts deducted in determining Tier 1 capital	(63,671)	(64,212)
3	**Total on-balance sheet exposures (excluding derivative contracts and SFTs)**	**2,559,696**	**2,531,144**
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)	12,505	16,205
5	Add-on amounts for PFE associated with all derivative contracts	20,536	20,649
6	Gross-up for derivatives collateral provided where deducted from the balance sheet assets pursuant to the applicable accounting framework	-	-
7	Less: Deductions of receivables assets for cash variation margin provided under derivative contracts	(5,635)	(7,785)
8	Less: Exempted CCP leg of client-cleared trade exposures	-	-
9	Adjusted effective notional amount of written credit derivative contracts	-	-
10	Less: Adjusted effective notional offsets and add-on deductions for written credit derivative contracts	-	-
11	**Total exposures arising from derivative contracts**	**27,406**	**29,069**
Exposures arising from SFTs			
12	Gross SFT assets (with no recognition of netting), after adjusting for sale accounting transactions	66,599	64,264
13	Less: Netted amounts of cash payables and cash receivables of gross SFT assets	-	-
14	CCR exposure for SFT assets	164	279
15	Agent transaction exposures	-	-
16	**Total exposures arising from SFTs**	**66,763**	**64,543**
Other off-balance sheet exposures			
17	Off-balance sheet exposure at gross notional amount	686,056	649,704
18	Less: Adjustments for conversion to credit equivalent amounts	(532,514)	(502,780)
19	**Off-balance sheet items**	**153,542**	**146,924**
Capital and total exposures			
20	**Tier 1 capital**	**218,515**	**220,566**
20a	**Total exposures before adjustments for specific and collective provisions**	**2,807,407**	**2,771,680**
20b	**Adjustments for specific and collective provisions**	**(7,801)**	**(7,068)**
21	**Total exposures after adjustments for specific and collective provisions**	**2,799,606**	**2,764,612**
Leverage ratio			
22	**Leverage ratio**	**7.81%**	**7.98%**

6. Liquidity

LIQA: Liquidity risk management

In accordance with the Group's corporate governance principles in respect of risk management, the Board and the RMC, senior management and functional departments/units perform their duties and responsibilities to manage the Group's liquidity risk. The RMC is the decision-making authority of liquidity risk management, and assumes the ultimate responsibility of liquidity risk management. As authorised by the RMC, ALCO exercises its oversight of liquidity risk and ensures the daily operations of the Group are in accordance with the risk appetite and policies as set by the RMC. The RMD is responsible for the Group's liquidity risk management. It cooperates with the Financial Management Department and Investment Management, etc. to assist the ALCO to perform liquidity management functions according to their specific responsibilities.

The Group established liquidity risk management indicators and limits to identify, measure, monitor and control liquidity risk on a daily basis. These indicators and limits include, but are not limited to liquidity coverage ratio ("LCR"), net stable funding ratio ("NSFR"), loan-to-deposit ratio, Maximum Cumulative Cash Outflow ("MCO") and liquidity cushion. The Group applies a cash flow analysis to assess the Group's liquidity condition under normal conditions and also performs a liquidity stress test (including institution specific, general market crisis and combined crisis) and other methods at least on a monthly basis to assess the Group's capability to withstand various severe liquidity crises. Also, relevant management information systems such as the Assets and Liabilities Management System and the Basel Liquidity Ratio Management System are developed to provide data and to prepare for regular management reports to facilitate liquidity risk management duties.

In accordance with the requirements of Supervisory Policy Manual LM-2 "Sound Systems and controls for Liquidity Risk Management" issued by the HKMA, the Group has implemented a behaviour model and assumptions of cash flow analysis and stress test to enhance the Group's cash flow analysis under both normal and stressed conditions. In cash flow analysis under normal circumstances, assumptions have been made relating to on-balance sheet items (such as deposits from customers) and off-balance sheet items (such as loan commitments). According to various characteristics of the assets, liabilities and off-balance sheet items, the Group forecasts the future cash flow based on the contractual maturity date and the assumptions of customer behaviour and balance sheet changes. The Group establishes the MCO indicator which predicts the future 30 days maximum cumulative net cash outflow in normal situations based on the above assumptions, to assess if the Group has sufficient financing capacity to meet the cash flow gap in order to achieve the objective of continuing operations. As at 31 December 2019, before taking the cash inflow through the sale of outstanding marketable securities into consideration, BOCHK's 30-day cumulative cash flow was a net cash inflow, amounting to HK$116,071 million and was in compliance with the internal limit requirements.

6. Liquidity (continued)

LIQA: Liquidity risk management (continued)

The Group is committed to diversify the sources, tenors and use of funding to avoid excessive concentration of assets and liabilities; and prevent triggering liquidity risk due to the break of funding strand resulting from over-concentration of sources and use of funding in a particular area where problems occur. In order to manage such risk, the Group sets concentration limits on collateral pools and sources of funding such as Tier 1 high-quality readily liquefiable assets to total high-quality readily liquefiable assets ratio, top ten depositors ratio and large depositors ratio. Whenever necessary, the Group could improve the liquidity position by taking mitigation actions including, but not limited to obtaining funding through interbank borrowings or repos in the money market, selling bonds in the secondary market or retaining existing and attracting new customer deposits. Apart from increasing the funding, the Group would maintain good communication with the counterparties, the parent and the regulators to enhance mutual confidence.

In the liquidity stress test, institution specific, general market crisis and combined crisis scenarios have been set up, a combined crisis scenario is a combination of institution specific and general market crisis to assess the Group's capability to withstand a more severe liquidity crisis, with a more stringent set of assumptions being adopted.

A contingency plan is being established which details the conditions to trigger the plan based on stress test results and early warning indicators, the action plans and relevant procedures and responsibility of relevant departments.

The Group has established a set of uniform liquidity risk management policies which serve as standards and guidance to all the Group's members for liquidity risk management. On the basis of the Group's uniform policies, each of the subsidiaries develops its own liquidity management policies according to its own characteristics, and assumes its own liquidity risk management responsibility. Subsidiaries are required to report their respective liquidity positions with relevant liquidity ratios on a regular basis to the RMD of BOCHK, which consolidates this information and evaluates group-wide liquidity risk to ensure relevant requirements are satisfied.

6. Liquidity (continued)

LIQA: Liquidity risk management (continued)

Under normal circumstances, the intra-group funding transactions between BOCHK and Southeast Asian entities are mainly through interbank placement. As at 31 December 2019, the net funding provided by BOCHK were as follows (positive indicates net placement, negative indicates net borrowing):

	At 31 December 2019
	HK$'m
Southeast Asian entities	
BOC Malaysia	1,887
BOC Thailand	412
Manila Branch	560
Jakarta Branch	4,212
Ho Chi Minh City Branch	(1,168)
Vientiane Branch	(1)
Phnom Penh Branch	(627)
Brunei Branch	(313)

As at 31 December 2019, the maturity analysis based on the remaining period at balance sheet date to the contractual maturity date is as follows:

	At 31 December 2019			
	Within one year	One to five years	Over five years	Indefinite
	HK$'m	HK$'m	HK$'m	HK$'m
Total on-balance sheet assets	1,501,031	864,916	431,004	76,916
Total on-balance sheet liabilities	2,564,177	22,246	5,503	-
Net liquidity gap	(1,063,146)	842,670	425,501	76,916

The net liquidity gap of off-balance sheet items is mainly within one year.

6. Liquidity (continued)

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 template: (75)		**For the quarter ended 31 December 2019**	
		(a)	(b)
Basis of disclosure: consolidated		**Unweighted value (average)**	**Weighted value (average)**
		HK$'m	**HK$'m**
A.	**HQLA**		
1	Total HQLA		645,105
B.	**Cash Outflows**		
2	Retail deposits and small business funding, of which:	1,020,484	63,876
3	*Stable retail deposits and stable small business funding*	*348,834*	*10,465*
4	*Less stable retail deposits and less stable small business funding*	*389,635*	*38,964*
4a	*Retail term deposits and small business term funding*	*282,015*	*14,447*
5	Unsecured wholesale funding (other than small business funding), and debt securities and prescribed instruments issued by the AI, of which:	1,022,226	468,882
6	*Operational deposits*	*319,998*	*78,683*
7	*Unsecured wholesale funding (other than small business funding) not covered in row 6*	*702,003*	*389,974*
8	*Debt securities and prescribed instruments issued by the AI and redeemable within the LCR period*	*225*	*225*
9	Secured funding transactions (including securities swap transactions)		2,198
10	Additional requirements, of which:	396,984	65,666
11	*Cash outflows arising from derivative contracts and other transactions, and additional liquidity needs arising from related collateral requirements*	*31,202*	*31,202*
12	*Cash outflows arising from obligations under structured financing transactions and repayment of funding obtained from such transactions*	-	-
13	*Potential drawdown of undrawn committed facilities (including committed credit facilities and committed liquidity facilities)*	*365,782*	*34,464*
14	Contractual lending obligations (not otherwise covered in Section B) and other contractual cash outflows	38,585	38,585
15	Other contingent funding obligations (whether contractual or non-contractual)	305,699	5,296
16	**Total Cash Outflows**		**644,503**
C.	**Cash Inflows**		
17	Secured lending transactions (including securities swap transactions)	2,620	2,004
18	Secured and unsecured loans (other than secured lending transactions covered in row 17) and operational deposits placed at other financial institutions	215,761	137,839
19	Other cash inflows	57,935	52,537
20	**Total Cash Inflows**	**276,316**	**192,380**
D.	**Liquidity Coverage Ratio**		**Adjusted value**
21	**Total HQLA**		**645,105**
22	**Total Net Cash Outflows**		**452,123**
23	**LCR (%)**		**143.00%**

6. Liquidity (continued)

LIQ1: Liquidity Coverage Ratio – for category 1 institution (continued)

Notes:

- The weighted amount of HQLA is to be calculated as the amount after applying the haircuts as required under the Banking (Liquidity) Rules.
- The unweighted amounts of cash inflows and cash outflows are to be calculated as the principal amounts in the calculation of the LCR as required under the Banking (Liquidity) Rules.
- The weighted amounts of cash inflows and cash outflows are to be calculated as the amounts after applying the inflow and outflow rates as required under the Banking (Liquidity) Rules.
- The adjusted value of total HQLA and the total net cash outflows have taken into account any applicable ceiling as required under the Banking (Liquidity) Rules.

The Group's average LCR of each quarter in 2019 were 178.67%, 151.47%, 139.27% and 143.00% respectively, continuously maintained at stable and healthy levels.

The HQLA consists of cash, balances at central banks and high quality marketable securities issued or guaranteed by sovereigns, central banks, public sector entities or multilateral development banks and non-financial corporate debt securities. The majority of the HQLA was composed of Level 1 HQLA.

The net cash outflow was mainly from retail and corporate customer deposit which are the Group's primary source of funds, together with deposit and balance from bank and other financial institution. To ensure stable, sufficient and diversified source of funds, the Group actively attracts new deposits, keeps the core deposit and obtains supplementary funding from the interbank market or by issuing debts in the capital market. Other cash outflow, such as commitment, cash outflow under derivative contract and potential collateral requirement, were minimal to the LCR.

Majority of the Group's customer deposits are denominated in HKD, USD and RMB. As the supply of HKD denominated HQLA in the market is relatively limited, the Group swaps surplus HKD funding into USD and other foreign currencies, part of funding are deployed to investment in HQLA.

6. Liquidity (continued)

LIQ2: Net Stable Funding Ratio – for category 1 institution

	For the quarter ended 31 December 2019 (HK$'m)	(a)	(b)	(c)	(d)	(e)
	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**
A.	**Available stable funding ("ASF") item**					
1	Capital:	287,547	12,954	-	-	287,547
2	*Regulatory capital*	*287,547*	-	-	-	*287,547*
2a	*Minority interests not covered by row 2*	-	-	-	-	-
3	*Other capital instruments*	-	*12,954*	-	-	-
4	Retail deposits and small business funding:	-	1,002,554	25,902	384	946,397
5	*Stable deposits*		*402,196*	*5,866*	*74*	*387,733*
6	*Less stable deposits*		*600,358*	*20,036*	*310*	*558,664*
7	Wholesale funding:	-	1,233,570	20,114	6,003	350,721
8	*Operational deposits*		*323,911*	-	-	*161,956*
9	*Other wholesale funding*	-	*909,659*	*20,114*	*6,003*	*188,765*
10	Liabilities with matching interdependent assets	163,840	-	-	-	-
11	Other liabilities:	66,019	46,772	3,091	9,246	10,792
12	*Net derivative liabilities*	-				
13	*All other funding and liabilities not included in the above categories*	*66,019*	*46,772*	*3,091*	*9,246*	*10,792*
14	**Total ASF**					**1,595,457**
B.	**Required stable funding ("RSF") item**					
15	Total HQLA for NSFR purposes	798,256				80,272
16	Deposits held at other financial institutions for operational purposes	-	882	-	-	441
17	Performing loans and securities:	22,418	510,026	132,461	1,101,503	1,150,542
18	*Performing loans to financial institutions secured by Level 1 HQLA*	-	*739*	-	-	*74*
19	*Performing loans to financial institutions secured by non-Level 1 HQLA and unsecured performing loans to financial institutions*	*35*	*203,423*	*11,242*	*21,820*	*57,989*
20	*Performing loans, other than performing residential mortgage, to non-financial corporate clients, retail and small business customers, sovereigns, the Monetary Authority for the account of the Exchange Fund, central banks and PSEs, of which:*	*21,211*	*243,354*	*103,664*	*702,595*	*786,473*
21	*With a risk-weight of less than or equal to 35% under the STC approach*	*6*	*4,306*	*2,163*	*11,349*	*10,615*
22	*Performing residential mortgages, of which:*	-	*6,914*	*6,769*	*277,759*	*187,384*
23	*With a risk-weight of less than or equal to 35% under the STC approach*	-	*6,914*	*6,769*	*277,759*	*187,384*
24	*Securities that are not in default and do not qualify as HQLA, including exchange-traded equities*	*1,172*	*55,596*	*10,786*	*99,329*	*118,622*
25	Assets with matching interdependent liabilities	163,840	-	-	-	-
26	Other assets:	126,482	52,207	1,106	860	113,063
27	*Physical traded commodities, including gold*	*5,060*				*4,301*
28	*Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs*	*4,203*				*3,573*
29	*Net derivative assets*	*2,769*				*2,769*
30	*Total derivative liabilities before deduction of variation margin posted*	*32,068*				-
31	*All other assets not included in the above categories*	*82,382*	*52,207*	*1,106*	*860*	*102,420*
32	Off-balance sheet items		692,891			19,249
33	**Total RSF**					**1,363,567**
34	**Net Stable Funding Ratio (%)**					**117.01%**

6. Liquidity (continued)

LIQ2: Net Stable Funding Ratio – for category 1 institution (continued)

	For the quarter ended 30 September 2019 (HK$'m)	(a)	(b)	(c)	(d)	(e)
	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**
A.	**Available stable funding ("ASF") item**					
1	Capital:	289,799	12,962	-	-	289,799
2	*Regulatory capital*	*289,799*	-	-	-	*289,799*
2a	*Minority interests not covered by row 2*	-	-	-	-	-
3	*Other capital instruments*	-	*12,962*	-	-	-
4	Retail deposits and small business funding:	-	988,126	38,081	421	944,496
5	*Stable deposits*		*401,527*	*8,265*	*89*	*389,391*
6	*Less stable deposits*		*586,599*	*29,816*	*332*	*555,105*
7	Wholesale funding:	-	1,225,062	17,256	4,118	347,259
8	*Operational deposits*		*318,504*	-	-	*159,252*
9	*Other wholesale funding*	-	*906,558*	*17,256*	*4,118*	*188,007*
10	Liabilities with matching interdependent assets	168,880	-	-	-	-
11	Other liabilities:	52,911	50,586	3,584	9,556	11,348
12	*Net derivative liabilities*	-				
13	*All other funding and liabilities not included in the above categories*	*52,911*	*50,586*	*3,584*	*9,556*	*11,348*
14	**Total ASF**					**1,592,902**
B.	**Required stable funding ("RSF") item**					
15	Total HQLA for NSFR purposes	755,495				80,311
16	Deposits held at other financial institutions for operational purposes	-	3,213	-	-	1,606
17	Performing loans and securities:	21,405	506,766	153,668	1,096,711	1,160,841
18	*Performing loans to financial institutions secured by Level 1 HQLA*	-	*2,362*	-	-	*236*
19	*Performing loans to financial institutions secured by non-Level 1 HQLA and unsecured performing loans to financial institutions*	*59*	*185,710*	*9,906*	*31,877*	*64,745*
20	*Performing loans, other than performing residential mortgage, to non-financial corporate clients, retail and small business customers, sovereigns, the Monetary Authority for the account of the Exchange Fund, central banks and PSEs, of which:*	*20,474*	*251,642*	*116,727*	*681,999*	*777,650*
21	*With a risk-weight of less than or equal to 35% under the STC approach*	*4*	*4,967*	*50*	*6,089*	*5,552*
22	*Performing residential mortgages, of which:*	-	*8,362*	*6,575*	*275,424*	*186,589*
23	*With a risk-weight of less than or equal to 35% under the STC approach*	-	*8,361*	*6,575*	*274,947*	*186,184*
24	*Securities that are not in default and do not qualify as HQLA, including exchange-traded equities*	*872*	*58,690*	*20,460*	*107,411*	*131,621*
25	Assets with matching interdependent liabilities	168,880	-	-	-	-
26	Other assets:	135,666	51,575	728	809	116,170
27	*Physical traded commodities, including gold*	*5,607*				*4,766*
28	*Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs*	*4,811*				*4,089*
29	*Net derivative assets*	*6,473*				*6,473*
30	*Total derivative liabilities before deduction of variation margin posted*	*37,499*				-
31	*All other assets not included in the above categories*	*81,276*	*51,575*	*728*	*809*	*100,842*
32	Off-balance sheet items		654,934			18,514
33	**Total RSF**					**1,377,442**
34	**Net Stable Funding Ratio (%)**					**115.64%**

7. Credit risk for non-securitization exposures

CRA: General information about credit risk

Credit risk is the risk of loss that a customer or counterparty is unable to or unwilling to meet its contractual obligations. Credit risk exists in the trading book and banking book, as well as from on- and off-balance sheet transactions of the Group. It arises principally from lending, trade finance and treasury businesses.

The Group has formulated a comprehensive set of credit risk management policies and procedures, and appropriate credit risk limits to manage and control credit risk that may arise. These policies, procedures and credit risk limits are regularly reviewed and updated to cope with changes in market conditions and business strategies.

The Group's organisation structure establishes a clear set of authority and responsibility for monitoring compliance with policies, procedures and limits.

The Board delegates credit approval authority to the CE. The CE can further delegate to the subordinates within his limit authorised by the Board. The Group sets the limits of credit approval authority according to the credit business nature, rating, the level of transaction risk, and the extent of the credit exposure.

The Chief Credit Officer, who reports directly to the CRO, takes charge of credit risk management and is also responsible for the control of credit risk exposures of subsidiaries in line with the credit risk management principles and requirements set by the Group. Various units of the Group have their respective credit risk management responsibilities. Business units act as the first line of defence. The Risk Management Department ("RMD"), which is independent from the business units, is responsible for the day-to-day management of credit risks and has the primary responsibility for providing an independent due diligence through identifying, measuring, monitoring and controlling credit risk to ensure an effective checks and balances, as well as drafting, reviewing and updating credit risk management policies and procedures. It is also responsible for the design, development and maintenance of the Group's internal rating system and ensures the system complies with the relevant regulatory requirements. Back offices are responsible for credit administration, providing operations support and supervision on the implementation of prerequisite terms and conditions of credit facilities.

The Group Audit is responsible for conducting independent reviews on the adequacy and effectiveness of credit risk management framework, as well as the compliance to internal policies and procedures.

The RMD provides regular credit management information reports and ad hoc reports to the Management Committee ("MC"), RMC, and the Board to facilitate their continuous monitoring of credit risk.

7. Credit risk for non-securitization exposures (continued)

CRA: General information about credit risk (continued)

In addition, the Group identifies credit concentration risk by industry, geography, customer, and counterparty. The Group monitors changes to counterparties credit risk, quality of the credit portfolio and credit risk concentrations, and reports regularly to the Group's Management.

CR1: Credit quality of exposures

		At 31 December 2019						
		(a)	(b)	(c)	(d)	(e)	(f)	(g)
		Gross carrying amounts of			Of which ECL accounting provisions for credit losses on STC approach exposures		Of which ECL accounting provisions for credit losses on IRB approach exposures	
		Defaulted exposures	Non-defaulted exposures	Allowances/ impairments	Allocated in regulatory category of specific provisions	Allocated in regulatory category of collective provisions		Net values (a+b-c)
		HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m
1	Loans	2,903	1,762,935	(7,039)	(647)	(978)	(5,414)	1,758,799
2	Debt securities	-	739,802	(20)	-	(16)	(4)	739,782
3	Off-balance sheet exposures	55	686,001	(577)	(19)	(78)	(480)	685,479
4	**Total**	**2,958**	**3,188,738**	**(7,636)**	**(666)**	**(1,072)**	**(5,898)**	**3,184,060**

The Group identifies the exposures as "default" if the exposure is past due for more than 90 days or the borrower is unlikely to pay in full for the credit obligations to the Group.

CR2: Changes in defaulted loans and debt securities

		(a)
		HK$'m
1	**Defaulted loans and debt securities at 30 June 2019**	**2,538**
2	Loans and debt securities that have defaulted since the last reporting period	879
3	Returned to non-defaulted status	(188)
4	Amounts written off	(256)
5	Other changes	(70)
6	**Defaulted loans and debt securities at 31 December 2019**	**2,903**

The increase in defaulted exposures in the current reporting period was due to default of a few corporate loans.

7. Credit risk for non-securitization exposures (continued)

CRB: Additional disclosure related to credit quality of exposures

Exposures with a specific repayment date are classified as overdue when the principal or interest is past due and remains unpaid. Advances repayable by regular instalments are classified as overdue when an instalment payment is past due and remains unpaid. Advances repayable on demand are classified as overdue either when a demand for repayment has been served on the borrower but repayment has not been made in accordance with the instruction or when the advances have remained continuously to exceed the approved limit that was advised to the borrower.

For exposures under both FIRB and STC approaches, ECL is assessed in three stages and the exposures are classified in one of the following three stages:

Stage 1: if the financial instrument is not credit-impaired upon origination and the credit risk on the financial instrument has not increased significantly since initial recognition, the loss allowance is measured at an amount up to 12-month ECL;

Stage 2: if the financial instrument is not credit-impaired upon origination but the credit risk on the financial instrument has increased significantly since initial recognition, the loss allowance is measured at an amount equal to the lifetime ECL;

Stage 3: if the financial instrument is credit-impaired, with one or more events that have a detrimental impact on the estimated future cash flows of that financial asset have occurred, the loss allowance is also measured at an amount equal to the lifetime ECL.

Rescheduled exposures are those advances that have been restructured and renegotiated between the bank and borrowers because of deterioration in the financial position of the borrower or the inability of the borrower to meet the original repayment schedule, and the revised repayment terms, either of interest or the repayment period, are “non-commercial” to the Group.

7. Credit risk for non-securitization exposures (continued)

CRB: Additional disclosure related to credit quality of exposures (continued)

(i) Exposures by geographical areas

		At 31 December 2019
		HK$'m
1	Hong Kong	2,063,691
2	Chinese Mainland	325,908
3	United States	188,603
4	Others	613,494
5	**Total**	**3,191,696**

(ii) Exposures by industry

		At 31 December 2019
		HK$'m
1	Personal	585,539
2	Financial and insurance services	768,735
3	Manufacturing	214,347
4	Public, commercial and other services	368,400
5	Real estate	442,817
6	Wholesale, retail, import and export trades	317,031
7	Others	494,827
8	**Total**	**3,191,696**

(iii) Exposures by residual maturity

		At 31 December 2019
		HK$'m
1	Within one year	1,906,533
2	One to five years	855,341
3	Over five years	426,519
4	Indefinite	3,303
5	**Total**	**3,191,696**

7. Credit risk for non-securitization exposures (continued)

CRB: Additional disclosure related to credit quality of exposures (continued)

(iv) Impaired exposures, related allowances and write-offs by geographical areas

		At 31 December 2019		
		Impaired exposures	Related allowances	Write-offs
		HK$'m	HK$'m	HK$'m
1	Hong Kong	2,160	(1,491)	404
2	Chinese Mainland	45	(17)	-
3	United States	-	-	-
4	Others	1,012	(667)	58
5	**Total**	**3,217**	**(2,175)**	**462**

(v) Impaired exposures, related allowances and write-offs by industry

		At 31 December 2019		
		Impaired exposures	Related allowances	Write-offs
		HK$'m	HK$'m	HK$'m
1	Personal	376	(216)	388
2	Financial and insurance services	-	-	-
3	Manufacturing	1,230	(1,086)	10
4	Public, commercial and other services	395	(181)	1
5	Real estate	47	(23)	-
6	Wholesale, retail, import and export trades	328	(207)	2
7	Others	841	(462)	61
8	**Total**	**3,217**	**(2,175)**	**462**

(vi) Aging analysis of accounting past due exposures

		At 31 December 2019
		HK$'m
1	Overdue for three months or less	3,944
2	Overdue for six months or less but over three months	145
3	Overdue for one year or less but over six months	836
4	Overdue for over one year	948
5	**Total**	**5,873**

(vii) Restructured exposures

		At 31 December 2019
		HK$'m
1	Impaired exposures	239
2	Not impaired exposures	-
3	**Total**	**239**

7. Credit risk for non-securitization exposures (continued)

CRC: Qualitative disclosures related to credit risk mitigation

The Group's policies and procedures stipulate the counterparty credit risk management and the netting should only be applied where there is a legal right to do so. Recognised netting only can be done pursuant to a valid bilateral netting agreement in accordance with the Banking (Capital) Rules section 209. The Group adopts the netting approach which is consistent with the Banking (Capital) Rules for capital adequacy purposes, and only those OTC derivative transactions subject to valid bilateral netting agreements are eligible for netting approach.

The Group has in place specific policies with respect to revaluation and management of collateral. These policies articulate the standards to monitor and manage the collateral's security as the secondary repayment source and recovery of obligation loss. All collateral are revalued on a regular basis. More frequent revaluation is required for collateral with higher volatility or deteriorated accounts.

The credit and market risk concentrations within the credit risk mitigation (recognised collateral and guarantees for capital calculation) used by the Group are under a low level.

7. Credit risk for non-securitization exposures (continued)

CR3: Overview of recognized credit risk mitigation

		At 31 December 2019				
		(a)	(b1)	(b)	(d)	(f)
		Exposures unsecured: carrying amount	**Exposures to be secured**	**Exposures secured by recognized collateral**	**Exposures secured by recognized guarantees**	**Exposures secured by recognized credit derivative contracts**
		HK$'m	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**
1	Loans	1,325,036	433,763	75,895	357,868	-
2	Debt securities	695,067	44,715	-	44,715	-
3	**Total**	**2,020,103**	**478,478**	**75,895**	**402,583**	**-**
4	Of which defaulted	530	264	264	-	-

CRD: Qualitative disclosures on use of ECAI ratings under STC approach

The ECAIs recognised by the Group include Standard & Poor's, Moody's and Fitch.

The Group adopts STC approach based on external credit rating to determine the risk weight of the small residual credit exposures that was approved by the HKMA to be exempted from FIRB approach and the exposures are listed as below:

- Exposures to Sovereign
- Exposures to Public sector entity
- Exposures to Multilateral development bank

The Group performs the ECAI issuer ratings mapping to its exposures in banking book in accordance with Part 4 of the Banking (Capital) Rules.

7. Credit risk for non-securitization exposures (continued)

CR4: Credit risk exposures and effects of recognized credit risk mitigation – for STC approach

		At 31 December 2019					
		(a)	(b)	(c)	(d)	(e)	(f)
		Exposures pre-CCF and pre-CRM		Exposures post-CCF and post-CRM		RWA and RWA density	
	Exposure classes	On-balance sheet amount	Off-balance sheet amount	On-balance sheet amount	Off-balance sheet amount	RWA	RWA density
		HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	%
1	Sovereign exposures	522,864	2,225	522,864	1,112	10,438	2
2	PSE exposures	40,698	1,810	42,389	2,872	2,138	5
2a	Of which: domestic PSEs	3,009	1,810	4,700	2,872	1,514	20
2b	Of which: foreign PSEs	37,689	-	37,689	-	624	2
3	Multilateral development bank exposures	41,839	-	41,839	-	-	-
4	Bank exposures	1,794	2,628	5,354	1,347	2,860	43
5	Securities firm exposures	2	26	2	9	6	50
6	Corporate exposures	63,294	31,748	56,158	8,160	61,603	96
7	CIS exposures	-	-	-	-	-	-
8	Cash items	493	-	493	-	-	-
9	Exposures in respect of failed delivery on transactions entered into on a basis other than a delivery-versus-payment basis	-	-	-	-	-	-
10	Regulatory retail exposures	10,217	18,307	9,521	644	7,623	75
11	Residential mortgage loans	3,152	5,239	1,460	-	771	53
12	Other exposures which are not past due exposures	20,186	24,366	8,966	94	9,060	100
13	Past due exposures	174	-	174	-	261	150
14	Significant exposures to commercial entities	-	-	-	-	-	-
15	**Total**	**704,713**	**86,349**	**689,220**	**14,238**	**94,760**	**13**

7. Credit risk for non-securitization exposures (continued)

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

		At 31 December 2019										
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(ha)	(i)	(j)
	Exposure class / Risk Weight	0%	10%	20%	35%	50%	75%	100%	150%	250%	Others	Total credit risk exposures amount (post CCF and post CRM)
		HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m
1	Sovereign exposures	505,976	-	2,011	-	11,907	-	4,082	-	-	-	523,976
2	PSE exposures	34,571	-	10,690	-	-	-	-	-	-	-	45,261
2a	Of which: domestic PSEs	-	-	7,572	-	-	-	-	-	-	-	7,572
2b	Of which: foreign PSEs	34,571	-	3,118	-	-	-	-	-	-	-	37,689
3	Multilateral development bank exposures	41,839	-	-	-	-	-	-	-	-	-	41,839
4	Bank exposures	-	-	1,636	-	5,065	-	-	-	-	-	6,701
5	Securities firm exposures	-	-	-	-	11	-	-	-	-	-	11
6	Corporate exposures	-	-	67	-	5,409	-	58,756	86	-	-	64,318
7	CIS exposures	-	-	-	-	-	-	-	-	-	-	-
8	Cash items	493	-	-	-	-	-	-	-	-	-	493
9	Exposures in respect of failed delivery on transactions entered into on a basis other than a delivery-versus-payment basis	-	-	-	-	-	-	-	-	-	-	-
10	Regulatory retail exposures	-	-	-	-	-	10,165	-	-	-	-	10,165
11	Residential mortgage loans	-	-	-	816	-	633	11	-	-	-	1,460
12	Other exposures which are not past due exposures	-	-	-	-	-	-	9,060	-	-	-	9,060
13	Past due exposures	-	-	-	-	-	-	-	174	-	-	174
14	Significant exposures to commercial entities	-	-	-	-	-	-	-	-	-	-	-
15	**Total**	**582,879**	**-**	**14,404**	**816**	**22,392**	**10,798**	**71,909**	**260**	**-**	**-**	**703,458**

7. Credit risk for non-securitization exposures (continued)

CRE: Qualitative disclosures related to internal models for measuring credit risk under IRB approach

The internal model developments, controls and changes are complied with the regulatory requirements of Banking (Capital) Rules by the HKMA. The Group establishes the model standards to govern the process for the initial development, the approval and the implementation of the internal rating system, as well as the procedures for monitoring and reporting of the model performance.

To ensure the discriminatory power, accuracy and stability of the rating systems meet regulatory and management requirements, review of a rating model will be triggered if the performance of the model deteriorates materially against pre-determined tolerance limit.

The model development and maintenance unit of the RMD is responsible for developing, maintaining and changing internal rating models. The model validation unit of the RMD is responsible for independent validation of internal rating models.

The implementation of initial IRB models and the subsequent material changes of models are approved by the Risk Committee of the Board on the recommendation of the Asset and Liability Management Committee (“ALCO”).

The RMD as a credit risk control unit is responsible for the design, selection, testing and implementation, oversight of the effectiveness, as well as related monitoring and review of an internal rating system.

Internal audit reviews at least annually the internal rating system (including the validation process and the estimation of the risk components) and the operations of the related credit risk control unit. The audit purpose is to verify the control mechanism over the internal rating system is functioning as intended.

Comprehensive validation of all internal rating models is carried out by Model Validation Team that is functionally independent of model development, maintenance unit and business units. The validation findings and conclusions will be submitted directly to the Group's senior management and the Risk Committee.

Internal rating models are validated at least once a year. If material changes in the market environment or business activities are considered to have potentially significant impact on effectiveness of IRB system, prompt validation will be conducted accordingly.

For newly-developed or revised internal rating models, independent validation should be carried out before the model is submitted to the Risk Committee for approval for implementation. The validation opinions will be submitted together with the model development documentation for consideration in the model approval process.

7. Credit risk for non-securitization exposures (continued)

CRE: Qualitative disclosures related to internal models for measuring credit risk under IRB approach (continued)

On an ongoing basis, regular validation reports are endorsed by the Risk Committee. Significant findings of model weakness are reported to the senior management and the Risk Committee. Corresponding remedial actions are taken by the model development and maintenance unit, and followed up by the validation unit, which is also governed by the Risk Committee and senior management.

The scope of reporting related to credit risk models covers the assessment on the discriminatory power, accuracy and stability of the rating systems, the use of rating overrides and its reason analysis, the major findings during the model review and validation.

The Group adopts the FIRB approach to calculate the regulatory capital requirements for most of the corporate and bank exposures, and adopts the supervisory slotting criteria approach to project finance exposures under specialised lending. The Group adopts retail IRB approach for retail exposures to individuals and small business.

The following table summarised the portion of total EAD within the Group covered by the STC approach and IRB approaches:

		IRB approaches		
Portfolio	STC approach (% in EAD)	Foundation IRB approach (% in EAD)	Retail IRB approach (% in EAD)	Specific Risk Weight approach (% in EAD)
Sovereign	100%	-	-	-
Bank	4%	96%	-	-
Corporate	5%	95%	-	-
Retail	2%	-	98%	-
Equity	100%	-	-	-
Other	3%	-	-	97%

Description of Internal rating models

The models in portfolios are categorised mainly by product nature or obligor types. The main differences among the models are the reflection of the risk characteristics (e.g. secured or unsecured products, and obligors with different sales turnover, exposure size and industry, etc.). For project finance exposures, the rating is assigned by the project finance model based on the characteristics of borrowers and transactions.

7. Credit risk for non-securitization exposures (continued)

CRE: Qualitative disclosures related to internal models for measuring credit risk under IRB approach (continued)

IRB models – Bank and Corporate

Probability of Default ("PD") models

- PD represents the likelihood of a default event in a one-year horizon.

Portfolio	Model	Number of Models	Key Model Characteristics	Regulatory Floors Applied
Bank (Banks and regulated securities firms)	PD	2	PD models are developed based on historical data and market benchmarking data, combining both quantitative and qualitative data on latest financial performance, management quality, industry risks, group connection and negative warning signals of each obligor.	0.03%
Corporate (Large corporates, medium corporates, real estate developers, real estate investors, insurance companies, object finance and project finance)	PD	7		0.03%

IRB models – Retail

The Group uses statistical models to provide estimated probability of default ("PD"), loss given default ("LGD") and exposure at default ("EAD") for retail exposures under retail IRB approach.

Probability of Default ("PD") models

- PD represents the likelihood of a default event in a one-year horizon.
- PD models incorporate the characteristics of obligors, facility types, and the obligor's account behavior.

Loss Given Default ("LGD") models

- LGD estimates the potential loss of each credit exposure if the obligor defaults.
- LGD is mainly determined by the characteristics of facility, collateralisation, loss recovery and the associated costs. Downturn LGD takes into account of the recoveries experience in the historical downturn situation. The determination of the time lapse between the default event and the closure of the exposure is based on empirical data and expert judgement.

Exposure at Default ("EAD") models

- EAD estimates the additional drawn down on the undrawn facility, if any, after the facility defaulted.
- In modeling the credit conversion factors ("CCF"), fixed horizon method has been used and the horizon chosen is 12 months. For the estimation of CCF for facilities of off-balance sheet exposures such as the undrawn portion of credit lines, CCF estimation considered the factors such as utilisation rate.

7. Credit risk for non-securitization exposures (continued)

CRE: Qualitative disclosures related to internal models for measuring credit risk under IRB approach (continued)

Portfolio	Model	Number of Models	Key Model Characteristics	Regulatory Floors Applied
Residential Mortgage (To individuals and property holding shell companies)	PD	1	Calibrated to a long-run default rate from the score based on obligor's characteristics and internal behavioral data.	0.03%
	LGD	1	Pooling based on the factors such as collateral type and LTV, etc. A conservative LGD is estimated for the economic downturn period based on the historical data.	10%
	EAD	1	Based on the outstanding balance. For the accounts denominated in foreign currency, EAD will be adjusted to consider the increasing of EAD due to the appreciation of the foreign currency.	At least be equal to the current outstanding balance
Other Retail Exposure to individuals (non-credit card)	PD	3	Calibrated to a long-run default rate from the score based on the facility type and internal behavioral data.	0.03%
	LGD	3	Pooling based on the factors such as facility type, collateral type and LTV, etc. A conservative LGD is estimated for the economic downturn period based on the historical data.	Nil
	EAD	3	For revolving facilities, utilisation ratio is derived to determine the EAD. For reducing balance facilities, EAD is based on the outstanding balance. For the accounts denominated in foreign currency, EAD will be adjusted to consider the increasing of EAD due to the appreciation of the foreign currency.	At least be equal to the current outstanding balance
Credit Card	PD	1	Calibrated to a long-run default rate from the score based on obligor's characteristics and internal behavioral data.	0.03%
	LGD	1	A conservative LGD is estimated for the economic downturn period based on the historical data.	Nil
	EAD	1	Utilisation ratio is derived to determine the EAD. For the accounts denominated in foreign currency, EAD will be adjusted to consider the increasing of EAD due to the appreciation of the foreign currency.	At least be equal to the current outstanding balance

7. Credit risk for non-securitization exposures (continued)

CRE: Qualitative disclosures related to internal models for measuring credit risk under IRB approach (continued)

Portfolio	Model	Number of Models	Key Model Characteristics	Regulatory Floors Applied
Small Business Retail	PD	1	Calibrated to a long-run default rate from the combination of financial assessment, qualitative assessment to the obligor and the internal behavioral data.	0.03%
	LGD	1	Pooling based on the factors such as facility type and LTV, etc. A conservative LGD is estimated for the economic downturn period based on the historical data.	Nil
	EAD	1	CCF is estimated to determine the EAD. For reducing balance facilities, EAD is based on the outstanding balance.	At least be equal to the current outstanding balance

7. Credit risk for non-securitization exposures (continued)

CR6: Credit risk exposures by portfolio and PD ranges – for IRB approach

(a) FIRB approach

		At 31 December 2019											
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
	PD scale	Original on-balance sheet gross exposure	Off-balance sheet exposures pre-CCF	Average CCF	EAD post-CRM and post-CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RWA density	EL	Provisions
	%	HK$'m	HK$'m	%	HK$'m	%		%	Year	HK$'m	%	HK$'m	HK$'m
Portfolio (i) – Sovereign	0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
	Sub-total	-	-	-	-	-	-	-	-	-	-	-	-
Portfolio (ii) – Bank	0.00 to < 0.15	350,373	23,536	41	368,693	0.06	309	45	2.50	112,439	30	107	
	0.15 to < 0.25	12,202	1,845	8	12,794	0.22	31	44	2.50	6,897	54	13	
	0.25 to < 0.50	6,018	2,877	2	6,537	0.39	51	44	2.50	4,882	75	11	
	0.50 to < 0.75	1,041	5,991	1	1,136	0.64	23	33	2.50	759	67	2	
	0.75 to < 2.50	732	1,553	-	734	1.21	21	34	2.50	508	69	2	
	2.50 to < 10.00	4	42	-	4	3.51	1	-	2.50	-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
	Sub-total	370,370	35,844	28	389,898	0.08	436	45	2.50	125,485	32	135	2,302
Portfolio (iii) – Corporate – specialized lending (other than HVCRE) – FIRB/AIRB	0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
	Sub-total	-	-	-	-	-	-	-	-	-	-	-	-

7. Credit risk for non-securitization exposures (continued)

CR6: Credit risk exposures by portfolio and PD ranges – for IRB approach (continued)

(a) FIRB approach (continued)

		At 31 December 2019											
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
	PD scale	Original on-balance sheet gross exposure	Off-balance sheet exposures pre-CCF	Average CCF	EAD post-CRM and post-CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RWA density	EL	Provisions
	%	HK$'m	HK$'m	%	HK$'m	%		%	Year	HK$'m	%	HK$'m	HK$'m
Portfolio (iv) – Corporate – small-and-medium sized corporates	0.00 to < 0.15	10,973	1,083	18	11,797	0.08	169	44	2.50	2,586	22	4	
	0.15 to < 0.25	3,407	1,886	19	9,102	0.22	176	42	2.50	3,265	36	8	
	0.25 to < 0.50	5,822	4,836	13	11,204	0.39	337	41	2.50	5,133	46	18	
	0.50 to < 0.75	21,308	8,697	7	18,682	0.58	447	42	2.50	10,858	58	46	
	0.75 to < 2.50	35,877	14,450	20	34,177	1.30	940	42	2.50	25,696	75	185	
	2.50 to < 10.00	11,469	3,185	3	6,084	4.06	382	36	2.50	5,475	90	90	
	10.00 to < 100.00	721	186	1	453	12.01	30	39	2.50	643	142	21	
	100.00 (Default)	214	-	-	214	100.00	3	41	2.50	968	453	14	
	Sub-total	89,791	34,323	15	91,713	1.24	2,484	42	2.50	54,624	60	386	972
Portfolio (v) – Corporate – HVCRE – FIRB/AIRB	0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
	Sub-total	-	-	-	-	-	-	-	-	-	-	-	-
Portfolio (vi) – Corporate – other (including purchased corporate receivables)	0.00 to < 0.15	378,570	122,285	42	582,626	0.10	634	44	2.50	169,822	29	250	
	0.15 to < 0.25	66,918	20,562	32	111,800	0.22	209	44	2.50	51,327	46	109	
	0.25 to < 0.50	63,864	32,235	40	125,352	0.39	281	44	2.50	77,493	62	216	
	0.50 to < 0.75	201,228	72,992	28	104,772	0.58	397	44	2.50	76,407	73	268	
	0.75 to < 2.50	193,174	117,659	13	116,673	1.30	746	40	2.50	104,885	90	603	
	2.50 to < 10.00	45,102	32,644	1	18,949	3.71	265	41	2.50	23,756	125	285	
	10.00 to < 100.00	1,728	1,244	11	532	10.84	19	30	2.50	694	130	17	
	100.00 (Default)	1,976	1	-	1,976	100.00	23	44	2.50	1,171	59	1,554	
	Sub-total	952,560	399,622	29	1,062,680	0.58	2,574	44	2.50	505,555	48	3,302	10,495

7. Credit risk for non-securitization exposures (continued)

CR6: Credit risk exposures by portfolio and PD ranges – for IRB approach (continued)

(a) FIRB approach (continued)

		At 31 December 2019											
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
	PD scale	Original on-balance sheet gross exposure	Off-balance sheet exposures pre-CCF	Average CCF	EAD post-CRM and post-CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RWA density	EL	Provisions
	%	HK$'m	HK$'m	%	HK$'m	%		%	Year	HK$'m	%	HK$'m	HK$'m
Portfolio (vii) – Equity – PD/LGD approach	0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
	Sub-total	-	-	-	-	-	-	-	-	-	-	-	-
Portfolio (viii) – Retail – QRRE	0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
	Sub-total	-	-	-	-	-	-	-	-	-	-	-	-
Portfolio (ix) – Retail – Residential mortgage exposures (including both to individuals and to property-holding shell companies)	0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
	Sub-total	-	-	-	-	-	-	-	-	-	-	-	-

7. Credit risk for non-securitization exposures (continued)

CR6: Credit risk exposures by portfolio and PD ranges – for IRB approach (continued)

(a) FIRB approach (continued)

		At 31 December 2019											
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
	PD scale	**Original on-balance sheet gross exposure**	**Off-balance sheet exposures pre-CCF**	**Average CCF**	**EAD post-CRM and post-CCF**	**Average PD**	**Number of obligors**	**Average LGD**	**Average maturity**	**RWA**	**RWA density**	**EL**	**Provisions**
	%	**HK$'m**	**HK$'m**	**%**	**HK$'m**	**%**		**%**	**Year**	**HK$'m**	**%**	**HK$'m**	**HK$'m**
Portfolio (x) – Retail – small business retail exposures	0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
	Sub-total	-	-	-	-	-	-	-	-	-	-	-	-
Portfolio (xi) – Other retail exposures to individuals	0.00 to < 0.15	-	-	-	-	-	-	-	-	-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-	-	-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-	-	-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-	-	-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-	-	-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-	-	-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-	-	-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-	-	-	-	-	
	Sub-total	-	-	-	-	-	-	-	-	-	-	-	-
Total (sum of all portfolios)		**1,412,721**	**469,789**	**28**	**1,544,291**	**0.49**	**5,494**	**44**	**2.50**	**685,664**	**44**	**3,823**	**13,769**

7. Credit risk for non-securitization exposures (continued)

CR6: Credit risk exposures by portfolio and PD ranges – for IRB approach (continued)

(b) Retail IRB approach

		At 31 December 2019											
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
	PD scale	Original on-balance sheet gross exposure	Off-balance sheet exposures pre-CCF	Average CCF	EAD post-CRM and post-CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RWA density	EL	Provisions
	%	HK$'m	HK$'m	%	HK$'m	%		%	Year	HK$'m	%	HK$'m	HK$'m
Portfolio (i) – Sovereign	0.00 to < 0.15	-	-	-	-	-	-	-		-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-		-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-		-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-		-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-		-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-		-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-		-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-		-	-	-	
	Sub-total	-	-	-	-	-	-	-		-	-	-	-
Portfolio (ii) – Bank	0.00 to < 0.15	-	-	-	-	-	-	-		-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-		-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-		-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-		-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-		-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-		-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-		-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-		-	-	-	
	Sub-total	-	-	-	-	-	-	-		-	-	-	-
Portfolio (iii) – Corporate – specialized lending (other than HVCRE) – FIRB/AIRB	0.00 to < 0.15	-	-	-	-	-	-	-		-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-		-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-		-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-		-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-		-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-		-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-		-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-		-	-	-	
	Sub-total	-	-	-	-	-	-	-		-	-	-	-

7. Credit risk for non-securitization exposures (continued)

CR6: Credit risk exposures by portfolio and PD ranges – for IRB approach (continued)

(b) Retail IRB approach (continued)

		At 31 December 2019											
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
	PD scale	Original on-balance sheet gross exposure	Off-balance sheet exposures pre-CCF	Average CCF	EAD post-CRM and post-CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RWA density	EL	Provisions
	%	HK$'m	HK$'m	%	HK$'m	%		%	Year	HK$'m	%	HK$'m	HK$'m
Portfolio (iv) – Corporate – small-and-medium sized corporates	0.00 to < 0.15	-	-	-	-	-	-	-		-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-		-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-		-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-		-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-		-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-		-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-		-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-		-	-	-	
	Sub-total	-	-	-	-	-	-	-		-	-	-	-
Portfolio (v) – Corporate – HVCRE – FIRB/AIRB	0.00 to < 0.15	-	-	-	-	-	-	-		-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-		-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-		-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-		-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-		-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-		-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-		-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-		-	-	-	
	Sub-total	-	-	-	-	-	-	-		-	-	-	-
Portfolio (vi) – Corporate – other (including purchased corporate receivables)	0.00 to < 0.15	-	-	-	-	-	-	-		-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-		-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-		-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-		-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-		-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-		-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-		-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-		-	-	-	
	Sub-total	-	-	-	-	-	-	-		-	-	-	-

7. Credit risk for non-securitization exposures (continued)

CR6: Credit risk exposures by portfolio and PD ranges – for IRB approach (continued)

(b) Retail IRB approach (continued)

		At 31 December 2019											
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
	PD scale	Original on-balance sheet gross exposure	Off-balance sheet exposures pre-CCF	Average CCF	EAD post-CRM and post-CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RWA density	EL	Provisions
	%	HK$'m	HK$'m	%	HK$'m	%		%	Year	HK$'m	%	HK$'m	HK$'m
Portfolio (vii) – Equity – PD/LGD approach	0.00 to < 0.15	-	-	-	-	-	-	-		-	-	-	
	0.15 to < 0.25	-	-	-	-	-	-	-		-	-	-	
	0.25 to < 0.50	-	-	-	-	-	-	-		-	-	-	
	0.50 to < 0.75	-	-	-	-	-	-	-		-	-	-	
	0.75 to < 2.50	-	-	-	-	-	-	-		-	-	-	
	2.50 to < 10.00	-	-	-	-	-	-	-		-	-	-	
	10.00 to < 100.00	-	-	-	-	-	-	-		-	-	-	
	100.00 (Default)	-	-	-	-	-	-	-		-	-	-	
	Sub-total	-	-	-	-	-	-	-		-	-	-	-
Portfolio (viii) – Retail – QRRE	0.00 to < 0.15	6,263	58,579	-	37,310	0.10	747,240	90		2,086	6	35	
	0.15 to < 0.25	2,723	25,940	-	22,792	0.23	628,772	91		2,472	11	47	
	0.25 to < 0.50	760	16,655	-	14,121	0.33	412,561	90		2,017	14	42	
	0.50 to < 0.75	997	3,062	-	3,335	0.57	82,581	93		761	23	18	
	0.75 to < 2.50	947	1,535	-	2,393	1.30	54,887	94		1,041	44	29	
	2.50 to < 10.00	1,523	1,153	-	2,353	5.53	40,093	95		2,843	121	123	
	10.00 to < 100.00	630	154	-	774	19.15	12,751	96		1,720	222	140	
	100.00 (Default)	53	52	-	94	100.00	1,692	88		558	594	38	
	Sub-total	13,896	107,130	-	83,172	0.67	1,980,577	90		13,498	16	472	277
Portfolio (ix) – Retail – Residential mortgage exposures (including both to individuals and to property-holding shell companies)	0.00 to < 0.15	160,321	-	100	160,322	0.11	81,667	11		31,397	20	19	
	0.15 to < 0.25	53,829	-	-	53,829	0.22	16,837	11		10,313	19	13	
	0.25 to < 0.50	40,956	-	-	40,956	0.39	12,470	11		9,219	23	18	
	0.50 to < 0.75	38,107	-	-	38,107	0.56	12,739	13		8,876	23	28	
	0.75 to < 2.50	6,281	-	-	6,281	1.01	2,512	13		1,622	26	8	
	2.50 to < 10.00	1,098	-	-	1,098	4.72	649	12		402	37	6	
	10.00 to < 100.00	609	-	-	609	23.05	363	11		375	62	16	
	100.00 (Default)	85	-	-	85	100.00	88	10		107	127	1	
	Sub-total	301,286	-	100	301,287	0.33	127,325	11		62,311	21	109	1,090

7. Credit risk for non-securitization exposures (continued)

CR6: Credit risk exposures by portfolio and PD ranges – for IRB approach (continued)

(b) Retail IRB approach (continued)

		At 31 December 2019											
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
	PD scale	Original on-balance sheet gross exposure	Off-balance sheet exposures pre-CCF	Average CCF	EAD post-CRM and post-CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RWA density	EL	Provisions
	%	HK$'m	HK$'m	%	HK$'m	%		%	Year	HK$'m	%	HK$'m	HK$'m
Portfolio (x) – Retail – small business retail exposures	0.00 to < 0.15	1,037	1,838	35	1,676	0.08	1,460	13		48	3	-	
	0.15 to < 0.25	346	236	36	431	0.22	306	12		23	5	-	
	0.25 to < 0.50	554	339	38	684	0.39	433	13		57	8	-	
	0.50 to < 0.75	610	387	39	759	0.58	443	13		79	10	1	
	0.75 to < 2.50	711	340	35	829	1.23	626	19		177	21	2	
	2.50 to < 10.00	202	46	42	221	3.77	736	24		77	35	2	
	10.00 to < 100.00	20	5	42	23	29.41	95	19		10	43	1	
	100.00 (Default)	14	-	119	14	100.00	45	44		18	133	7	
	Sub-total	3,494	3,191	36	4,637	1.04	4,144	15		489	11	13	15
Portfolio (xi) – Other retail exposures to individuals	0.00 to < 0.15	2,331	3,993	1	6,006	0.05	2,679	20		221	4	1	
	0.15 to < 0.25	3,410	34	-	3,436	0.22	4,827	12		183	5	1	
	0.25 to < 0.50	33,744	22	-	33,760	0.34	16,623	12		2,260	7	13	
	0.50 to < 0.75	18,202	8	-	18,209	0.56	8,721	21		2,906	16	21	
	0.75 to < 2.50	14,515	15,518	-	17,161	1.06	10,253	20		3,745	22	46	
	2.50 to < 10.00	313	1	-	313	3.88	421	26		116	37	3	
	10.00 to < 100.00	188	-	-	188	13.41	519	18		63	34	5	
	100.00 (Default)	94	2	-	95	100.00	1,001	92		86	91	85	
	Sub-total	72,797	19,578	-	79,168	0.69	45,044	17		9,580	12	175	252
Total (sum of all portfolios)		**391,473**	**129,899**	**1**	**468,264**	**0.46**	**2,157,090**	**26**		**85,878**	**18**	**769**	**1,634**

7. Credit risk for non-securitization exposures (continued)

CR7: Effects on RWA of recognized credit derivative contracts used as recognized credit risk mitigation – for IRB approach

		At 31 December 2019	
		(a)	(b)
		Pre-credit derivatives RWA	Actual RWA
		HK$'m	HK$'m
1	Corporate – Specialized lending under supervisory slotting criteria approach (project finance)	626	626
2	Corporate – Specialized lending under supervisory slotting criteria approach (object finance)	-	-
3	Corporate – Specialized lending under supervisory slotting criteria approach (commodities finance)	-	-
4	Corporate – Specialized lending under supervisory slotting criteria approach (income-producing real estate)	-	-
5	Corporate – Specialized lending (high-volatility commercial real estate)	-	-
6	Corporate – Small-and-medium sized corporates	54,624	54,624
7	Corporate – Other corporates	505,555	505,555
8	Sovereigns	-	-
9	Sovereign foreign public sector entities	-	-
10	Multilateral development banks	-	-
11	Bank exposures – Banks	125,178	125,178
12	Bank exposures – Securities firms	307	307
13	Bank exposures – Public sector entities (excluding sovereign foreign public sector entities)	-	-
14	Retail – Small business retail exposures	489	489
15	Retail – Residential mortgages to individuals	61,643	61,643
16	Retail – Residential mortgages to property-holding shell companies	668	668
17	Retail – Qualifying revolving retail exposures (QRRE)	13,498	13,498
18	Retail – Other retail exposures to individuals	9,580	9,580
19	Equity – Equity exposures under market-based approach (simple risk-weight method)	-	-
20	Equity – Equity exposures under market-based approach (internal models method)	-	-
21	Equity – Equity exposures under PD/LGD approach (publicly traded equity exposures held for long-term investment)	-	-
22	Equity – Equity exposures under PD/LGD approach (privately owned equity exposures held for long-term investment)	-	-
23	Equity – Equity exposures under PD/LGD approach (other publicly traded equity exposures)	-	-
24	Equity – Equity exposures under PD/LGD approach (other equity exposures)	-	-
25	Equity – Equity exposures associated with equity investments in funds (CIS exposures)	-	-
26	Other – Cash items	-	-
27	Other – Other items	76,065	76,065
28	**Total (under the IRB calculation approaches)**	**848,233**	**848,233**

The Group did not use any recognised credit derivative contracts for credit risk mitigation.

7. Credit risk for non-securitization exposures (continued)

CR8: RWA flow statements of credit risk exposures under IRB approach

		(a)
		HK$'m
1	**RWA as at 30 September 2019**	**851,270**
2	Asset size	(11,404)
3	Asset quality	7,911
4	Model updates	-
5	Methodology and policy	-
6	Acquisitions and disposals	-
7	Foreign exchange movements	456
8	Other	-
9	**RWA as at 31 December 2019**	**848,233**

7. Credit risk for non-securitization exposures (continued)

CR9: Back-testing of PD per portfolio – for IRB approach

(a) FIRB approach

		At 31 December 2019							
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)
					Number of obligors				
Portfolio	PD Range	External rating equivalent (Standard & Poor's)	Weighted average PD	Arithmetic average PD by obligors	Beginning of the year	End of the year	Defaulted obligors in the year	Of which: new defaulted obligors in the year	Average historical annual default rate
	%		%	%					%
Bank	0.00 to < 0.15	AAA to BBB+	0.06	0.07	270	313	-	-	-
	0.15 to < 0.25	BBB+ to BBB	0.22	0.22	44	33	-	-	-
	0.25 to < 0.50	BBB to BB+	0.39	0.39	36	58	-	-	-
	0.50 to < 0.75	BB+	0.62	0.56	22	34	-	-	-
	0.75 to < 2.50	BB+ to B+	1.62	1.31	22	32	-	-	-
	2.50 to < 10.00	B+ to B-	6.48	5.58	3	3	-	-	-
	10.00 to < 100.00	B- to C	-	-	-	-	-	-	-
Corporate – small-and-medium sized corporates	0.00 to < 0.15	AAA to BBB+	0.08	0.11	225	198	-	-	-
	0.15 to < 0.25	BBB+ to BBB	0.22	0.22	175	192	-	-	-
	0.25 to < 0.50	BBB to BB+	0.39	0.39	393	372	-	-	-
	0.50 to < 0.75	BB+	0.58	0.58	562	522	-	-	0.05
	0.75 to < 2.50	BB+ to B+	1.31	1.38	1,024	1,084	-	-	0.09
	2.50 to < 10.00	B+ to B-	3.89	3.85	459	436	4	-	0.59
	10.00 to < 100.00	B- to C	13.94	13.97	20	35	-	-	1.47
Corporate – other (including purchased corporate receivables)	0.00 to < 0.15	AAA to BBB+	0.09	0.10	620	625	-	-	-
	0.15 to < 0.25	BBB+ to BBB	0.22	0.22	189	181	-	-	0.12
	0.25 to < 0.50	BBB to BB+	0.39	0.39	268	284	-	-	0.17
	0.50 to < 0.75	BB+	0.59	0.60	513	501	-	-	0.05
	0.75 to < 2.50	BB+ to B+	1.27	1.33	1,019	1,010	2	-	0.24
	2.50 to < 10.00	B+ to B-	4.48	4.25	367	388	4	1	0.88
	10.00 to < 100.00	B- to C	16.51	12.27	39	32	4	1	3.50

7. Credit risk for non-securitization exposures (continued)

CR9: Back-testing of PD per portfolio – for IRB approach (continued)

(b) Retail IRB approach

		At 31 December 2019							
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)
					Number of obligors				
Portfolio	PD Range	External rating equivalent (Standard & Poor's)	Weighted average PD	Arithmetic average PD by obligors	Beginning of the year	End of the year	Defaulted obligors in the year	Of which: new defaulted obligors in the year	Average historical annual default rate
	%		%	%					%
Retail – QRRE	0.00 to < 0.15		0.10	0.10	527,994	530,895	331	7	0.07
	0.15 to < 0.25		0.20	0.23	452,390	421,569	301	10	0.09
	0.25 to < 0.50		0.30	0.35	431,605	396,742	250	11	0.11
	0.50 to < 0.75		0.50	0.57	80,963	75,752	192	6	0.28
	0.75 to < 2.50		1.00	0.99	123,764	50,699	350	49	0.34
	2.50 to < 10.00		4.70	5.50	39,658	37,547	808	23	2.21
	10.00 to < 100.00		14.85	19.96	12,272	12,769	863	15	8.12
Retail – Residential mortgage exposures (including both to individuals and to property-holding shell companies)	0.00 to < 0.15		0.10	0.09	65,294	64,287	8	-	0.01
	0.15 to < 0.25		0.21	0.22	17,193	16,301	1	-	0.02
	0.25 to < 0.50		0.30	0.37	17,355	20,699	3	-	0.02
	0.50 to < 0.75		0.45	0.56	12,599	16,892	2	-	0.01
	0.75 to < 2.50		0.47	0.98	5,078	7,604	2	-	0.10
	2.50 to < 10.00		3.92	4.65	695	762	5	-	0.69
	10.00 to < 100.00		18.37	19.94	434	434	12	-	3.28
Retail – small business retail exposures	0.00 to < 0.15		0.09	0.09	1,539	1,460	-	-	0.05
	0.15 to < 0.25		0.22	0.22	370	306	1	-	0.33
	0.25 to < 0.50		0.39	0.39	443	434	-	-	0.11
	0.50 to < 0.75		0.59	0.59	511	447	1	-	0.43
	0.75 to < 2.50		1.24	1.30	739	632	8	-	1.50
	2.50 to < 10.00		4.10	5.94	884	737	110	84	3.93
	10.00 to < 100.00		21.35	42.59	79	95	36	-	22.51

7. Credit risk for non-securitization exposures (continued)

CR9: Back-testing of PD per portfolio – for IRB approach (continued)

(b) Retail IRB approach (continued)

		At 31 December 2019							
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)
					Number of obligors				
Portfolio	PD Range	External rating equivalent (Standard & Poor's)	Weighted average PD	Arithmetic average PD by obligors	Beginning of the year	End of the year	Defaulted obligors in the year	Of which: new defaulted obligors in the year	Average historical annual default rate
	%		%	%					%
Other retail exposures to individuals	0.00 to < 0.15		0.07	0.07	1,627	1,455	3	2	0.03
	0.15 to < 0.25		0.16	0.22	4,327	4,447	1	1	-
	0.25 to < 0.50		0.25	0.35	13,184	15,664	-	-	-
	0.50 to < 0.75		0.36	0.57	6,766	8,270	1	-	0.01
	0.75 to < 2.50		0.57	1.29	66,459	11,351	237	159	0.27
	2.50 to < 10.00		3.06	5.38	397	467	128	110	3.34
	10.00 to < 100.00		13.25	29.38	1,344	550	429	33	24.74

7. Credit risk for non-securitization exposures (continued)

CR10: Specialized lending under supervisory slotting criteria approach and equities under simple risk-weight method – for IRB approach

I. Specialized lending under supervisory slotting criteria approach – HVCRE

There were no specialised lending under supervisory slotting criteria approach – HVCRE as at 31 December 2019.

II. Specialized lending under supervisory slotting criteria approach – other than HVCRE

		At 31 December 2019									
		(a)	(b)	(c)	(d)(i)	(d)(ii)	(d)(iii)	(d)(iv)	(d)(v)	(e)	(f)
					EAD amount						
Supervisory Rating Grade	Remaining Maturity	On-balance sheet exposure amount	Off-balance sheet exposure amount	SRW	PF	OF	CF	IPRE	Total	RWA	Expected loss amount
		HK$'m	HK$'m		HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m
Strong^	Less than 2.5 years	-	-	50%	-	-	-	-	-	-	-
Strong	Equal to or more than 2.5 years	-	-	70%	-	-	-	-	-	-	-
Good^	Less than 2.5 years	-	-	70%	-	-	-	-	-	-	-
Good	Equal to or more than 2.5 years	696	-	90%	696	-	-	-	696	626	6
Satisfactory		-	-	115%	-	-	-	-	-	-	-
Weak		-	-	250%	-	-	-	-	-	-	-
Default		-	-	0%	-	-	-	-	-	-	-
Total		696	-		696	-	-	-	696	626	6

^ Use of preferential risk-weights.

Compared with 30 June 2019, the material change in RWA was due to the change in maturity of the project finance exposures.

III. Equity exposures under simple risk-weight method

The Group did not use simple risk-weight method to measure equities exposures as at 31 December 2019.

8. Counterparty credit risk

CCRA: Qualitative disclosures related to counterparty credit risk (including those arising from clearing through CCPs)

The Group's management objective to counterparty credit risk is to ensure credit risk is properly managed and controlled within the general credit risk management framework. The Group has also formulated relevant policy which covers identification, measurement, control and monitoring of counterparty credit risk.

The Group establishes credit limit through formal credit approval procedures to control the pre-settlement credit risk arising from derivative transactions and settlement limit to control the settlement risk arising from foreign exchange-related transactions for counterparties including CCP in both the trading book and banking book. The Group monitors the risk exposure due to market fluctuations by using the current exposure and the potential exposure value of the transactions.

The Group establishes prudent eligibility criteria and haircut policy of debt securities being pledged as collateral for securities financing transactions.

In controlling and monitoring of wrong-way risk (risk of existence of positive correlation between the PD of a counterparty and credit exposures driven by mark-to-market value of the underlying transactions), specific wrong-way risk transactions are generally not allowed; monitoring measures have been formulated for those counterparties that would be exposed to potential general wrong-way risk being identified by making use of internal risk management tools.

Based on the existing ISDAs and CSAs signed with BOCHK's counterparties, there is no impact on collateral amount that BOCHK would be required to provide given a credit rating downgrade.

8. Counterparty credit risk (continued)

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

		At 31 December 2019					
		(a)	(b)	(c)	(d)	(e)	(f)
		Replacement cost (RC)	PFE	Effective EPE	Alpha (α) used for computing default risk exposure	Default risk exposure after CRM	RWA
		HK$'m	HK$'m	HK$'m		HK$'m	HK$'m
1	SA-CCR (for derivative contracts)	-	-		1.4	-	-
1a	CEM	12,486	17,717		-	30,008	10,142
2	IMM(CCR) approach			-	-	-	-
3	Simple Approach (for SFTs)					-	-
4	Comprehensive Approach (for SFTs)					6,811	260
5	VaR (for SFTs)					-	-
6	**Total**						**10,402**

Compared with 30 June 2019, the 72% decrease in SFTs' default risk exposure after CRM was mainly driven by change in outstanding transaction volume.

CCR2: CVA capital charge

		At 31 December 2019	
		(a)	(b)
		EAD post CRM	RWA
		HK$'m	HK$'m
	Netting sets for which CVA capital charge is calculated by the advanced CVA method	-	-
1	(i) VaR (after application of multiplication factor if applicable)		-
2	(ii) Stressed VaR (after application of multiplication factor if applicable)		-
3	Netting sets for which CVA capital charge is calculated by the standardized CVA method	30,054	6,221
4	**Total**	**30,054**	**6,221**

8. Counterparty credit risk (continued)

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

		At 31 December 2019										
		(a)	(b)	(c)	(ca)	(d)	(e)	(f)	(g)	(ga)	(h)	(i)
	Exposure class / **Risk Weight**	**0%**	**10%**	**20%**	**35%**	**50%**	**75%**	**100%**	**150%**	**250%**	**Others**	**Total default risk exposure after CRM**
		HK$'m	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**	**HK$'m**
1	Sovereign exposures	787	-	6	-	7	-	-	-	-	-	800
2	PSE exposures	-	-	4	-	-	-	-	-	-	-	4
2a	Of which: domestic PSEs	-	-	4	-	-	-	-	-	-	-	4
2b	Of which: foreign PSEs	-	-	-	-	-	-	-	-	-	-	-
3	Multilateral development bank exposures	-	-	-	-	-	-	-	-	-	-	-
4	Bank exposures	-	-	-	-	-	-	-	-	-	-	-
5	Securities firm exposures	-	-	-	-	-	-	-	-	-	-	-
6	Corporate exposures	46	-	-	-	-	-	100	-	-	-	146
7	CIS exposures	-	-	-	-	-	-	-	-	-	-	-
8	Regulatory retail exposures	582	-	-	-	-	59	-	-	-	-	641
9	Residential mortgage loans	-	-	-	-	-	-	-	-	-	-	-
10	Other exposures which are not past due exposures	3,650	-	-	-	-	-	907	-	-	-	4,557
11	Significant exposures to commercial entities	-	-	-	-	-	-	-	-	-	-	-
12	**Total**	**5,065**	**-**	**10**	**-**	**7**	**59**	**1,007**	**-**	**-**	**-**	**6,148**

8. Counterparty credit risk (continued)

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

FIRB approach

		At 31 December 2019						
		(a)	(b)	(c)	(d)	(e)	(f)	(g)
	PD scale	**EAD post-CRM**	**Average PD**	**Number of obligors**	**Average LGD**	**Average maturity**	**RWA**	**RWA density**
	%	**HK$'m**	**%**		**%**	**Year**	**HK$'m**	**%**
Portfolio (i) – Sovereign	0.00 to < 0.15	-	-	-	-	-	-	-
	0.15 to < 0.25	-	-	-	-	-	-	-
	0.25 to < 0.50	-	-	-	-	-	-	-
	0.50 to < 0.75	-	-	-	-	-	-	-
	0.75 to < 2.50	-	-	-	-	-	-	-
	2.50 to < 10.00	-	-	-	-	-	-	-
	10.00 to < 100.00	-	-	-	-	-	-	-
	100.00 (Default)	-	-	-	-	-	-	-
	Sub-total	-	-	-	-	-	-	-
Portfolio (ii) – Bank	0.00 to < 0.15	22,604	0.06	139	32	2.01	4,700	21
	0.15 to < 0.25	343	0.22	17	41	2.50	182	53
	0.25 to < 0.50	2,446	0.39	21	27	1.59	1,122	46
	0.50 to < 0.75	241	0.61	6	44	2.50	207	86
	0.75 to < 2.50	51	1.19	4	45	2.50	51	99
	2.50 to < 10.00	-	3.51	2	45	2.50	1	134
	10.00 to < 100.00	-	-	-	-	-	-	-
	100.00 (Default)	-	-	-	-	-	-	-
	Sub-total	25,685	0.11	189	32	1.98	6,263	24
Portfolio (iii) – Corporate	0.00 to < 0.15	2,413	0.10	23	39	2.49	746	31
	0.15 to < 0.25	408	0.22	9	45	2.50	188	46
	0.25 to < 0.50	67	0.39	16	45	2.50	41	61
	0.50 to < 0.75	482	0.63	23	45	2.50	327	68
	0.75 to < 2.50	922	1.08	64	40	2.50	809	88
	2.50 to < 10.00	693	4.19	29	45	2.50	969	140
	10.00 to < 100.00	1	17.35	3	45	2.50	2	230
	100.00 (Default)	-	-	-	-	-	-	-
	Sub-total	4,986	0.92	167	41	2.49	3,082	62
Portfolio (iv) – Retail	0.00 to < 0.15	-	-	-	-	-	-	-
	0.15 to < 0.25	-	-	-	-	-	-	-
	0.25 to < 0.50	-	-	-	-	-	-	-
	0.50 to < 0.75	-	-	-	-	-	-	-
	0.75 to < 2.50	-	-	-	-	-	-	-
	2.50 to < 10.00	-	-	-	-	-	-	-
	10.00 to < 100.00	-	-	-	-	-	-	-
	100.00 (Default)	-	-	-	-	-	-	-
	Sub-total	-	-	-	-	-	-	-
Total (sum of all portfolios)		**30,671**	**0.24**	**356**	**33**	**2.06**	**9,345**	**30**

8. Counterparty credit risk (continued)

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

	At 31 December 2019					
	(a)	(b)	(c)	(d)	(e)	(f)
	Derivative contracts				SFTs	
	Fair value of recognized collateral received		Fair value of posted collateral		Fair value of recognized collateral received	Fair value of posted collateral
	Segregated	Unsegregated	Segregated	Unsegregated		
	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m
Cash	-	9,559	-	6,589	60,562	6,031
Debt securities	-	-	-	-	3,268	60,726
Equity securities	-	-	-	-	3,067	-
Total	**-**	**9,559**	**-**	**6,589**	**66,897**	**66,757**

Compared with 30 June 2019, the 30% increase in unsegregated fair value of recognised collateral received under derivative contracts was mainly driven by change in outstanding transactions' market value and outstanding transaction volume. The 20% decrease in unsegregated fair value of posted collateral under derivative contracts was mainly driven by change in outstanding transactions' market value and outstanding transaction volume.

CCR6: Credit-related derivatives contracts

	At 31 December 2019	
	(a)	(b)
	Protection bought	Protection sold
	HK$'m	HK$'m
Notional amounts		
Index credit default swaps	389	-
Total notional amounts	**389**	**-**
Fair values		
Positive fair value (asset)	-	-
Negative fair value (liability)	(9)	-

Compared with 30 June 2019, the 29% increase in negative fair value (liability) of protection bought was mainly driven by change in outstanding transactions' market value and outstanding transaction volume.

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

The Group did not use IMM(CCR) approach to measure default risk exposures as at 31 December 2019.

8. Counterparty credit risk (continued)

CCR8: Exposures to CCPs

		At 31 December 2019	
		(a)	(b)
		Exposure after CRM	RWA
		HK$'m	HK$'m
1	**Exposures of the AI as clearing member or client to qualifying CCPs (total)**		**293**
2	Default risk exposures to qualifying CCPs (excluding items disclosed in rows 7 to 10), of which:	7,733	176
3	(i) OTC derivative transactions	7,324	168
4	(ii) Exchange-traded derivative contracts	409	8
5	(iii) Securities financing transactions	-	-
6	(iv) Netting sets subject to valid cross-product netting agreements	-	-
7	Segregated initial margin	-	
8	Unsegregated initial margin	4,635	112
9	Funded default fund contributions	91	5
10	Unfunded default fund contributions	-	-
11	**Exposures of the AI as clearing member or client to non-qualifying CCPs (total)**		**-**
12	Default risk exposures to non-qualifying CCPs (excluding items disclosed in rows 17 to 20), of which:	-	-
13	(i) OTC derivative transactions	-	-
14	(ii) Exchange-traded derivative contracts	-	-
15	(iii) Securities financing transactions	-	-
16	(iv) Netting sets subject to valid cross-product netting agreements	-	-
17	Segregated initial margin	-	
18	Unsegregated initial margin	-	-
19	Funded default fund contributions	-	-
20	Unfunded default fund contributions	-	-

Compared with 30 June 2019, the 18% decrease in qualifying CCPs RWA was mainly driven by change in outstanding transaction volume.

9. Securitization exposures

SECA: Qualitative disclosures related to securitization exposures

BOCHK has not sponsored or managed or provided implicit support to securitisation exposures and does not hold any re-securitisation exposures as at 31 December 2019.

SEC1: Securitization exposures in banking book

There were no securitisation exposures in the banking book as at 31 December 2019.

SEC2: Securitization exposures in trading book

There were no securitisation exposures in the trading book as at 31 December 2019.

SEC3: Securitization exposures in banking book and associated capital requirements – where AI acts as originator

There were no securitisation exposures in the banking book and the associated capital requirements where the Group acts as an originator as at 31 December 2019.

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

There were no securitisation exposures in the banking book and the associated capital requirements where the Group acts as an investor as at 31 December 2019.

10. Market risk

MRA: Qualitative disclosures related to market risk

Market Risk

Market risk refers to the risk of loss arising from movements in the value of foreign exchange, interest rate, equity and commodity positions held by the Group due to the volatility of financial market price (foreign exchange rate, interest rate, equity price, commodity price).

Market Risk Governance

The Group's market risk management is intended to ensure proper oversight of market risk, assure market risk taking activities are consistent with our risk appetite while optimising risk and return. In accordance with the Group's corporate governance principles in respect of risk management, the Board and RMC, senior management and functional departments/units perform their duties and responsibilities to manage the Group's market risk. The RMD is responsible for the Group's market risk management, assisting senior management to perform their day-to-day duties, independently monitoring the market risk profile and compliance of management policies and limits of the Group and BOCHK, and ensuring that the aggregate and individual market risks are within acceptable levels. The Group's risk management report is submitted to the senior management and RMC on a monthly basis.

The Group's market risk management covers BOCHK and its subsidiaries. The Group establishes market risk management policies to regulate BOCHK's and its subsidiaries' market risk management; meanwhile, the Group sets up the Group's VaR and stress test limits, which are allocated and monitored across the Group, according to the business requirements and risk tolerance levels. In line with the requirements set in the Group's policy, the subsidiaries formulate the detailed policies and procedures and are responsible for managing their daily market risk.

The Group sets up market risk indicators and limits to identify, measure, monitor and control market risk. Major risk indicators and limits include but are not limited to VaR, Stop Loss, Open Position, Stress Testing and Sensitivity Analysis (Basis Point Value, Greeks), etc. Trading market risks are managed holistically at the portfolio level on a daily basis. Global Markets may utilise hedging strategies to manage risk within set limits. Hedging may lead to basis risks – due to less than perfect correlation between the hedging instrument in question and the position to be hedged, which are managed within the overall limits. As such, the RMD does not distinguish between specific positions and their respective hedges.

Market risk limits are established for the Group, individual entities, business unit and at granular levels within the business lines, reflecting the nature and magnitude of the market risks. Major risk indicators and limits are classified into four levels, and are approved by the RMC, MC, CRO and the DCE in charge of the treasury business or the head of the respective business unit respectively. Regular review of the market risk limits should be conducted at least once a year. The treasury business units of BOCHK and subsidiaries (as for Group Limit) are required to conduct their business within approved market risk indicators and limits.

10. Market risk (continued)

MRB: Additional qualitative disclosures for AI using IMM approach

The Group continues to adopt the internal models (“IMM”) approach to calculate the general market risk capital charge for foreign exchange and interest rate exposures and, with the approval from the HKMA, exclude its structural FX positions in the calculation of the market risk capital charge. The Group continues to adopt the standardised (market risk) (“STM”) approach to calculate the market risk capital charge for the remaining exposures. Regulatory VaR and stressed VaR models are adopted to use in the Group and BOCHK.

Regulatory VaR and stressed VaR for determining market risk capital requirements are calculated at a 99% confidence level for a 10-day holding period. The stressed VaR uses the same methodology as the VaR model and is generated with inputs calibrated to the historical market data from a continuous 12-month period of significant financial stress relevant to the Group’s portfolio. For management purposes, the Group uses 1-day 99% VaR to measure and report general market risks of the Group and subsidiaries, and sets up the VaR limit of the Group and subsidiaries.

Directly modeled 10-day holding period is used in the calculation of regulatory VaR, whereby two-year historical observations are equally weighted. Absolute returns are used for interest rates; logarithmic returns are used for foreign exchange rates and implied volatilities under historical simulation, where the data are updated daily.

Stressed VaR model is based on a directly modeled 10-day holding period, which is same as regulatory VaR model. Based on the assessment at the most volatile period in recent history, relevant historical crises are first identified. With further assessment, January 2008 to December 2008 is chosen as the stress period in calculating stressed VaR. The period used is approved by the HKMA and regularly reviewed.

Full revaluation approach is used in both VaR and stressed VaR model. Specific risk charge is calculated as a standalone charge by using a different method (i.e. Standardised approach). It is aggregated by simple sum with the VaR and stressed VaR contributions when computing the market risk capital charge.

The Group adopts back-testing to measure the accuracy of VaR model results. The back-testing compares the calculated VaR figure of market risk positions of each business day with the actual and hypothetical gains or losses arising from those positions on the next business day. Generally speaking, the number of back-testing exceptions in a rolling 12-month period will not exceed four times, given a 99% confidence level.

10. Market risk (continued)

MR1: Market risk under STM approach

		At 31 December 2019
		(a)
		RWA
		HK$'m
	Outright product exposures	
1	Interest rate exposures (general and specific risk)	1,522
2	Equity exposures (general and specific risk)	258
3	Foreign exchange (including gold) exposures	-
4	Commodity exposures	592
	Option exposures	
5	Simplified approach	-
6	Delta-plus approach	9
7	Other approach	-
8	Securitization exposures	-
9	**Total**	**2,381**

MR2: RWA flow statements of market risk exposures under IMM approach

		(a)	(b)	(c)	(d)	(e)	(f)
		VaR	Stressed VaR	IRC	CRC	Other	Total RWA
		HK$'m	HK$'m	HK$'m	HK$'m	HK$'m	HK$'m
1	**RWA as at 30 September 2019**	**2,465**	**7,432**	**-**	**-**	**-**	**9,897**
1a	*Regulatory adjustment*	*(1,516)*	*(4,805)*	-	-	-	*(6,321)*
1b	***RWA as at day-end of 30 September 2019***	***949***	***2,627***	**-**	**-**	**-**	***3,576***
2	Movement in risk levels*	70	(834)	-	-	-	(764)
3	Model updates/changes	-	-	-	-	-	-
4	Methodology and policy	-	-	-	-	-	-
5	Acquisitions and disposals	-	-	-	-	-	-
6	Foreign exchange movements	-	-	-	-	-	-
7	Other	-	-	-	-	-	-
7a	***RWA as at day-end of 31 December 2019***	***1,019***	***1,793***	**-**	**-**	**-**	***2,812***
7b	*Regulatory adjustment*	*2,062*	*5,807*	-	-	-	*7,869*
8	**RWA as at 31 December 2019**	**3,081**	**7,600**	**-**	**-**	**-**	**10,681**

* Movements as a result of changes in positions and risk levels.

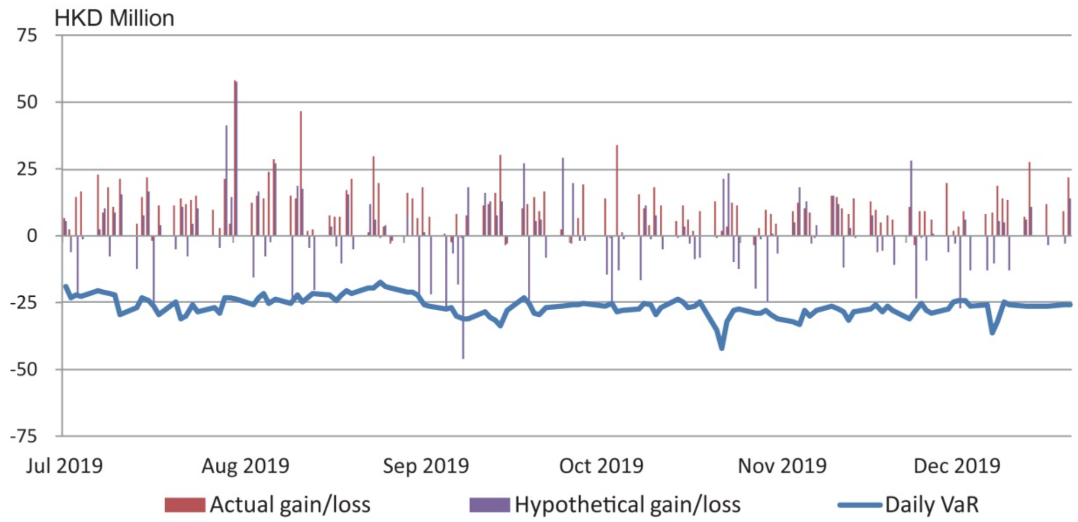
10. Market risk (continued)

MR3: IMM approach values for market risk exposures

		(a)
		HK$'m
VaR (10 days – one-tailed 99% confidence interval)		
1	Maximum Value	127
2	Average Value	74
3	Minimum Value	44
4	Period End	82
Stressed VaR (10 days – one-tailed 99% confidence interval)		
5	Maximum Value	339
6	Average Value	215
7	Minimum Value	135
8	Period End	143
Incremental risk charge (IRC) (99.9% confidence interval)		
9	Maximum Value	-
10	Average Value	-
11	Minimum Value	-
12	Period End	-
Comprehensive risk charge (CRC) (99.9% confidence interval)		
13	Maximum Value	-
14	Average Value	-
15	Minimum Value	-
16	Period End	-
17	Floor	-

10. Market risk (continued)

MR4: Comparison of VaR estimates with gains or losses



Regulatory VaR and stressed VaR for determining market risk capital requirements are calculated at a 99% confidence level for a 10-day holding period. The stressed VaR uses the same methodology as the VaR model and is generated with inputs calibrated to the historical market data from a continuous 12-month period of significant financial stress relevant to the Group's portfolio.

The Group adopts a regulatory VaR model, using a historical simulation approach and two years of historical data, to capture general interest rate and foreign exchange risks over a 10-day holding period with a 99% confidence level. The Group adopts back-testing to measure the accuracy of VaR model results. Actual and hypothetical P&L are compared against the corresponding 99% one-day regulatory VaR. The numbers of exception over the recent 250 business days (Actual or hypothetical P&L exceeds the VaR) determines the value of VaR multiplication factor.

Actual P&Ls are the P&Ls in respect to trading activities within the scope of regulatory VaR model, which includes intraday P&Ls; excludes commissions, fees and reserves. Hypothetical P&Ls are the hypothetical changes in portfolio value assuming unchanged end-of-day position.

Two exceptions are noted in hypothetical P&L back-testing on 12 September and 11 December (excess amount: HK$15 million and HK$3 million respectively) in the second-half of 2019. Those exceptions were both driven by unexpected interest rate market movements.

11. Interest rate risk in banking book

IRRBBA: Interest rate risk in banking book – risk management objectives and policies

The Group's risk management framework applies also to interest rate risk management. The ALCO exercises its oversight of interest rate risk in accordance with the "BOCHK Group Banking Book Interest Rate Risk Management Policy" approved by the RMC. The RMD is responsible for the Group's interest rate risk management. With the cooperation of the Financial Management Department and Investment Management, etc., RMD assists the ALCO to perform day-to-day interest rate risk management. Its roles include, but are not limited to, the formulation of management policies, selection of methodologies, setting of risk indicators and limits, assessment of target balance sheet, monitoring of the compliance with policies and limits, and submission of interest rate risk management reports to senior management and the RMC, etc.

Interest rate risk in banking book ("IRRBB") refers to the risk of losses in terms of overall earnings and economic value of the banking book due to the adverse movement of the interest rate level, or change to the balance sheet structure. The major types of interest rate risk of the Group are:

- Gap risk: mismatches in the maturity or repricing periods of assets and liabilities that may affect net interest income and economic value;
- Basis risk: different pricing basis for different transactions resulting that the yield on assets and cost of liabilities may change by different amounts within the same repricing period; and
- Option risk: exercise of the options embedded in assets, liabilities or off-balance sheet items that can cause a change in the cash flows of assets and liabilities.

The Group sets out interest rate risk indicators and limits to identify, measure, monitor and control interest rate risk on a daily basis. The indicators and limits include, but are not limited to, repricing gap limits, basis risk, duration, price value of a basis point ("PVBP"), net interest income sensitivity ratio ("NII"), economic value sensitivity ratio ("EV"), etc. The indicators and limits are classified into different levels, which are approved by the CFO, CRO, ALCO and RMC accordingly. Risk-taking business units are required to conduct their business within the boundary of the interest rate risk limits. Based on the limit requirements and business conditions, when necessary, the Group can hedge (economic hedging or hedge accounting) or mitigate the IRRBB by holding one or more hedging tools that are opposite to the original risk position. Before launching a new product or business in the banking book, the relevant departments are required to go through a risk assessment process, which includes the assessment of underlying interest rate risk and consideration of the adequacy of current risk monitoring mechanism. Any material impact on interest rate risk noted during the risk assessment process will be submitted to the RMC for approval. The Group Audit, assuming the roles of third line of defence of the Group, performs internal audit on the Group's IRRBB management process independently in accordance with the annual audit plan.

11. Interest rate risk in banking book (continued)

IRRBBA: Interest rate risk in banking book – risk management objectives and policies (continued)

The Group calculates the NII and EV KRI according to the local standard framework for measuring IRRBB risk exposure in the Hong Kong Monetary Authority's Supervisory Policy Manual IR-1, which includes six interest rate shock scenarios:

- parallel shock up;
- parallel shock down;
- steepener shock (short rates down and long rates up);
- flattener shock (short rates up and long rates down);
- short rates shock up; and
- short rates shock down.

In the standardised framework implementation, the Group includes commercial margins and other spread components into the cash flows and discounts them at risk-free rates. For products with customer behavior models, such as retail fixed-rate loans with early repayment risk, retail time deposits and open-term deposits with early redemption risk, model and parameter assumptions are based on historical analysis. Average repricing maturity assigned to non-maturity deposits (“NMDs”) is 0.3 year and longest repricing maturity assigned to NMDs is 5 years. Assumptions and parameters are updated, reviewed and independently validated regularly.

The Group uses scenario analyses and stress tests to assess the banking book interest rate risk that the Group would face under adverse circumstances.

IRRBB1: Quantitative information on interest rate risk in banking book

		(a)	(b)	(c)	(d)
		ΔEVE		ΔNII	
	Period	**At 31 December 2019**	**At 31 December 2018**	**At 31 December 2019**	**At 31 December 2018**
		HK$’m	**HK$’m**	**HK$’m**	**HK$’m**
1	Parallel up	13,245	Not applicable	(4,384)	Not applicable
2	Parallel down	2,402	Not applicable	4,598	Not applicable
3	Steepener	5,111	Not applicable		
4	Flattener	931	Not applicable		
5	Short rate up	4,902	Not applicable		
6	Short rate down	2,992	Not applicable		
7	**Maximum**	13,245	Not applicable	4,598	Not applicable
	Period	**At 31 December 2019**		**At 31 December 2018**	
		HK$’m		**HK$’m**	
8	**Tier 1 capital**	**218,515**		203,678	

12. Remuneration

REMA: Remuneration policy

For details, please refer to "Corporate Governance" section of the Group's 2019 Annual Report.

REM1: Remuneration awarded during financial year

For details, please refer to Note 19 to the Financial Statements of the Group's 2019 Annual Report.

REM2: Special payments

For details, please refer to Note 19 to the Financial Statements of the Group's 2019 Annual Report.

REM3: Deferred remuneration

For details, please refer to Note 19 to the Financial Statements of the Group's 2019 Annual Report.

13. Operational risk

	At 31 December 2019
	HK$'m
Capital charge for operational risk	7,647

The Group uses the standardised (operational risk) approach to calculate its operational risk capital charge.