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Supplementary Notes on the Financial Statements (unaudited) (continued)

Introduction

The information contained in this document is for The Hongkong and Shanghai Banking Corporation Limited ('the Bank') and its subsidiaries (together 'the group'). It is supplementary to and should be read in conjunction with the *Annual Report and Accounts 2015*. The Annual Report and Accounts and these Supplementary Notes (which includes Supplementary Notes on the Financial Statements, Supplementary Notes Appendices and the Regulatory Capital Instruments), taken together, comply with the Banking (Disclosure) Rules made under section 60A of the Banking Ordinance, as amended by the Banking (Disclosure) (Amendment) Rules 2013. They also serve to comply with the disclosures on remuneration as required by the Hong Kong Monetary Authority ('HKMA') Supervisory Policy Manual CG-5 'Guideline on a Sound Remuneration System'.

References to 'HSBC', 'the Group' or 'the HSBC Group' within this document mean HSBC Holdings plc together with its subsidiaries. Within this document the Hong Kong Special Administrative Region of the People's Republic of China is referred to as 'Hong Kong'. The abbreviations 'HK\$m' and 'HK\$bn' represent millions and billions (thousands of millions) of Hong Kong dollars respectively.

While the Supplementary Notes are not required to be externally audited, the document has been verified internally in accordance with the group's policies on disclosure and its financial reporting and governance processes.

1 Basis of preparation

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- a The approaches used in calculating the group's regulatory capital or capital charge are in accordance with the Banking (Capital) Rules. The group uses the advanced internal ratings-based approach to calculate its credit risk for the majority of its non-securitisation exposures and the internal ratings-based (securitisation) approach to determine credit risk for its banking book securitisation exposures. For market risk, the group uses an internal models approach to calculate its general market risk for the risk categories of interest rate and foreign exchange (including gold) exposures, and equity exposures. The group also uses an internal models approach to calculate its market risk in respect of specific risk for interest rate exposures and equity exposures. The group uses the standardised (market risk) approach for calculating other market risk positions as well as trading book securitisation exposures, and the standardised (operational risk) approach to calculate its operational risk.
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- b Except where indicated otherwise, the financial information contained in these Supplementary Notes has been prepared on a consolidated basis. The basis of consolidation for regulatory purposes is different from that for accounting purposes. Information regarding subsidiaries that are not included in the consolidation for regulatory purposes is set out in note 20.
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- c The accounting policies applied in preparing these Supplementary Notes are the same as those applied in preparing the consolidated financial statements for the year ended 31 December 2015, as set out in note 3 on the financial statements in the *Annual Report and Accounts 2015*.

2 Credit risk capital requirements

The group uses the advanced internal ratings-based ('IRBA') approach to calculate its credit risk for the majority of its non-securitisation exposures. The remainder of its credit risk for non-securitisation exposures was assessed using the standardised (credit risk) approach.

The table below shows the capital requirements for credit risk for each class and subclass of non-securitisation exposures as specified in the Banking (Capital) Rules. Capital requirement means the amount of capital required to be held for that risk based on its risk-weighted amount multiplied by 8%.

	At 31 December	
	2015 HK\$m	2014 HK\$m
Capital required for exposures under the IRB approach		
Corporate exposures		
Specialised lending under the supervisory slotting criteria approach		
- Project finance	1,029	1,052
- Object finance	42	80
- Commodities finance	9	118
- Income- producing real estate	2,421	2,601
Small-and-medium sized corporates	15,068	20,443
Other corporates	69,977	71,049
Sovereign exposures		
Sovereigns	10,627	12,998
Multilateral Development Banks	146	264
Bank exposures		
Banks	10,991	16,406
Securities firms	718	350
Retail exposures		
Residential mortgages		
- Individuals	7,419	5,458
- Property- holding shell companies	311	217
Qualifying revolving retail exposures	4,968	4,409
Small business retail exposures	13	14
Other retail exposures to individuals	746	794
Equity Exposures		
Equity exposures under the simple risk-weighted method	2,440	1,502
Other equity exposures	9,187	8,876
Other exposures		
Cash items	242	90
Other items	10,174	9,672
Total for the IRB approach	146,528	156,393
Capital required for exposures under the standardised (credit risk) approach		
Sovereign exposures	54	32
Public sector entity exposures	812	710
Bank exposures	50	116
Securities firm exposures	1	3
Corporate exposures	8,439	9,197
Regulatory retail exposures	4,215	4,465
Residential mortgage loans	3,399	3,297
Other exposures which are not past due exposures	511	565
Past due exposures	326	313
Off-balance sheet exposures other than OTC derivative transactions and credit derivative contracts ...	1,094	1,277
OTC derivative transactions and credit derivative contracts	400	512
Total for the standardised (credit risk) approach	19,301	20,487
Capital required for Central Clearing Counterparties (CCP)	281	675
Capital required for Credit Valuation Adjustment (CVA)	5,602	6,485
Total	171,712	184,040

Supplementary Notes on the Financial Statements (unaudited) (continued)**3 Summary of risk-weighted assets**

The group's total risk-weighted assets are summarised as follows:

	At 31 December	
	2015 HK\$m	2014 HK\$m
Credit risk		
Standardised approach	235,235	248,891
Internal ratings-based ('IRB') approach	1,701,500	1,811,343
IRB (securitisation) approach	5,695	4,453
Counterparty credit risk		
Standardised approach	5,003	6,406
IRB approach	98,229	113,801
Central clearing counterparty ('CCP')	3,511	8,435
Credit Valuation Adjustment ('CVA')	70,021	81,061
Market risk	101,551	143,199
Operational risk	298,662	290,342
	2,519,407	2,707,931

4 Credit risk under the internal ratings-based approach**a The internal ratings system and its risk components****Nature of exposures within each IRB class**

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

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

Measurement and monitoring – risk rating systems

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

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

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

4 Credit risk under the internal ratings-based approach *(continued)*

Group standards govern the process through which risk rating systems are initially developed, judged fit for purpose, approved and implemented; the conditions under which individual approvers can override analytical risk model outcomes; and the process of model performance monitoring and reporting. There is emphasis on an effective dialogue between business lines and risk management, appropriate independence of decision-takers, and a good understanding and robust reflection on the part of senior management.

Like other facets of risk management, analytical risk rating systems are not static and are subject to review and modification in the light of the changing environment and the greater availability and quality of data. Structured processes and metrics are in place to capture relevant data and feed it into continuous model improvement.

Application of IRB parameters

The group's credit risk rating framework incorporates the probability of default ('PD') of a borrower and the loss severity, expressed in terms of exposure at default ('EAD') and loss given default ('LGD'). These measures are used to calculate both expected loss ('EL') and capital requirements, subject to any floors required by the HKMA. They are also used in conjunction with other inputs to inform rating assessments for the purpose of credit approval and many other risk management decisions.

The narrative explanations that follow relate to the IRB advanced approaches, that is, IRB advanced for distinct customers and retail IRB for the portfolio-managed retail business.

Wholesale business

PD for wholesale customer segments (Central Governments and Central Banks (Sovereigns), Institutions, Corporates) is estimated using a Customer Risk Rating ('CRR') scale of 23 grades, of which 21 are non-default grades representing varying degrees of strength of financial condition and two are default grades. A score generated by a model for the individual borrower type is mapped to the corresponding CRR. The process through which this, or a judgementally amended CRR, is then recommended to and reviewed by a credit approver takes into account all additional information relevant to the risk rating determination, including external ratings where available. The approved CRR is mapped to a PD value range of which the 'mid-point' is used in the regulatory capital calculation. PD models are developed where the risk profile of corporate borrowers is specific to a country and sector. For illustration purposes, the CRR is also mapped to external ratings of Standard and Poor's ('S&P'), though we also benchmark against other agencies' ratings in an equivalent manner.

LGD and EAD estimation for the wholesale business is subject to a Group framework of basic principles. EAD is estimated to a 12-month horizon and broadly represents the current exposure plus an estimate for future increases in exposure, taking into account such factors as available but undrawn facilities and the crystallisation of contingent exposures, post-default. LGD focuses on the facility and collateral structure, involving factors like facility priority/seniority, the type and value of collateral, type of client and regional variances in experience, and is expressed as a percentage of EAD.

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

Retail business

The wide range of application and behavioural models used in the management of retail portfolios has been supplemented with models to derive the measures of PD, EAD and LGD required for Basel framework. For management information and reporting purposes, retail portfolios are segmented according to location, analytically derived PD bands, in 9 composite PD grades, facilitating comparability across the group's retail customer segments, business lines and product types.

Supplementary Notes on the Financial Statements (unaudited) (continued)

4 Credit risk under the internal ratings-based approach (continued)

Model governance

Model governance of group risk rating models, including development, validation and monitoring, are under the general oversight of the Wholesale Credit and Market Risk ('WCMR') Model Oversight Committee ('MOC') and Retail Banking and Wealth Management Risk ('RBWMR') MOC. Both the WCMR MOC and RBWMR MOC are under the oversight of the Group MOC and are accountable to the group Risk Management Committee.

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

Use of internal estimates

Internal risk parameters derived from applying the IRB approach are not only employed in the calculation of risk-weighted assets ('RWAs') for the purpose of determining regulatory capital requirements, but also in many other contexts within risk management and business processes, including:

- **credit approval and monitoring:** IRB models, scorecards and other methodologies are valuable tools deployed in the assessment of customer and portfolio risk in lending decisions, including the use of CRR grades within watch-list processes and other enhanced monitoring procedures;
- **risk appetite:** IRB measures are an important element of risk appetite definition at customer, sector and portfolio levels, and in the implementation of the Group risk appetite framework, for instance in subsidiaries' operating plans and the calculation of remuneration through the assessment of performance;
- **portfolio management:** regular reports to the Board, Audit Committee and Risk Committee contain analyses of risk exposures, e.g. by customer segment and quality grade, employing IRB metrics;
- **pricing:** IRB risk parameters are used in wholesale pricing tools when considering new transactions and annual reviews; and
- **economic capital:** IRB measures provide customer risk components for the economic capital model that has been implemented across the group to improve the consistent analysis of economic returns, help determine which customers, business units and products add greatest value, and drive higher returns through effective economic capital allocation.

4 Credit risk under the internal ratings-based approach (continued)

b Exposures by IRB calculation approach

The following table shows the group's exposures¹ by each IRB calculation approach:

	Advanced IRB approach HK\$m	Supervisory slotting criteria approach HK\$m	Retail IRB approach HK\$m	Total exposures HK\$m
At 31 December 2015				
Corporate exposures	1,921,516	64,394	–	1,985,910
Sovereign exposures	1,577,190	–	–	1,577,190
Bank exposures	816,240	–	–	816,240
Retail exposures				
- Residential mortgages to individuals and property-holding shell companies	–	–	686,548	686,548
- Qualifying revolving retail exposures	–	–	237,721	237,721
- Other retail exposures to individuals and small business retail exposures	–	–	55,288	55,288
At 31 December 2014				
Corporate exposures	1,979,076	69,437	–	2,048,513
Sovereign exposures	1,333,386	–	–	1,333,386
Bank exposures	895,506	–	–	895,506
Retail exposures				
- Residential mortgages to individuals and property-holding shell companies	–	–	683,750	683,750
- Qualifying revolving retail exposures	–	–	211,730	211,730
- Other retail exposures to individuals and small business retail exposures	–	–	52,399	52,399

¹ This includes EAD of on-balance sheet and off-balance sheet exposures.

The corporate, sovereign and bank exposures reported under the IRBA approach as at 31 December 2015 include amounts of HK\$75,280m, HK\$5,261m and HK\$199,163m respectively (31 December 2014: HK\$103,288m, HK\$5,526m and HK\$204,644m respectively) that are subject to supervisory estimates. In addition, equity exposures of HK\$7,296m (31 December 2014: HK\$4,519m) reported under the simple risk-weighted method and amounts reported under the Supervisory Slotting Criteria approach are subject to supervisory estimates.

c Exposures covered by recognised guarantees or recognised credit derivative contracts

The following shows the group's exposures¹ (after the effect of any on-balance sheet or off-balance sheet recognised netting) which are covered by recognised guarantees or recognised credit derivative contracts after the application of haircuts required under the Banking (Capital) Rules. These exposures exclude securities financing transactions and derivative contracts.

	At 31 December	
	2015 HK\$m	2014 HK\$m
Corporate exposures	495,235	456,147
Sovereign exposures	1,163	–
Bank exposures	20,918	9,953
Retail exposures	38,310	37,532
	555,626	503,632

¹ This includes EAD of on-balance sheet and off-balance sheet exposures.

Supplementary Notes on the Financial Statements (unaudited) (continued)**4 Credit risk under the internal ratings-based approach** (continued)**d Risk assessment for exposures under IRB approach**

The EADs, PDs and LGDs disclosed below in respect of corporate, sovereign and bank exposures have taken into account the effect of recognised collateral, recognised netting, recognised guarantees and recognised credit derivative contracts.

Corporate exposures (other than specialised lending) – analysis by obligor grade

	CRR	PD range %	Exposure at default HK\$m	Exposure- weighted average PD %	Exposure- weighted average LGD %	Exposure- weighted average risk-weight %	RWAs HK\$m	Mapped External Rating
At 31 December 2015								
Default risk								
Minimal	0.1	0.000 to 0.010	–	–	–	–	–	AAA to AA- AA-
	1.1	0.011 to 0.028	5,842	0.03 ¹	38.7	10	587	
	1.2	0.029 to 0.053	120,316	0.04	41.6	14	17,139	
Low	2.1	0.054 to 0.095	179,704	0.07	46.1	22	38,876	A+ to A- A-
	2.2	0.096 to 0.169	274,579	0.13	46.4	33	89,599	
Satisfactory	3.1	0.170 to 0.285	232,008	0.22	43.2	41	94,173	BBB+
	3.2	0.286 to 0.483	272,260	0.37	40.7	50	136,715	BBB
	3.3	0.484 to 0.740	239,059	0.63	42.1	67	159,823	BBB-
Fair	4.1	0.741 to 1.022	143,904	0.87	40.2	71	101,926	BB+
	4.2	1.023 to 1.407	116,321	1.20	41.8	83	96,355	BB
	4.3	1.408 to 1.927	111,570	1.65	38.4	84	93,229	BB-
Moderate	5.1	1.928 to 2.620	101,727	2.25	37.2	92	93,781	BB-
	5.2	2.621 to 3.579	44,291	3.05	42.9	117	51,863	B+
	5.3	3.580 to 4.914	36,859	4.20	41.4	124	45,854	B
Significant	6.1	4.915 to 6.718	13,512	5.75	41.1	137	18,523	B-
	6.2	6.719 to 8.860	7,510	7.85	46.2	171	12,877	B-
High	7.1	8.861 to 11.402	5,050	10.00	35.3	140	7,094	CCC+
	7.2	11.403 to 15.000	1,939	13.00	37.0	173	3,354	CCC+
Special management	8.1	15.001 to 22.000	604	19.00	41.3	209	1,260	CCC
	8.2	22.001 to 50.000	3	36.00	47.3	254	7	CCC- to CC
	8.3	50.001 to 99.999	24	75.00	31.9	89	22	C
Default	9/10	100.000	14,434	100.00	45.4	–	–	Default
			1,921,516				1,063,057	

4 Credit risk under the internal ratings-based approach (continued)

d Risk assessment for exposures under IRB approach

Corporate exposures (other than specialised lending) – analysis by obligor grade

	CRR	PD range %	Exposure at default HK\$m	Exposure- weighted average PD %	Exposure- weighted average LGD %	Exposure- weighted average risk-weight %	RWAs HK\$m	Mapped External Rating
At 31 December 2014								
Default risk								
Minimal	0.1	0.000 to 0.010	–	–	–	–	–	AAA to AA-
	1.1	0.011 to 0.028	12,062	0.03 ¹	49.2	15	1,799	
	1.2	0.029 to 0.053	106,127	0.04	40.4	12	12,826	
Low	2.1	0.054 to 0.095	223,868	0.07	45.0	22	49,698	A+ to A-
	2.2	0.096 to 0.169	290,066	0.13	46.6	34	97,974	
Satisfactory	3.1	0.170 to 0.285	286,425	0.22	43.2	41	116,675	BBB+
	3.2	0.286 to 0.483	241,646	0.37	44.9	56	136,052	BBB
	3.3	0.484 to 0.740	223,324	0.63	43.3	70	156,068	BBB-
Fair	4.1	0.741 to 1.022	117,443	0.87	43.0	78	91,661	BB+
	4.2	1.023 to 1.407	122,674	1.20	42.5	86	105,679	BB
	4.3	1.408 to 1.927	136,632	1.65	40.8	92	126,151	BB-
Moderate	5.1	1.928 to 2.620	86,644	2.25	39.0	98	85,038	BB-
	5.2	2.621 to 3.579	49,456	3.05	45.7	124	61,121	B+
	5.3	3.580 to 4.914	44,381	4.20	43.6	132	58,473	B
Significant	6.1	4.915 to 6.718	12,591	5.75	42.9	144	18,084	B-
	6.2	6.719 to 8.860	7,328	7.85	50.3	195	14,257	B-
High	7.1	8.861 to 11.402	2,606	10.00	36.7	154	4,023	CCC+
	7.2	11.403 to 15.000	1,923	13.00	41.9	199	3,833	CCC+
Special management	8.1	15.001 to 22.000	1,262	19.00	37.2	200	2,524	CCC
	8.2	22.001 to 50.000	–	–	–	–	–	CCC- to CC
	8.3	50.001 to 99.999	1,184	75.00	48.5	144	1,705	C
Default	9/10	100.000	11,434	100.00	45.3	–	–	Default
			<u>1,979,076</u>				<u>1,143,641</u>	

1 PD is floored at 0.03% according to the HKMA Banking Capital Rules.

Supplementary Notes on the Financial Statements (unaudited) (continued)**4 Credit risk under the internal ratings-based approach** (continued)**d Risk assessment for exposures under IRB approach** (continued)

Corporate exposures (specialised lending) – analysis by supervisory rating grade

	At 31 December 2015		At 31 December 2014	
	Exposure at default HK\$m	Exposure- weighted average risk- weight %	Exposure at default HK\$m	Exposure- weighted average risk- weight %
Strong	49,827	62	55,077	60
Good	12,156	79	10,524	82
Satisfactory	2,085	122	2,397	122
Weak	201	265	1,240	265
Default	125	–	199	–
	64,394		69,437	

The supervisory rating grades and risk-weights of specialised lending are determined in accordance with section 158 of the Banking (Capital) Rules.

Sovereign exposures – analysis by obligor grade

		CRR	PD range %	Exposure at default HK\$m	Exposure- weighted average PD %	Exposure- weighted average LGD %	Exposure- weighted average risk-weight %	RWAs HK\$m	Mapped External Rating
At 31 December 2015									
Default risk									
Minimal	0.1	0.000 to 0.010	440,512	0.01	45.0	5	20,651	AAA AA+ to AA AA- to A+	
	1.1	0.011 to 0.028	772,369	0.02	24.0	3	25,521		
	1.2	0.029 to 0.053	220,192	0.04	45.0	12	26,670		
Low	2.1	0.054 to 0.095	24,409	0.07	45.0	17	4,079	A A-	
	2.2	0.096 to 0.169	63,884	0.13	45.0	32	20,570		
Satisfactory	3.1	0.170 to 0.285	28,440	0.22	45.0	36	10,274	BBB+ BBB BBB-	
	3.2	0.286 to 0.483	258	0.37	45.0	60	153		
	3.3	0.484 to 0.740	2,999	0.63	45.0	64	1,925		
Fair	4.1	0.741 to 1.022	—	—	—	—	—	BB+ BB BB-	
	4.2	1.023 to 1.407	8,218	1.20	45.0	86	7,063		
	4.3	1.408 to 1.927	9,258	1.65	45.0	106	9,848		
Moderate	5.1	1.928 to 2.620	5,031	2.25	45.0	111	5,594	BB- B+ B	
	5.2	2.621 to 3.579	1,221	3.05	45.0	125	1,525		
	5.3	3.580 to 4.914	—	—	—	—	—		
Significant	6.1	4.915 to 6.718	399	5.75	45.0	198	791	B B-	
	6.2	6.719 to 8.860	—	—	—	—	—		
High	7.1	8.861 to 11.402	—	—	—	—	—	CCC+ CCC+	
	7.2	11.403 to 15.000	—	—	—	—	—		
Special management	8.1	15.001 to 22.000	—	—	—	—	—	CCC+ CCC+ CCC to C	
	8.2	22.001 to 50.000	—	—	—	—	—		
	8.3	50.001 to 99.999	—	—	—	—	—		
Default	9/10	100.000	—	—	—	—	—	Default	
			1,577,190				134,664		

4 Credit risk under the internal ratings-based approach (continued)

d Risk assessment for exposures under IRB approach (continued)

Sovereign exposures – analysis by obligor grade

	CRR	PD range %	Exposure at default HK\$m	Exposure- weighted average PD %	Exposure- weighted average LGD %	Exposure- weighted average risk-weight %	RWAs HK\$m	Mapped External Rating
At 31 December 2014								
Default risk								
Minimal	0.1	0.000 to 0.010	252,045	0.01	45.0	5	12,811	AAA
	1.1	0.011 to 0.028	412,987	0.02	13.0	2	7,610	AA+ to AA
	1.2	0.029 to 0.053	307,399	0.04	45.2	11	33,040	AA- to A+
Low	2.1	0.054 to 0.095	222,202	0.07	45.0	18	39,049	A
	2.2	0.096 to 0.169	26,625	0.13	45.0	25	6,669	A-
Satisfactory	3.1	0.170 to 0.285	65,395	0.22	45.0	44	28,732	BBB+
	3.2	0.286 to 0.483	16,647	0.37	45.0	49	8,175	BBB
	3.3	0.484 to 0.740	3,922	0.63	45.0	64	2,521	BBB-
Fair	4.1	0.741 to 1.022	9,507	0.87	45.0	78	7,434	BB+
	4.2	1.023 to 1.407	2,414	1.20	45.0	105	2,537	BB
	4.3	1.408 to 1.927	–	–	–	–	–	BB-
Moderate	5.1	1.928 to 2.620	6,550	2.25	45.0	109	7,127	BB-
	5.2	2.621 to 3.579	5,674	3.05	45.0	124	7,044	B+
	5.3	3.580 to 4.914	1,290	4.20	45.0	132	1,704	B
Significant	6.1	4.915 to 6.718	729	5.75	45.0	182	1,328	B
	6.2	6.719 to 8.860	–	–	–	–	–	B-
High	7.1	8.861 to 11.402	–	–	–	–	–	CCC+
	7.2	11.403 to 15.000	–	–	–	–	–	CCC+
Special management	8.1	15.001 to 22.000	–	–	–	–	–	CCC+
	8.2	22.001 to 50.000	–	–	–	–	–	CCC+
	8.3	50.001 to 99.999	–	–	–	–	–	CCC to C
Default	9/10	100.000	–	–	–	–	–	Default
			<u>1,333,386</u>				<u>165,781</u>	

Supplementary Notes on the Financial Statements (unaudited) (continued)**4 Credit risk under the internal ratings-based approach** (continued)**d Risk assessment for exposures under IRB approach** (continued)

Bank exposures – analysis by obligor grade

	CRR	PD range %	Exposure at default HK\$m	Exposure- weighted average PD %	Exposure- weighted average LGD %	Exposure- weighted average risk-weight %	RWAs HK\$m	Mapped External Rating
At 31 December 2015								
Default risk								
Minimal	0.1	0.000 to 0.010	24,938	0.03 ¹	20.0	8	2,108	AAA
	1.1	0.011 to 0.028	111,114	0.03	36.3	10	11,198	AA+ to AA
	1.2	0.029 to 0.053	360,764	0.04	40.1	12	42,116	AA-
Low	2.1	0.054 to 0.095	182,844	0.07	33.5	18	32,400	A+ to A
	2.2	0.096 to 0.169	72,577	0.13	40.7	28	20,307	A-
Satisfactory	3.1	0.170 to 0.285	24,873	0.22	41.6	40	9,960	BBB+
	3.2	0.286 to 0.483	19,265	0.37	42.2	52	9,932	BBB
	3.3	0.484 to 0.740	9,384	0.63	43.3	64	6,026	BBB-
Fair	4.1	0.741 to 1.022	3,017	0.87	45.6	84	2,525	BB+
	4.2	1.023 to 1.407	1,070	1.20	44.8	91	970	BB
	4.3	1.408 to 1.927	1,815	1.65	49.9	109	1,985	BB-
Moderate	5.1	1.928 to 2.620	464	2.25	56.3	140	648	BB-
	5.2	2.621 to 3.579	474	3.05	43.1	120	570	B+
	5.3	3.580 to 4.914	1,779	4.20	57.8	158	2,811	B
Significant	6.1	4.915 to 6.718	871	5.75	54.0	170	1,480	B-
	6.2	6.719 to 8.860	802	7.85	36.6	142	1,142	B-
High	7.1	8.861 to 11.402	33	10.00	67.1	265	88	CCC+
	7.2	11.403 to 15.000	23	13.00	60.3	275	63	CCC+
Special management	8.1	15.001 to 22.000	11	19.00	73.8	368	40	CCC
	8.2	22.001 to 50.000	–	–	–	–	–	CCC- to CC
	8.3	50.001 to 99.999	–	–	–	–	–	C
Default	9/10	100.000	122	100	62.0	–	–	Default
			816,240				146,369	

4 Credit risk under the internal ratings-based approach (continued)

d Risk assessment for exposures under IRB approach (continued)

Bank exposures – analysis by obligor grade

	CRR	PD range %	Exposure at default HK\$m	Exposure- weighted average PD %	Exposure- weighted average LGD %	Exposure- weighted average risk-weight %	RWAs HK\$m	Mapped External Rating
At 31 December 2014								
Default risk								
Minimal	0.1	0.000 to 0.010	18,633	0.03 ¹	36.6	13	2,514	AAA
	1.1	0.011 to 0.028	94,602	0.03	40.1	11	10,538	AA+ to AA
	1.2	0.029 to 0.053	156,802	0.04	33.5	11	17,920	AA-
Low	2.1	0.054 to 0.095	413,612	0.07	40.2	19	78,543	A+ to A
	2.2	0.096 to 0.169	84,794	0.13	41.9	32	26,987	A-
Satisfactory	3.1	0.170 to 0.285	59,331	0.22	43.0	42	25,009	BBB+
	3.2	0.286 to 0.483	41,839	0.37	42.9	55	22,858	BBB
	3.3	0.484 to 0.740	12,543	0.63	42.0	64	7,974	BBB-
Fair	4.1	0.741 to 1.022	2,006	0.87	51.4	86	1,728	BB+
	4.2	1.023 to 1.407	2,275	1.20	46.9	87	1,982	BB
	4.3	1.408 to 1.927	1,498	1.65	44.4	94	1,402	BB-
Moderate	5.1	1.928 to 2.620	436	2.25	47.6	126	552	BB-
	5.2	2.621 to 3.579	713	3.05	52.3	151	1,076	B+
	5.3	3.580 to 4.914	1,450	4.20	61.8	172	2,497	B
Significant	6.1	4.915 to 6.718	2,120	5.75	78.2	241	5,112	B-
	6.2	6.719 to 8.860	2,427	7.85	19.9	75	1,808	B-
High	7.1	8.861 to 11.402	250	10.00	78.4	309	773	CCC+
	7.2	11.403 to 15.000	44	13.00	72.4	332	146	CCC+
Special management	8.1	15.001 to 22.000	6	19.00	89.8	451	28	CCC
	8.2	22.001 to 50.000	–	–	–	–	–	CCC- to CC
	8.3	50.001 to 99.999	–	–	–	–	–	C
Default	9/10	100.000	125	100.00	61.9	–	–	Default
			<u>895,506</u>				<u>209,447</u>	

1 PD is floored at 0.03% according to the HKMA Banking Capital Rules.

Supplementary Notes on the Financial Statements (unaudited) (continued)**4 Credit risk under the internal ratings-based approach** (continued)**d Risk assessment for exposures under IRB approach** (continued)

Retail exposures – analysis by internal PD grade

	PD range %	Exposure at default HK\$m	Exposure- weighted average PD %	Exposure- weighted average LGD %	Exposure- weighted average risk-weight %	RWAs HK\$m
At 31 December 2015						
Residential mortgages						
Band 1	0.000 to 0.483	475,615	0.14	10.7	11	50,932
Band 2	0.484 to 1.022	97,347	0.70	15.7	18	17,718
Band 3	1.023 to 4.914	83,713	1.74	10.2	19	16,097
Band 4	4.915 to 8.860	22,624	5.28	10.7	38	8,665
Band 5	8.861 to 15.000	4,882	12.78	11.7	62	3,021
Band 6	15.000 to 50.000	269	15.90	13.2	74	200
Band 7	50.001 to 100.000	2,098	100.00	14.4	–	–
		686,548				96,633
Qualifying revolving retail exposures						
Band 1	0.000 to 0.483	166,559	0.13	101.7	8	12,990
Band 2	0.484 to 1.022	27,154	0.69	97.6	29	7,992
Band 3	1.023 to 4.914	33,565	2.14	95.3	66	22,268
Band 4	4.915 to 8.860	5,988	6.68	95.6	148	8,865
Band 5	8.861 to 15.000	1,482	11.47	97.5	207	3,071
Band 6	15.000 to 50.000	2,546	21.32	93.6	260	6,617
Band 7	50.001 to 100.000	427	90.97	92.3	69	295
		237,721				62,098
Other retail exposures						
Band 1	0.000 to 0.483	37,325	0.17	11.5	5	2,040
Band 2	0.484 to 1.022	6,619	0.66	20.7	17	1,135
Band 3	1.023 to 4.914	8,859	2.58	32.8	47	4,120
Band 4	4.915 to 8.860	1,267	6.30	47.4	77	976
Band 5	8.861 to 15.000	525	11.58	67.7	126	662
Band 6	15.000 to 50.000	266	25.05	82.7	205	546
Band 7	50.001 to 100.000	427	99.94	63.3	–	2
		55,288				9,481
Total retail						
Band 1	0.000 to 0.483	679,499	0.14	33.1	10	65,963
Band 2	0.484 to 1.022	131,119	0.69	32.9	20	26,844
Band 3	1.023 to 4.914	126,137	1.90	34.5	34	42,485
Band 4	4.915 to 8.860	29,879	5.60	29.2	62	18,507
Band 5	8.861 to 15.000	6,889	12.40	34.4	98	6,754
Band 6	15.000 to 50.000	3,082	21.17	85.6	239	7,362
Band 7	50.001 to 100.000	2,952	98.68	32.8	10	296
		979,557				168,211

4 Credit risk under the internal ratings-based approach (continued)

d Risk assessment for exposures under IRB approach (continued)

Retail exposures – analysis by internal PD grade

	PD range %	Exposure at default HK\$m	Exposure- weighted average PD %	Exposure- weighted average LGD %	Exposure- weighted average risk-weight %	RWAs HK\$m
At 31 December 2014						
Residential mortgages						
Band 1	0.000 to 0.483	477,242	0.14	11.6	6	27,698
Band 2	0.484 to 1.022	103,963	0.68	15.9	17	17,448
Band 3	1.023 to 4.914	79,696	1.91	10.3	20	16,286
Band 4	4.915 to 8.860	12,340	5.06	10.4	37	4,555
Band 5	8.861 to 15.000	8,265	12.90	11.3	60	4,950
Band 6	15.000 to 50.000	8	30.15	10.0	62	5
Band 7	50.001 to 100.000	2,236	100.00	15.3	–	–
		<u>683,750</u>				<u>70,942</u>
Qualifying revolving retail exposures						
Band 1	0.000 to 0.483	149,619	0.13	101.7	8	11,643
Band 2	0.484 to 1.022	23,472	0.68	97.8	29	6,916
Band 3	1.023 to 4.914	29,310	2.14	95.8	67	19,556
Band 4	4.915 to 8.860	5,334	6.70	96.0	149	7,940
Band 5	8.861 to 15.000	1,396	11.52	97.9	209	2,911
Band 6	15.000 to 50.000	2,246	21.47	93.9	261	5,871
Band 7	50.001 to 100.000	353	90.07	92.9	77	272
		<u>211,730</u>				<u>55,109</u>
Other retail exposures						
Band 1	0.000 to 0.483	36,584	0.17	13.2	7	2,400
Band 2	0.484 to 1.022	5,909	0.69	19.4	16	947
Band 3	1.023 to 4.914	8,148	2.83	39.7	57	4,655
Band 4	4.915 to 8.860	676	6.83	81.7	133	900
Band 5	8.861 to 15.000	451	11.43	75.3	141	633
Band 6	15.000 to 50.000	265	24.65	85.6	212	563
Band 7	50.001 to 100.000	366	99.95	71.1	–	1
		<u>52,399</u>				<u>10,099</u>
Total retail						
Band 1	0.000 to 0.483	663,445	0.14	32.0	6	41,741
Band 2	0.484 to 1.022	133,344	0.68	30.5	19	25,311
Band 3	1.023 to 4.914	117,154	2.03	33.7	35	40,497
Band 4	4.915 to 8.860	18,350	5.60	37.9	73	13,395
Band 5	8.861 to 15.000	10,112	12.64	26.1	84	8,494
Band 6	15.000 to 50.000	2,519	21.83	92.8	256	6,439
Band 7	50.001 to 100.000	2,955	98.81	31.5	9	273
		<u>947,879</u>				<u>136,150</u>

Supplementary Notes on the Financial Statements (unaudited) (continued)**4 Credit risk under the internal ratings-based approach** (continued)**d Risk assessment for exposures under IRB approach** (continued)

Undrawn commitments

The following table shows the amount of undrawn commitments and exposure-weighted average EAD for corporate, sovereign and bank exposures:

	At 31 December 2015		At 31 December 2014	
	Undrawn commitments HK\$m	Exposure-weighted average EAD HK\$m	Undrawn commitments HK\$m	Exposure-weighted average EAD HK\$m
Corporate exposures	1,165,206	321,725	989,449	274,491
Sovereign exposures	1,377	410	964	285
Bank exposures	38,540	8,415	17,108	2,892
	1,205,123	330,550	1,007,521	277,668

e IRB expected loss and impairment charges

The following table compares actual outcomes for the year against the risk elements estimated at the beginning of the year.

	PD		LGD		EAD	
	Actual %	Projected %	Actual %	Projected %	Actual %	Projected %
At 31 December 2015						
Sovereign	0.00	0.23	0.00	35.69	0.00	100.18
Bank	0.00	0.61	0.00	36.05	0.00	98.98
Corporate	0.48	0.93	37.75	43.60	61.29	67.82
Residential mortgages	0.71	0.89	8.02	14.60	97.01	113.03
Qualifying revolving retail	0.44	0.68	81.93	92.05	82.89	84.85
Other retail	1.22	1.40	41.74	56.58	82.13	98.72
At 31 December 2014						
Sovereign	0.00	0.26	0.00	44.27	0.00	100.12
Bank	0.00	0.81	0.00	30.24	0.00	96.86
Corporate	0.45	0.97	17.20	42.69	53.34	67.43
Residential mortgages	0.74	0.91	9.54	13.34	92.86	112.17
Qualifying revolving retail	0.45	0.66	80.49	85.87	87.67	90.02
Other retail	1.28	1.55	57.16	72.14	69.48	88.28

The difference between actual PD and projected PD is driven by the difference in the time horizon used to calculate actual and estimated default rates. The actual default rate represents the actual number of borrower or account defaults during the year, whereas the projected PD is based on internally developed models built on long-run default experience.

The group measures actual LGD by calculating the economic loss incurred by the defaults, whereas projected LGD is based on an internally developed model built on loss experience in downturn conditions and applied with the relevant regulatory floors as appropriate. For wholesale classes, due to the different calculation methodologies and the portfolio mix between the default population and the overall book, actual and projected results can differ. In general, the projected LGD was more conservative than actual LGD across asset classes.

The group measures actual EAD by comparing the realised credit exposure of the defaulted counterparties in 2014 against the limits one year prior to default. The projected EAD is based on an internally developed model built on long run default experience.

4 Credit risk under the internal ratings-based approach *(continued)*

e *IRB expected loss and impairment charges (continued)*

The following table sets out, for each IRB exposure class, the expected loss (EL) and the actual loss experience reflected in impairment charges. EL is the estimated loss likely to be incurred arising from the potential default of the obligator in respect of the exposure over a one-year period. Impairment charges are the net charge for actual losses for each IRB class made during the year.

	As at 31 December 2015		As at 31 December 2014	
	Expected loss at 1 Jan HK\$m	Impairment charge for the year HK\$m	Expected loss at 1 Jan HK\$m	Impairment charge for the year HK\$m
Sovereign	502	–	462	–
Bank	677	–	698	–
Corporate	12,698	2,551	10,848	2,315
Residential mortgages	877	(55)	890	–
Qualifying revolving retail	2,203	854	1,622	722
Other retail	505	199	500	177
	17,462	3,549	15,020	3,214

The movement of impairment charges in 2015 is immaterial. It should be noted that impairment charges and EL are measured using different methodologies which are not directly comparable. In general, EL is greater than impairment charges for each IRB class. The limitation arises from the fundamental differences in the definition of ‘loss’ under the accounting standards which determine impairment charges by reflecting the current circumstances and specific cashflow expectations of a customer, and the Basel framework which determines the regulatory EL calculation on a forward looking basis using modelled estimates.

5 Credit risk under the standardised (credit risk) approach

a *Application of the standardised approach*

The standardised (credit risk) approach is applied where exposures do not qualify for use of an IRB approach and/or where an exemption from IRB has been granted. The standardised (credit risk) approach requires banks to use risk assessments prepared by External Credit Assessment Institutions (‘ECAI’) to determine the risk weightings applied to rated counterparties.

ECAI risk assessments are used within the group as part of the determination of risk weightings for the following classes of exposure:

- Public sector entity exposures;
- Bank or corporate exposures (those without an internal CRR); and
- Collective investment scheme exposures.

The group uses external credit ratings from the following ECAIs:

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

The group determines ECAI issuer ratings or ECAI issue-specific ratings in the banking book in a process consistent with Part 4 of the Banking (Capital) Rules.

All other exposure classes are assigned risk weightings as prescribed in the HKMA’s Banking (Capital) Rules.

Supplementary Notes on the Financial Statements (unaudited) (continued)

5 Credit risk under the standardised (credit risk) approach (continued)

b Credit risk exposures under the standardised (credit risk) approach

	Total exposures ¹ HK\$m	Exposures after recognised credit risk mitigation ²		Risk-weighted amounts		Total exposures covered by recognised collateral HK\$m	Total exposures covered by guaranties or recognised credit derivative contracts HK\$m
		Rated HK\$m	Unrated HK\$m	Rated HK\$m	Unrated HK\$m		
At 31 December 2015							
Assets							
On-balance sheet							
Sovereign	3,382	20,434	–	676	–	–	–
Public sector entity	97,330	81,080	–	10,155	–	5	16,540
Bank	582	242	563	128	491	–	–
Securities firm	16	–	16	–	8	–	–
Corporate	152,672	3,041	102,905	2,875	102,619	46,014	1,354
Cash items	336	–	336	–	–	–	–
Regulatory retail	75,314	–	70,244	–	52,683	4,755	315
Residential mortgage loan	95,466	–	95,375	–	42,482	90	1
Other exposures which are not past due exposures	44,457	–	6,382	–	6,382	38,074	–
Past due exposures	3,085	458	2,626	308	3,771	406	205
Total on-balance sheet	472,640	105,255	278,447	14,142	208,436	89,344	18,415
Off-balance sheet							
Off-balance sheet exposures other than OTC derivative transactions or credit derivative contracts	20,957	1,703	14,578	611	13,071	4,676	657
Derivative contracts and securities financing transactions	11,167	5,154	4,516	830	4,173	1,497	–
Total off-balance sheet	32,124	6,857	19,094	1,441	17,244	6,173	657
Total	504,764	112,112	297,541	15,583	225,680	95,517	19,072
Exposures risk-weighted at 1,250%	–						

5 Credit risk under the standardised (credit risk) approach (continued)

b Credit risk exposures under the standardised (credit risk) approach (continued)

At 31 December 2014	Total exposures ¹ HK\$	Exposures after recognised credit risk mitigation ²		Risk-weighted amounts		Total exposures covered by recognised collateral HK\$	Total exposures covered by recognised guarantees or derivative contracts HK\$
		Rated HK\$	Unrated HK\$	Rated HK\$	Unrated HK\$		
Assets							
On-balance sheet							
Sovereign	4,152	16,608	–	395	–	–	–
Public sector entity	65,613	55,660	–	8,877	–	61	10,397
Bank	1,666	1,032	1,230	489	960	–	–
Securities firm	79	–	79	–	39	–	–
Corporate	164,532	3,965	111,870	3,334	111,625	46,201	3,202
Cash items	399	–	399	–	–	–	–
Regulatory retail	79,973	–	74,421	–	55,816	4,891	660
Residential mortgage loan	85,774	–	85,699	–	41,215	72	2
Other exposures which are not past due exposures	44,116	–	7,064	–	7,064	37,052	–
Past due exposures	2,809	309	2,500	211	3,698	241	101
Total on-balance sheet	449,113	77,574	283,262	13,306	220,417	88,518	14,362
Off-balance sheet							
Off-balance sheet exposures other than OTC derivative transactions or credit derivative contracts	25,228	2,125	16,978	791	15,167	6,125	557
Derivative contracts and securities financing transactions	12,082	3,800	5,729	680	5,726	2,553	–
Total off-balance sheet	37,310	5,925	22,707	1,471	20,893	8,678	557
Total	486,423	83,499	305,969	14,777	241,310	97,196	14,919
Exposures risk-weighted at 1,250%	–						

1 Total exposures are the principal amounts for on-balance sheet exposures, or the credit equivalent amount or default exposure for off-balance sheet exposures, as applicable, net of individually assessed impairment allowances.

2 Exposures covered by recognised guarantees or recognised credit derivative contracts are reclassified after credit risk mitigation to reflect the exposures to the credit protection providers.

Supplementary Notes on the Financial Statements (unaudited) (continued)**6 Counterparty credit risk-related exposures**

- a** Counterparty credit risk arises from securities financing transactions and derivative contracts. It is calculated in both the trading and non-trading books, and is the risk that a counterparty to a transaction may default before completing the satisfactory settlement of the transaction. Following the implementation of Basel III on 1 January 2013, changes have been introduced to the capital treatment of counterparty credit risk exposures, which expanded the scope of transactions for which counterparty credit risk needs to be considered as well as amending the capital calculation.

In respect of the group's counterparty credit risk exposures arising from these transactions, all credit limits are established in advance of transactions. Credit and settlement risk is captured, monitored and reported in accordance with group risk methodologies. Credit exposures are divided into two categories: (1) exposure measures in book or market value terms depending on the product involved; and (2) exposure measures on the basis of 95 percentile potential worst case loss estimates. These methods of calculating credit exposure apply to all counterparties and differences in credit quality are reflected in the size of the limits.

The group adopts the current exposure method to determine its exposures to counterparty credit risk to OTC derivative transactions and credit derivative contracts.

Collateral arrangements

The policy for secured collateral on derivatives is guided by the group's internal Best Practice Guidelines ensuring that the due diligence necessary to understand the effectiveness of netting and collateralisation by jurisdiction, counterparty, product and agreement type is assessed and that due-diligence standards are consistently applied.

Credit ratings downgrade

The credit ratings downgrade language in a Master Agreement or Credit Support Annexes defines the series of events that are triggered if the credit rating of the affected party falls below a specified level. The group presently produces a report which identifies the additional collateral requirements where credit ratings downgrade language affects the threshold levels within a collateral agreement.

Under the terms of our current collateral obligations under derivative contracts and based on the positions at 31 December 2015, we estimate that we could be required to post additional collateral of up to HK\$448m (2014: HK\$467m) in the event of a one-notch downgrade in credit ratings, which would increase to HK\$541m (2014: HK\$641m) in the event of a two-notch downgrade.

Wrong-way risk

Wrong-way risk occurs when a counterparty's exposures are adversely correlated with its credit quality. There are two types of wrong-way risk.

- General wrong-way risk occurs when the probability of counterparty default is positively correlated with general risk factors such as where the counterparty is resident and/or incorporated in a higher-risk country and seeks to sell a non-domestic currency in exchange for its home currency.
- Specific wrong-way risk occurs when the exposure to a particular counterparty is positively correlated with the probability of counterparty default such as a reverse repo on the counterparty's own bonds. Group policy sets out that specific wrong-way transactions are approved on a case by case basis.

We use a range of tools to monitor and control wrong-way risk, including requiring the business to obtain prior approval before undertaking wrong-way risk transactions outside pre-agreed guidelines. The regional Traded Risk functions are responsible for the control and the monitoring process. This includes the monthly submission of wrong-way risk information to Group Risk and the Global Market Risk Management Committee.

6 Counterparty credit risk-related exposures (continued)

b Counterparty credit risk exposures under the advanced internal ratings-based approach

	As at 31 December 2015		As at 31 December 2014	
	Derivative Contracts ^{2,3} HK\$m	Securities financing transactions HK\$m	Derivative Contracts ^{2,3} HK\$m	Securities financing transactions HK\$m
Gross total positive fair value	415,871	—	368,959	—
Default risk exposures, net of bilateral netting ¹	300,233	58,137	313,459	28,496
Recognised collateral held by type:				
Debt securities	5,327	188,717	9,054	231,160
Others	26,419	121,637	28,315	66,390
	31,746	310,354	37,369	297,550
Default risk exposures, net of recognised collateral held ²	300,233	58,137	313,459	28,496
Risk-weighted amounts	94,778	4,914	111,046	2,755

- 1 The recognised collateral is netted against the default risk exposure for securities financing transactions with or without a netting agreement in place.
- 2 For OTC and credit derivative contracts, the recognised collateral is reflected in the LGD.
- 3 The HKMA issued a circular on 6 August 2015 requiring exposures to central counterparties to be included in the general disclosures of counterparty credit risk related exposures under section 80 and disclosures of credit risk mitigation under section 81 of Banking (Disclosure) Rules. The relevant exposures for the year ended 31 December 2015 have been disclosed accordingly. Comparatives have not been restated.

c Counterparty credit risk exposures under the standardised (credit risk) approach

	As at 31 December 2015		As at 31 December 2014	
	Derivative contracts HK\$m	Securities financing transactions ¹ HK\$m	Derivative contracts HK\$m	Securities financing transactions ¹ HK\$m
Gross total positive fair value	8,113	—	7,717	—
Default risk exposures, net of bilateral netting	10,978	189	11,876	206
Recognised collateral held by type:				
Debt securities	—	187	492	—
Others	1,497	2,943	2,373	2,036
	1,497	3,130	2,865	2,036
Default risk exposures, net of recognised collateral held ¹	10,978	189	11,876	206
Risk-weighted amounts	4,820	183	6,212	194

- 1 The recognised collateral is netted against the default risk exposure for securities financing transactions with or without netting agreement in place.

Supplementary Notes on the Financial Statements (unaudited) (continued)

6 Counterparty credit risk-related exposures (continued)

d Major classes of exposures under the advanced internal ratings-based approach by counterparty type

	As at 31 December 2015		As at 31 December 2014	
	Derivative Contracts ^{2,3} HK\$m	Securities financing transactions HK\$m	Derivative Contracts ^{2,3} HK\$m	Securities financing transactions HK\$m
Notional amounts:				
Sovereigns	842,106	30,554	491,546	16,249
Banks	28,342,977	325,342	21,996,213	228,089
Corporates	2,414,422	7,192	3,200,707	67,155
	31,599,505	363,088	25,688,466	311,493
Default risk exposures¹:				
Sovereigns	6,291	23,906	5,526	12,993
Banks	213,469	33,215	204,644	13,133
Corporates	80,473	1,016	103,289	2,370
	300,233	58,137	313,459	28,496
Risk-weighted amounts:				
Sovereigns	1,807	1,039	1,089	1,384
Banks	42,078	3,361	48,792	879
Corporates	50,893	514	61,165	492
	94,778	4,914	111,046	2,755

- 1 The recognised collateral is netted against the default risk exposure for securities financing transactions with or without a netting agreement in place.
- 2 For OTC and credit derivative contracts, the recognised collateral is reflected in the LGD.
- 3 The HKMA issued a circular on 6 August 2015 requiring exposures to central counterparties to be included in the general disclosures of counterparty credit risk related exposures under section 80 and disclosures of credit risk mitigation under section 81 of the Banking (Disclosure) Rules. The relevant exposures for the year ended 31 December 2015 have been disclosed accordingly. Comparatives have not been restated.

e Major classes of exposures under the standardised (credit risk) approach by counterparty type

	As at 31 December 2015		As at 31 December 2014	
	Derivative contracts HK\$m	Securities financing Transactions ¹ HK\$m	Derivative contracts HK\$m	Securities financing Transactions ¹ HK\$m
Notional amounts:				
Public sector entities	151,779	249	147,764	1,431
Banks	5,270	—	3,991	—
Corporates	89,808	838	136,516	673
	246,857	1,087	288,271	2,104
Default risk exposures	10,978	189	11,876	206
Risk-weighted amounts	4,820	183	6,212	194

- 1 The recognised collateral is netted against the default risk exposure for securities financing transactions with or without netting agreement in place.

6 Counterparty credit risk-related exposures (continued)

f Risk exposures to derivative transactions

	Contract Amount ¹ HK\$m	Risk-weighted amount ¹ HK\$m	Fair value ¹ HK\$m
At 31 December 2015			
Exchange rate contracts			
Forwards	10,891,177	27,480	36,767
Options purchased	486,589	18,613	10,858
Swaps	3,516,493	30,446	37,806
	14,894,259	76,539	85,431
Interest rate contracts			
Forwards	978,256	9	109
Options purchased	271,366	1,691	1,708
Swaps	14,634,307	12,722	25,799
	15,883,929	14,422	27,616
Credit derivative contracts	431,097	1,419	330
Other OTC derivative contracts	637,077	7,218	15,232
	31,846,362	99,598	128,609
At 31 December 2014			
Exchange rate contracts			
Forwards	8,920,165	24,204	44,347
Options purchased	707,251	20,469	9,230
Swaps	3,433,804	34,833	38,537
	13,061,220	79,506	92,114
Interest rate contracts			
Forwards	394,241	104	15
Options purchased	136,598	866	1,209
Swaps	11,240,845	25,545	23,197
	11,771,684	26,515	24,421
Credit derivative contracts	262,200	1,434	246
Other OTC derivative contracts	881,633	9,803	15,590
	25,976,737	117,258	132,371

The above table is compiled in accordance with the 'Capital Adequacy Ratio' return submitted to the HKMA. This return is prepared using a consolidated basis as specified by the HKMA under the requirements of section 3C of the Banking (Capital) Rules. This consolidation basis is different from the group's basis of consolidation for accounting purposes, as explained in note 20. Therefore, the contract amounts shown in the above table are different from those disclosed in note 12 of the *Annual Report and Accounts 2015*.

The fair values are calculated after taking into account the effect of valid bilateral netting agreements amounting to HK\$295,375m (2014: HK\$244,305m)¹.

1 The Hong Kong Monetary Authority issued a circular on 6 August 2015 requiring exposures to central counterparties to be included in the general disclosures of counterparty credit risk related exposures under section 80 and disclosures of credit risk mitigation under section 81 of Banking (Disclosure) Rules. The relevant exposures for the year ended 31 December 2015 have been disclosed accordingly. Comparatives have not been restated.

Supplementary Notes on the Financial Statements (unaudited) (continued)**6 Counterparty credit risk-related exposures (continued)****g Contract amounts of credit derivative contracts which create exposure to counterparty credit risk**

	At 31 December	
	2015 HK\$m	2014 HK\$m
Used for credit portfolio		
Credit default swaps		
Protection bought	3,372	7,040
Protection sold	—	—
Total return swaps		
Protection bought	—	7,917
Protection sold	—	—
	3,372	14,957
Used for intermediation activities		
Credit default swaps		
Protection bought	210,135	116,473
Protection sold	211,095	121,562
Total return swaps		
Protection bought	6,495	9,208
Protection sold	—	—
	427,725	247,243

7 Credit risk mitigation

The group grants credit facilities on the basis of capacity to repay, rather than place primary reliance on credit risk mitigation. Depending on a customer's standing and the type of product, unsecured facilities may be provided. The mitigation of credit risk is nevertheless a key aspect of effective risk management. By consideration of type, jurisdiction and geographical location of the credit risk mitigation held, there is no material concentration.

The group's general policy is to promote the use of credit risk mitigation, justified by commercial prudence and good practice as well as capital efficiency. Specific, detailed policies cover the acceptability, structuring and terms of various types of business with regard to the availability of credit risk mitigation, for example in the form of collateral security. These policies, together with the determination of suitable valuation parameters, are subject to regular review to ensure that they are supported by empirical evidence and continue to fulfil their intended purpose.

The most common method of mitigating credit risk is to take collateral. The main types of recognised collateral taken by the group are those as stated in section 77 of the Banking (Capital) Rules, including (but not limited to) cash on deposit, a mortgage over property, a charge over business assets, guarantees, equities (including convertible bonds) included in any main indices, units or shares in collective investment schemes and various recognised debt securities.

In accordance with sections 98 and 99 of the Banking (Capital) Rules, certain guarantees and credit derivative contracts are recognised for credit risk mitigation purposes. The main types of guarantees are from sovereigns, corporates and banks. The credit mitigating effect of recognised guarantees is grounded on empirical evidence of loss recovery experiences regionally. Exposures related to sovereign and bank guarantees are managed by central teams in HSBC Group Head Office in London.

Trading facilities are often supported by charges over financial instruments such as cash, debt securities and equities. Netting is extensively used and is a prominent feature of market standard documentation. Techniques such as credit default swaps, structured credit notes and securitisation structures can be deployed to actively manage the credit risk of the portfolios. The credit and market risk concentrations within the credit risk mitigants (recognised collateral, netting, guarantees and credit derivative contracts) used by the group are not considered to be material.

The group's policy stipulates that netting should only be applied where there is a legal right to do so. Under section 209 of the Banking (Capital) Rules, recognised netting is defined as any netting done pursuant to a valid bilateral netting arrangement. Consistent with the Banking (Capital) Rules, only bilateral netting arrangements are eligible to net amounts owed by the group for capital adequacy purposes.

The group has in place specific policies with respect to the valuation and re-valuation of credit risk mitigants. The primary objective of these policies is to monitor and ensure that the respective mitigants will provide the secure repayment source as anticipated at the time they were taken. Where collateral is subject to high volatility, valuation is frequent; where stable, less so. Policies in respect of credit mitigants underlying past due accounts are more stringent and call for more frequent monitoring and valuation.

In terms of their application within an IRB approach risk mitigants are considered in two broad categories: 1) those which reduce the intrinsic probability of default of a borrower and therefore are accounted for with adjustments to PD estimation; 2) those which affect the estimated recoverability of obligations and are accounted for with adjustments of LGD or, in certain circumstances, EAD.

The adjustment of PD estimation is also subject to supplementary methodologies in respect of a 'sovereign floor', constraining the risk ratings assigned to borrowers in countries of higher risk, and partial parental support.

LGD and EAD values, in the case of individually assessed exposures, are determined by reference to internal risk parameters based on the nature of the exposure, subject to the relevant regulatory requirements and floors. For retail portfolios, credit mitigation data is incorporated into the internal risk parameters and fed into the calculation of the EL band summarising both customer delinquency and product or facility risk.

Supplementary Notes on the Financial Statements (unaudited) (continued)

8 Asset securitisation

Group securitisation strategy

The group's strategy is to use securitisations to meet its needs for aggregate funding or capital management, to the extent that market, regulatory treatments and other conditions are suitable, and for customer facilitation.

Group securitisation roles

The roles played by the group in the securitisation process are as follows:

- Investor: where the group invests in a securitisation transaction directly, or provides derivatives or liquidity facilities to a securitisation;
- Originator: where the group originates the assets being securitised, either directly or indirectly; and
- Sponsor: in relation to an asset-backed commercial paper ('ABCP') programme, or a programme with similar features, where the group establishes and manages a securitisation programme that purchases exposures from third parties.

The group as investor

The group has exposure to third-party securitisations, including re-securitisation positions, in the form of investments, liquidity facilities and as a derivative counterparty. The majority of the group's securitisation positions are held as part of its investment portfolios in the banking book. The group also holds securitisation positions occasionally to generate trading profits. The credit and market risks of securitisation positions are monitored and managed along with their respective business portfolios. Factors such as the estimated future cash flows on underlying pools of collateral, including prepayment speeds, and whether historical performance remains representative of current economic and credit conditions, are considered in assessing impairment of these positions.

The group as originator

The group securitises customer loans and advances that it originated using special purpose entities ('SPEs') to diversify its sources of funding for asset origination, and for capital efficiency purposes. In such cases, the group transfers the loans and advances to the SPEs for cash, and the SPEs issue debt securities to investors to fund the cash purchases. The group may also act as a derivative counterparty or provide a guarantee. Credit enhancements to the underlying assets may be used to obtain investment grade ratings on the senior debt issued by the SPEs. The group currently consolidates these securitisations for accounting purposes. The group did not use any SPEs to securitise exposures acquired from third parties during the year (2014: none). The group's policy on credit risk mitigation to mitigate the risks of securitisation exposures retained is the same as that for non-securitisation exposures, as set out in note 7.

In addition, the group uses SPEs to mitigate the capital absorbed by some of the customer loans and advances it has originated. Credit derivatives are used to transfer the credit risk associated with such customer loans and advances to an SPE, using securitisations commonly known as synthetic securitisations, by which the SPEs write credit default swap protection to the group. These SPEs are consolidated for accounting purposes when the group is exposed to the majority of risks and rewards of ownership. The group did not originate any synthetic securitisations during the year (2014: none).

The group as sponsor

There were no outstanding underlying exposures in securitisation transactions where the group acted as a sponsor (2014: none).

8 Asset securitisation (continued)

Valuation of securitisation positions

The group's banking and trading book investments in securitisation exposures, including re-securitisation exposures, are valued according to their accounting classification. Valuation methods include, but are not limited to, quotations from third parties, observed trade levels and calibrated valuations from market standard models. The principal assumptions to determine fair value are based on benchmark information about prepayment speeds, default rates, loss severities and the historical performance of the underlying assets. This process did not change in 2015.

Securitisation activities in 2015

As an investor, the group's securitisation activities in 2015 mainly consisted of changes to the existing portfolio mix in the normal course of business. There was no transfer of securitisation exposures between the banking book and trading book during the year (2014: none).

As an originator, the group transferred and securitised HK\$1,589m of corporate loans in the banking book into a new SPE which the group consolidates in 2015 (2014: none). The group did not securitise any residential mortgages in the banking book (2014: HK\$17,169m). There were no gains or losses recognised (2014: none).

Securitisation accounting treatment

For accounting purposes, the group consolidates SPEs when the substance of the relationship indicates that it controls them. In assessing control, all relevant factors are considered, including qualitative and quantitative aspects. The group reassesses the required consolidation whenever there is a change in the substance of the relationship between the group and an SPE, for example, when the nature of its involvement or the governing rules, contractual arrangements or capital structure of the SPE change.

For securitisation transactions originated, the transfer of assets to an SPE may give rise to full or partial derecognition of the financial assets concerned. Only in the event that derecognition is achieved are sales and any resultant gains on sales recognised in the financial statements.

Full derecognition occurs when the group transfers its contractual right to receive cash flows from the financial assets, or retains the right but assumes an obligation to pass on the cash flows from the asset, and transfers substantially all the risks and rewards of ownership. The risks include credit, interest rate, currency, prepayment and other price risks.

Partial derecognition occurs when the group sells or otherwise transfers financial assets in such a way that some but not substantially all of the risks and rewards of ownership are transferred but control is retained. These financial assets are recognised on the balance sheet to the extent of the group's continuing involvement.

The rights and obligations that the group retains from its continuing involvement in securitisations are initially recorded as an allocation of the fair value of the financial asset between the part that is derecognised and the part that continues to be recognised on the date of transfer.

When the group has contractual arrangements that could require it to provide financial support for the underlying exposures that have been securitised, these are recognised following the accounting policies as set out in the group's Annual Report and Accounts.

Securitisation regulatory capital approaches

The group uses the internal ratings-based (securitisation) approach to calculate the credit risk for its securitisation exposures in the banking book. Securitisation positions in the trading book are treated under the standardised (market risk) approach, which calculates the market risk capital charge for specific risk interest rate exposures using the same methodology as the internal ratings-based (securitisation) approach.

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

Supplementary Notes on the Financial Statements (unaudited) (continued)**8 Asset securitisation (continued)****a Securitisation transactions – underlying exposures and impairment**

	At 31 December	
	2015 HK\$m	2014 HK\$m
As originator		
Traditional securitisations:		
Residential mortgage loans	15,910	24,565
	15,910	24,565

As at 31 December 2015, there were securitised impaired or overdue residential mortgage loans of HK\$380m (2014: HK\$548m) and there were no losses recognised during the year (2014: none).

The group does not report any amounts under the internal ratings-based (securitisation) approach or the standardised (market risk) approach for these securitisation exposures as they do not fall within the scope of s229(1) of the Banking (Capital) Rules. The related credit risk has been calculated using the same approach as other non-securitisation exposures. The capital requirements and the amounts deducted from capital under the internal ratings-based (securitisation) approach are therefore nil.

b Securitisation exposures – by exposure type

	At 31 December 2015			At 31 December 2014		
	Banking book HK\$m	Trading book HK\$m	Total HK\$m	Banking book HK\$m	Trading book HK\$m	Total HK\$m
On-balance sheet exposures						
As investor						
Residential mortgage loans	276	6	282	646	7	653
Student loans	–	–	–	26	–	26
Commercial mortgage loans	445	–	445	453	–	453
Loans and receivables	540	–	540	686	–	686
Auto loans	5,354	–	5,354	3,078	–	3,078
Others	–	–	–	122	451	573
	6,615	6	6,621	5,011	458	5,469
Off-balance sheet exposures						
As investor						
Commercial mortgage loans	608	–	608	679	–	679
Loans and receivables	46	–	46	61	–	61
	654	–	654	740	–	740
	7,269	6	7,275	5,751	458	6,209

8 Asset securitisation (continued)

c Securitisation exposures – by risk-weight bands

	Securitisation exposures			Capital requirements		
	Banking book HK\$m	Trading book HK\$m	Total HK\$m	Banking book HK\$m	Trading book HK\$m	Total HK\$m
At 31 December 2015						
As investor						
Securitisations						
- less than or equal to 10%	1,718	–	1,718	11	–	11
- greater than 10% and less than or equal to 20%	388	–	388	7	–	7
- greater than 20% and less than or equal to 50%	–	–	–	–	–	–
- greater than 50% and less than or equal to 100%	5,163	–	5,163	438	–	438
- greater than 100% and less than or equal to 650%	–	–	–	–	–	–
- greater than 650% and less than 1,250% - 1,250%	–	6	6	–	6	6
Re-securitisations						
- 1,250%	–	–	–	–	–	–
	7,269	6	7,275	456	6	462
At 31 December 2014						
As investor						
Securitisations						
- less than or equal to 10%	1,430	451	1,881	9	3	12
- greater than 10% and less than or equal to 20%	622	–	622	9	–	9
- greater than 20% and less than or equal to 50%	–	–	–	–	–	–
- greater than 50% and less than or equal to 100%	3,673	–	3,673	311	–	311
- greater than 100% and less than or equal to 650%	–	–	–	–	–	–
- greater than 650% and less than 1,250% - 1,250%	19	7	26	20	7	27
	5,744	458	6,202	349	10	359
Re-securitisations						
- 1,250%	7	–	7	7	–	7
	5,751	458	6,209	356	10	366

Securitisation exposures are presented as the principal amount net of specific provision or partial write-offs. Capital requirements mean the amount of capital required to be held for that risk based on the risk-weighted amount for that risk multiplied by 8%.

d Securitisation exposures deducted from capital

There were no securitisation exposures deducted from capital (2014: none).

There were no credit-enhancing interest-only strips and other exposures that have been allocated a risk-weight of 1,250% by the group (2014: none).

Supplementary Notes on the Financial Statements (unaudited) (continued)**8 Asset securitisation (continued)****e Other disclosures**

- (i) There were no securitisation transactions that were subject to an early amortisation provision in which the group was the originating institution (2014: none).
- (ii) There were no securitisation transactions under the internal ratings-based (securitisation) approach which were covered by recognised guarantees or recognised credit derivative contracts during the year (2014: none). There were no re-securitisation exposures to which credit risk mitigation or guarantees were applied (2014: none).
- (iii) There were no affiliates within the meaning of section 35 of the Banking (Capital) Rules that the group managed or advised, which invested in the securitisation exposures issued by (i) the group; or (ii) the SPEs of which the group was a sponsor. (2014: none)
- (iv) At 31 December 2015, there was no corporate loan exposure in the banking book held by the group with the intention of transferring into a securitisation transaction (2014: HK\$1,589m).

9 Market risk

Market risk is the risk that movements in market factors, including foreign exchange rates, interest rates, credit spreads or equity and commodity prices will result in profits or losses to the group. The group uses an internal models approach to calculate its general market risk for the risk categories of interest rate and foreign exchange (including gold) exposures, and equity exposures. The group also uses an internal models approach to calculate its market risk in respect of specific risk for interest rate exposures and equity exposures. The group uses the standardised approach for calculating other market risk positions as well as trading book securitisation exposures.

The group's market risk capital requirement under the internal models approach uses Value at Risk ('VaR'), stressed VaR and an incremental risk charge. The comprehensive risk charge is not used by the group.

Market risk capital requirement

	At 31 December	
	2015 HK\$m	2014 HK\$m
Under the standardised (market risk) approach		
Commodity exposures	1	–
Equity exposures	25	10
Interest rate exposures- non-securitisations	–	–
Interest rate exposures- securitisations	6	10
Under the internal models approach		
VaR	1,096	1,449
Stressed VaR	2,292	2,413
Incremental risk charge	3,722	6,045
Add-ons for interest rate	282	696
Add-ons for equity	700	833
Capital requirement for market risk	8,124	11,456

Capital requirement means the amount of regulatory capital which the group is required to hold for an exposure to a relevant risk which, if multiplied by 12.5, becomes the risk-weighted amount of that exposure for that risk.

9 Market risk (continued)

Methodology and Characteristics of Market Risk Models

VaR and stressed VaR models-

VaR is a technique that estimates the potential losses on risk positions as a result of movements in market rates and prices over a specified time horizon and to a given level of confidence. The use of VaR is integrated into market risk management and is calculated for all trading positions regardless of how the group capitalises those exposures. Where there is no approved internal model, the group uses the appropriate local rules to capitalise exposures.

In addition, the group calculates VaR for non-trading portfolios in order to have a complete picture of market risk. Our models are predominantly based on historical simulation. VaR is calculated at a 99% confidence level for a one-day holding period. Where VaR is not calculated explicitly, alternative tools are used as summarized in the Market Risk Stress testing section below.

The VaR models derive plausible future scenarios from past series of recorded market rates and prices, taking into account inter-relationships between different markets and rates such as interest rates and foreign exchange rates. The models also incorporate the effect of option features on the underlying exposures.

The historical simulation models used incorporate the following features:

- historical market rates and prices are calculated with reference to foreign exchange rates and commodity prices, interest rates, equity prices and the associated volatilities;
- potential market movements utilised for VaR are calculated with reference to data from the past two years; and

The nature of the VaR models means that an increase in observed market volatility will lead to an increase in VaR without any changes in the underlying positions.

VaR measures are calculated to a 99% confidence level and use a one-day holding period, whereas stressed VaR uses a 10-day holding period.

Historical, hypothetical and technical scenario stress testing is performed on positions on a weekly basis. Back-testing of the interest rate, foreign exchange, equity and credit spread models uses actual and hypothetical profits and losses from trading operations and compares these to overall VaR on a daily basis.

Our VaR model is designed to capture significant basis risks such as credit default swaps versus bond, asset swap spreads and cross-currency basis. Other basis risks which are not completely covered in VaR, such as the Libor tenor basis, Libor-OIS basis, dividend and correlation risks, are complemented by risk-not-in-VaR ('RNIV') calculations and are integrated into the capital framework. These add-ons are calibrated at least as conservatively as comparable risk factors under the internal models approach.

To enable group entities to aggregate and hold a risk-adjusted amount of capital resources appropriate to the group, all entities with trading book portfolios have adopted the group's VaR approach.

A comparison of the group's trading VaR with the actual profit and loss during the year reveals no loss side back-testing exceptions. For capital charge calculation purposes, the number of loss exceptions is accumulated on a 250 business day basis.

Incremental risk charge ('IRC')

The IRC measures the default and migration risk of issuers of traded instruments. It is computed using Monte-Carlo simulation and employing a multi-factor Gaussian Copula model.

The IRC model is calibrated to the 99.9th percentile loss over a one-year capital horizon. Risk factors covered include credit migration, default, product basis, concentration, hedge mismatch, recovery rate and liquidity.

Liquidity horizons are assessed based on a combination of factors including issuer type, currency and size of exposure, and are floored to three months.

The IRC is a standalone charge generating no diversification benefit with other charges.

As part of normal model oversight, the IRC model is periodically recalibrated in order to continue accurately to capture the risk profile in a stressed environment.

Supplementary Notes on the Financial Statements (unaudited) (continued)**9 Market risk (continued)****Analysis of VaR, stressed VaR and incremental risk charge measures**

The group's VaR for the positions covered by the internal models approach were as follows:

	2015 HK\$m	2014 HK\$m
Total		
Year end	93	177
Average	137	138
Maximum	234	192
Minimum	80	76
Interest rate		
Year end	71	153
Average	102	125
Maximum	196	176
Minimum	60	66
Foreign exchange		
Year end	40	30
Average	66	49
Maximum	118	86
Minimum	31	17
Credit spread		
Year end	29	27
Average	27	23
Maximum	45	41
Minimum	13	11
Equity		
Year end	23	28
Average	17	18
Maximum	30	31
Minimum	8	7

The above table is prepared in accordance with the basis of preparation used to calculate the group's market risk capital charge under the internal models approach. The preparation basis and the amounts shown are different from those disclosed in the Risk Report of the *Annual Report and Accounts 2015*, which reflects the group's trading VaR within Global Markets where the management of market risk is principally undertaken.

The group's stressed VaR for the positions covered by the internal models approach was as follows:

	2015 HK\$m	2014 HK\$m
Year end	671	800
Average	672	813
Maximum	1,025	1,439
Minimum	361	545

The following table shows an analysis of the group's incremental risk charge:

	2015 HK\$m	2014 HK\$m
Year end	3,534	5,993
Average	4,976	6,668
Maximum	7,382	8,169
Minimum	3,534	5,550

10 Operational risk

The group uses the standardised (operational risk) approach to calculate its operational risk.

	At 31 December	
	2015 HK\$m	2014 HK\$m
Capital requirement for operational risk	23,893	23,227

Capital requirement means an amount of regulatory capital which the group is required to hold for an exposure to a relevant risk which, if multiplied by 12.5, becomes the risk-weighted amount of that exposure for that risk.

11 Equity exposures in the banking book

Investments in equity shares which are intended to be held on a continuing basis, but which are not investments in associates, jointly controlled entities or subsidiaries, are classified as available-for-sale securities and are reported in the balance sheet as financial investments. Available-for-sale securities are measured at fair value as described in Notes 3(h) and (i) in the *Annual Report and Accounts 2015*. Included within this category are primarily investments made by the group for strategic purposes, which are subject to additional internal procedures and approvals to ensure that the investment is in accordance with the group's and HSBC Group's strategy and to ensure compliance with all relevant regulatory and legal restrictions. In some cases, additional investments may be made later such that the investee becomes an associate, jointly controlled entity or subsidiary, at which point the investment is reclassified in accordance with the group's accounting policies. In certain cases, some investments may be held for sale such that their carrying amounts will be recovered principally through sale, they are available for sale in their present condition and their sale is highly probable. These are reclassified and measured following the group's accounting policies as described in note 3(ad) in the *Annual Report and Accounts 2015*.

	2015 HK\$m	2014 HK\$m
Realised gains from sales for the year	10,758	4,573
Unrealised gains included in reserves but not through the income statement	3,084	12,859

12 Interest rate exposures in the banking book

A principal part of our management of market risk in non-trading portfolios is to monitor the sensitivity of projected net interest income at least quarterly under varying interest rate scenarios (simulation modelling). The group aims, through its management of market risk in non-trading portfolios, to mitigate the effect of prospective interest rate movements which could reduce future net interest income, while balancing the cost of such hedging activities on the current net revenue stream.

For simulation modelling, our businesses use a combination of scenarios and assumptions relevant to them and local markets as well as standard scenarios which are required throughout the HSBC Group. The standard scenarios are consolidated to illustrate the combined pro forma effect on the group's consolidated portfolio valuations and net interest income.

The table below sets out the effect on future net interest income of an incremental 25 basis points parallel rise or fall in all yield curves at the beginning of each quarter during the 12 months from 1 January. Assuming no management actions, the sensitivity of projected net interest income is as follows:

Supplementary Notes on the Financial Statements (unaudited) (continued)**12 Interest rate exposures in the banking book (continued)**

Change in projected net interest income arising from a shift in yield curves of:

Underlying Currency	2016 Projections HK\$m						2015 Projections HK\$m
	HK dollar	US dollar	Renminbi	Singapore dollar	Others	Total	Total
+25 basis points at the beginning of each quarter.....	1,719	1,780	407	379	2,002	6,287	5,384
-25 basis points at the beginning of each quarter.....	(5,042)	(3,822)	(497)	(458)	(1,246)	(11,065)	(8,681)

The sensitivity analysis is based on the simplified assumption that Balance Sheet Management positioning remains unchanged. As the group is a deposit led bank our deposit taking businesses generally benefit from rising interest rates. The main drivers of the year-on-year changes in the group's projected net interest income were due to higher implied Hong Kong dollar and US dollar yield curves under a reducing interest rate scenario, wider margins in a rising interest rate scenario and a decrease in the funding requirements of the trading book. Projected net interest income and its associated sensitivity, as reflected in the table above, include the expense of internally funding trading assets, while the related revenue is reported in 'Net trading income'

The interest rate sensitivities set out in the table above are illustrative only and are based on simplified scenarios. The figures represent the effect of the pro forma movements in net interest income based on the projected yield curve scenarios and the group's current interest rate risk profile. This effect, however, does not incorporate actions that would be taken by Balance Sheet Management or in the business units to mitigate the effect of interest rate risk. In practise, Balance Sheet Management seeks proactively to change the interest rate risk profile to minimise losses and optimise net revenues. The projections above also assume that interest rates of all maturities move by the same amount (although rates are not assumed to become negative in the falling rates scenario) and, therefore, do not reflect the potential impact on net interest income of some rates changing while others remain unchanged. In addition, the projections take account of the effect on net interest income of anticipated differences in changes between interbank interest rates and interest rates linked to other bases (such as Central Bank rates, or product rates over which the entity has discretion in terms of the timing and extent of rate changes). The projections make other simplifying assumptions, including that contractually fixed term positions run to maturity, managed rate products and non-interest bearing balances, such as interest free current accounts, are subject to interest rate risk behaviouralisation, and any material effect from the extent to which movements in interest rates will alter the demand for the group's products and how customers' behaviour may change with movements in interest rates, such as loan repayments are incorporated.

Projecting the movements in net interest income from prospective changes in interest rates is a complex interaction of structural and managed exposures. The group's exposure to the effect of movements in interest rates on its net interest income arises in two main areas: savings and demand deposit accounts and Balance Sheet Management portfolios.

- The net interest income of savings and demand deposit accounts increases as interest rates rise and decreases as interest rates fall. However, this risk is asymmetrical in a very low interest rate environment as there is limited room to lower deposit pricing in the event of interest rate reductions.
- Interest rate risk is transferred from the commercial bank to Balance Sheet Management under our policy where interest rate risk is managed within defined limits.

13 Off-balance sheet exposures other than derivative transactions

	At 31 December	
	2015 HK\$m	2014 HK\$m
Contract amounts		
Direct credit substitutes	69,988	68,422
Transaction-related contingencies	152,810	142,811
Trade-related contingencies	99,461	107,766
Forward asset purchases	2,135	2,329
Forward forward deposits placed	1,615	435
Commitments that are unconditionally cancellable without prior notice	1,879,081	1,605,529
Commitments which have an original maturity of not more than one year	52,023	62,886
Commitments which have an original maturity of more than one year	168,258	173,829
	2,425,371	2,164,007
Risk-weighted amounts	264,216	236,299

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

For accounting purposes, acceptances and endorsements are recognised on the balance sheet in 'Other assets' in accordance with HKAS 39 'Financial Instruments: Recognition and Measurement'. For the purpose of the Banking (Capital) Rules, acceptances and endorsements are included in the capital adequacy calculation as if they were contingencies.

14 Loans and advances to customers by geographical area

Analysis of loans and advances to customers by geographical areas according to the location of counterparties, after recognised risk transfer:

	Hong Kong HK\$m	Rest of Asia-Pacific HK\$m	Other HK\$m	Total HK\$m
At 31 December 2015				
Gross loans and advances to customers	1,371,783	1,194,267	207,769	2,773,819
At 31 December 2014				
Gross loans and advances to customers	1,336,446	1,256,404	232,886	2,825,736

Supplementary Notes on the Financial Statements (unaudited) (continued)**15 Loans and advances to customers by industry sectors**

The following analysis of the group's loans and advances to customers is based on the categories contained in the 'Quarterly Analysis of Loans and Advances and Provisions – (MA(BS)2A)' return required to be submitted to the HKMA by branches of the Bank and by banking subsidiaries in Hong Kong.

	Gross advances at 31 December		Collateral and other security at 31 December	
	2015 HK\$m	2014 HK\$m	2015 HK\$m	2014 HK\$m
Gross loans and advances to customers for use in Hong Kong				
<i>Industrial, commercial and financial</i>				
Property development	87,696	90,524	34,282	24,370
Property investment	240,018	240,221	182,025	187,070
Financial concerns	55,658	39,510	36,968	19,944
Stockbrokers	6,685	7,527	1,133	1,773
Wholesale and retail trade	94,460	106,875	22,996	29,165
Manufacturing	47,486	50,755	12,720	13,523
Transport and transport equipment	43,566	47,046	25,654	23,748
Recreational activities	718	415	288	284
Information technology	17,356	10,125	1,465	1,892
Others	108,466	112,466	51,096	38,285
	702,109	705,464	368,627	340,054
<i>Individuals</i>				
Advances for the purchase of flats under the Hong Kong Government's Home Ownership Scheme, Private Sector Participation Scheme and Tenants Purchase Scheme	27,702	26,671	27,702	26,671
Advances for the purchase of other residential properties ..	413,768	378,992	413,753	378,992
Credit card advances	55,353	53,499	—	—
Others	74,999	64,523	38,043	31,547
	571,822	523,685	479,498	437,210
Gross loans and advances to customers for use in Hong Kong	1,273,931	1,229,149	848,125	777,264
Trade finance	166,107	161,250	34,697	32,260
Gross loans and advances to customers for use outside Hong Kong	1,333,781	1,435,337	473,317	522,027
Gross loans and advances to customers	2,773,819	2,825,736	1,356,139	1,331,551

The categories of advances, and the relevant definitions, used by the HKMA differ from those used for internal purposes by the HSBC Group as disclosed in note 15 on the financial statements in the *Annual Reports and Accounts 2015*.

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

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

16 Mainland activities

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

The comparatives have been restated due to revised interpretation of HKMA requirement.

	On-balance sheet exposure HK\$m	Off-balance sheet exposure HK\$m	Total exposures HK\$m
At 31 December 2015			
Types of Counterparties			
1. Central government, central government-owned entities and their subsidiaries and joint ventures ('JVs')	191,692	10,303	201,995
2. Local governments, local government-owned entities and their subsidiaries and JVs.....	45,911	6,866	52,777
3. People's Republic of China ('PRC') nationals residing in mainland China or other entities incorporated in mainland China and their subsidiaries and JVs	221,513	27,012	248,525
4. Other entities of central government not reported in item 1 above	10,317	763	11,080
5. Other entities of local governments not reported in item 2 above.....	6,736	1,125	7,861
6. PRC nationals residing outside mainland China or entities incorporated outside mainland China where the credit is granted for use in mainland China	73,418	7,644	81,062
7. Other counterparties where the exposures are considered by the reporting institution to be non-bank mainland China exposures	61,189	3,333	64,522
Total	610,776	57,046	667,822
Total assets after provision	4,022,835		
On-balance sheet exposures as percentages of total assets.....	15.18%		
	On-balance sheet exposure HK\$m	Off-balance sheet exposure HK\$m	Total exposures HK\$m
At 31 December 2014			
Types of Counterparties			
1. Central government, central government-owned entities and their subsidiaries and joint ventures ('JVs')	263,489	9,714	273,203
2. Local governments, local government-owned entities and their subsidiaries and JVs.....	66,103	6,009	72,112
3. PRC nationals residing in mainland China or other entities incorporated in Mainland China and their subsidiaries and JVs.....	209,951	22,896	232,847
4. Other entities of central government not reported in item 1 above	5,250	2,664	7,914
5. Other entities of local governments not reported in item 2 above.....	1,091	2	1,093
6. PRC nationals residing outside mainland China or entities incorporated outside mainland China where the credit is granted for use in mainland China	76,295	11,214	87,509
7. Other counterparties where the exposures are considered by the reporting institution to be non-bank mainland China exposures	55,251	2,050	57,301
Total	677,430	54,549	731,979
Total assets after provision	3,908,505		
On-balance sheet exposures as percentages of total assets.....	17.33%		

Supplementary Notes on the Financial Statements (unaudited) (continued)**17 International claims**

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

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

Comparative figures for 2014 have not been provided as the current year is the first year of disclosure.

	Banks HK\$m	Official sector HK\$m	Non-bank financial institutions HK\$m	Non-financial private sector HK\$m	Others HK\$m	Total HK\$m
At 31 December 2015						
Developed countries	461,536	503,088	154,330	239,419	–	1,358,373
of which: United States	47,871	253,652	28,895	50,599	–	381,017
Offshore centres	83,297	8,719	57,780	401,698	839	552,333
Developing Asia and Pacific	398,275	89,010	41,544	386,748	177	915,754
of which: mainland China	310,337	49,652	17,875	202,518	117	580,499

18 Foreign currency positions

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

	United States dollars	Singapore dollars	Brunei dollars	Renminbi
At 31 December 2015				
Spot assets	1,755,460	214,592	11,405	601,725
Spot liabilities	(1,886,435)	(185,277)	(15,168)	(576,803)
Forward purchases	8,316,811	156,565	212	2,603,843
Forward sales	(8,172,575)	(182,482)	(190)	(2,628,291)
Net options positions	5,232	(9)	–	(3,170)
Net long (net short) position	18,493	3,389	(3,741)	(2,696)
At 31 December 2014				
Spot assets	1,743,998	296,573	15,535	728,481
Spot liabilities	(1,892,847)	(241,818)	(19,643)	(698,814)
Forward purchases	8,154,446	333,035	243	2,262,230
Forward sales	(7,978,516)	(384,261)	(111)	(2,286,303)
Net options positions	10,047	10	–	(6,641)
Net long (net short) position	37,128	3,539	(3,976)	(1,047)

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

19 Senior management compensation and benefits

Remuneration of senior management and key personnel

The following tables show the remuneration paid to senior management and key personnel. These disclosures are in compliance with the guideline in Part 3 (Disclosure on remuneration) of the HKMA Supervisory Policy Manual CG-5 ‘Guideline on a Sound Remuneration System’.

Senior management is defined as those persons responsible for oversight of the group’s strategy, activities or material business lines. This includes the Executive Directors, Executive Committee members, Chief Executive, Alternative Chief Executive and Managers as registered with the HKMA. There were 27 members of senior management in 2015 (2014: 26 members). This includes one member (2014: one) who is a Director of, and is remunerated by, HSBC Holdings plc and is consequently not included in the disclosures below.

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

The group follows the remuneration system of HSBC Holdings plc. Please refer to the Director’s Remuneration Report in the *Annual Report and Accounts* of HSBC Holdings plc for details of the governance structure and the major design characteristics of the remuneration system.

Analysis of remuneration between fixed, variable, deferred and non-deferred amounts

	2015			2014		
	Senior management (26 people) HK\$m	Key personnel (242 people) HK\$m	Total HK\$m	Senior management (25 people) HK\$m	Key personnel (226 people) HK\$m	Total HK\$m
Fixed						
Cash based	116	924	1,040	115	911	1,026
Share based	110	128	238	111	139	250
Total fixed pay	226	1,052	1,278	226	1,050	1,276
Variable¹						
Cash	51	278	329	47	255	302
Non-Deferred Shares	50	265	315	47	251	298
Deferred cash	64	238	302	60	213	273
Deferred shares	76	242	318	74	214	288
Total variable pay	241	1,023	1,264	228	933	1,161

Supplementary Notes on the Financial Statements (unaudited) (continued)**19 Senior management compensation and benefits (continued)***Analysis of deferred remuneration*

	2015			2014		
	Senior management (26 people) HK\$m	Key personnel (242 people) HK\$m	Total HK\$m	Senior management (25 people) HK\$m	Key personnel (226 people) HK\$m	Total HK\$m
Deferred remuneration at 31 December						
Outstanding, unvested ^{2, 4}	382	859	1,241	452	1,076	1,528
Outstanding, cash	136	267	403	144	170	314
Outstanding, shares ⁵	246	592	838	308	906	1,214
Awarded during the year	126	401	527	200	550	750
Paid out	147	476	623	149	625	774
Deferred shares paid out ³	80	402	482	86	554	640
Deferred cash paid out	67	74	141	63	71	134
Reduced through performance adjustment	—	—	—	—	—	—

- The forms of variable remuneration and the proportion deferred are based on the seniority, role and responsibilities of employees and their level of total variable compensation.*
- Outstanding, unvested, deferred remuneration is exposed to ex post explicit adjustments.*
- There is no retained remuneration exposed to ex post explicit adjustments as at 31 December 2015 and 31 December 2014.*
- There is no reduction of deferred remuneration and retained remuneration due to ex post explicit adjustments during 2015 and 2014.*
- Outstanding, unvested, deferred shares are exposed to ex post implicit adjustments. The total value of these shares in 2015 and 2014 are calculated based on the closing market share price as at 31 December of the respective financial years. HSBC's share price is 17% lower as at 31 December 2015 when compared to that of 31 December 2014.*

20 Basis of consolidation

The basis of consolidation for financial accounting purposes is in accordance with Hong Kong Financial Reporting Standards, as described in Note 1 on the financial statements in the *Annual Report and Accounts 2015*.

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

A list of these subsidiaries is shown below:

	Principal activity	At 31 December 2015		At 31 December 2014	
		Total assets HK\$m	Total equity HK\$m	Total assets HK\$m	Total equity HK\$m
HSBC Broking Futures (Hong Kong) Ltd	Futures Broking	2,915	589	2,699	464
HSBC Broking Services (Asia) Ltd and its subsidiaries	Broking services	16,806	3,014	16,698	2,694
HSBC Corporate Advisory (Malaysia) Sdn Bhd ¹	Financial Services	6	5	n/a	n/a
HSBC Global Asset Management Holdings (Bahamas) Ltd	Asset management	124	124	125	124
HSBC Global Asset Management (Hong Kong) Ltd	Asset management	617	363	658	402
HSBC Investment Funds (Hong Kong) Ltd	Asset management	319	157	266	113
HSBC Global Asset Management (Japan) K.K.	Asset management	146	76	161	75
HSBC Global Asset Management (Singapore) Ltd	Asset management	92	55	124	86
HSBC Insurance (Asia-Pacific) Holdings Ltd and its subsidiaries	Insurance	305,340	22,207	284,555	21,485
HSBC InvestDirect (India) Ltd and its subsidiaries	Financial Services	637	497	676	485
HSBC Securities (Asia) Ltd and its subsidiaries	Broking services	435	421	431	420
HSBC Securities (Japan) Ltd	Broking services	95,063	1,213	86,246	1,198
HSBC Securities (Singapore) Pte Ltd	Broking services	174	60	114	31
HSBC Securities Brokers (Asia) Ltd	Broking services	10,094	4,264	16,677	3,958
Hang Seng (Nominee) Ltd ²	Nominee services	n/a	n/a	–	–
Hang Seng Bank (Trustee) Ltd ²	Trustee services	n/a	n/a	5	3
Hang Seng Futures Ltd	Futures Broking	102	102	103	102
Hang Seng Insurance Co. Ltd and its subsidiaries	Insurance	112,857	9,139	103,945	10,170
Hang Seng Investment Management Ltd	Asset management	946	910	870	557
Hang Seng Investment Services Ltd	Investment services	9	9	9	9
Hang Seng Securities Ltd	Broking services	2,493	1,596	4,462	1,329

¹ The entity is excluded from consolidation for regulatory purposes in 2015.

² With effect from 1 January 2015 these entities are included in consolidation for regulatory purposes.

For insurance entities, the figures shown above exclude deferred acquisition cost assets as these are derecognised for consolidation purpose due to the recognition of the present value of in-force long-term insurance business ('PVIF') on long-term insurance contracts and investment contracts with discretionary participation features at group level. The PVIF asset of HK\$36,897m (31 December 2014: HK\$ 32,389m) and the related deferred tax liability, however, are recognised at the consolidated group level only, and are therefore also not included in the asset or equity positions for the standalone entities shown above.

There are no subsidiaries which are included within both the accounting scope of consolidation and the regulatory scope of consolidation but where the method of consolidation differs at 31 December 2015 and 31 December 2014.

There are no subsidiaries which are included within the regulatory scope of consolidation but not included within the accounting scope of consolidation at 31 December 2015 and 31 December 2014.

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