

PILLAR 3 DISCLOSURES

31 December 2016



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Standard Chartered Bank is authorised by the Prudential Regulation Authority (PRA) and regulated by the Financial Conduct Authority and the PRA. Within this document 'the Group' refers to Standard Chartered PLC together with its subsidiary undertakings. The regions of Greater China, North East (NE) Asia, South Asia, ASEAN, MENAP, are defined in the Glossary on pages 80 – 84. Throughout this document unless specified the disclosures are at Group level. Throughout this document, unless another currency is specified, the word 'dollar' or symbol \$ means United States dollar. Throughout this document IRB refers to internal ratings based models. The Group does not use the Foundation IRB approach.

1 Introduction

1.1 Purpose

The Pillar 3 Disclosures comprise detailed information on the underlying drivers of risk-weighted assets (RWA) and capital ratios as at 31 December 2016 in accordance with the European Union's (EU) Capital Requirements Regulation (CRR) as implemented in the United Kingdom (UK) by the Prudential Regulation Authority (PRA).

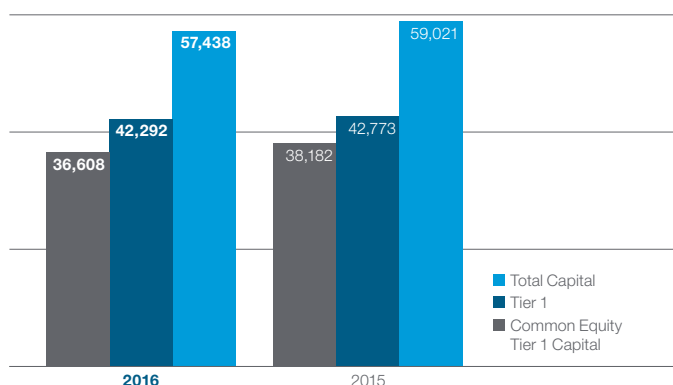
1.2 Highlights

- The Group's balance sheet remains resilient, well diversified and highly liquid with an efficient funding structure and low leverage.
- The Group is well capitalised with an end-point Common Equity Tier 1 (CET1) ratio of 13.6 per cent that was ahead of the Group's prevailing 2016 CET1 requirement of 7.1 per cent and the Group's

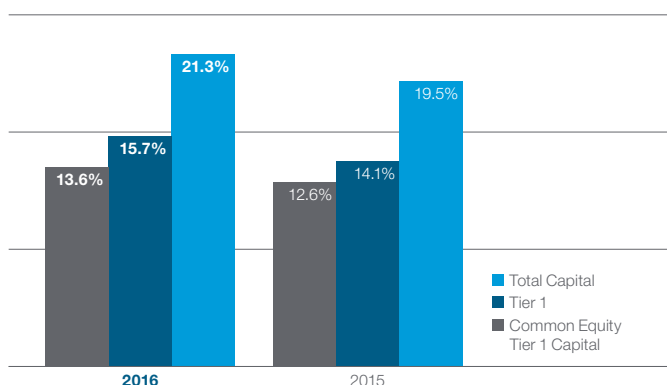
current expected 2019 minimum CET1 requirement of 9.7 per cent, comprising the Pillar 1 and 2A minimum requirements and CRD IV capital buffers.

- The Group is not highly leveraged and only 3.6 per cent of its assets are encumbered. Its leverage ratio of 5.7 per cent is ahead of the current known 2019 leverage requirement of 3.4 per cent.
- The Group continues to manage its balance sheet proactively, with a particular focus on the efficient management of RWA. Over the course of 2016, Group RWA reduced by \$33.5 billion, or 11 per cent, mainly due to management actions including more selective origination, de-risking, disposals and other efficiencies.

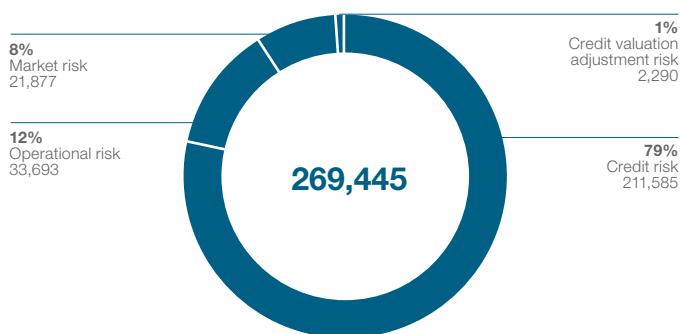
Capital base \$million



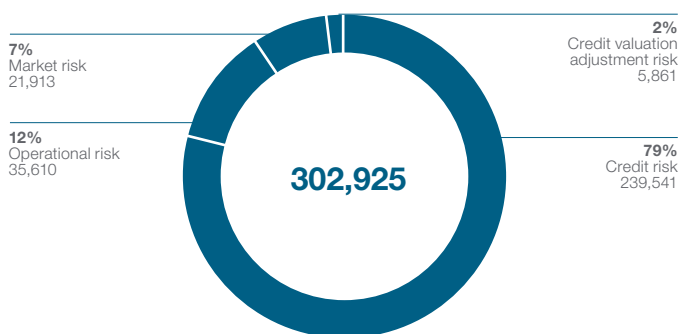
Capital ratios transitional %



RWA by risk type 2016 \$million



RWA by risk type 2015 \$million



1.3 Regulatory disclosure framework

The Group complies with the Basel III framework as implemented in the United Kingdom. It is built on the three pillars of the Basel II framework.

- | | |
|-----------|--|
| Pillar 1: | Prescribes the minimum capital requirements for credit risk, market risk and operational risk. |
| Pillar 2: | Covers the consideration of whether further capital is required in addition to Pillar 1 calculations. |
| Pillar 3: | Aims to provide a consistent and comprehensive disclosure framework that enhances comparability between banks and further promotes improvements in risk management. Pillar 3 requires all material risks to be disclosed, enabling a comprehensive view of the Group's risk profile. |

The Pillar 3 Disclosures 2016 comprise all information required in the UK and are prepared at the Group consolidated level. Where disclosure has been withheld as proprietary or non-material, as permitted by the rules, appropriate comment has been included. It is the Group's intention that the Pillar 3 Disclosures be viewed as an integral, albeit separately reported, element of the Annual Report and Accounts. The Group considers a number of factors in determining where disclosure is made between the Annual Report and Accounts and Pillar 3, including International Financial Reporting Standards (IFRS), regulatory requirements and industry best practice. A summary of differences and cross references between the Annual Report and Accounts and the Pillar 3 Disclosures can be found on pages 85 to 86 of this document.

Remuneration

The remuneration disclosure follows the requirements of Policy Statement PS10/21 issued in December 2010 by the Financial Services Authority (FSA) and can be found in the Directors' remuneration report in the 2016 Annual Report and Accounts.

G-SIB

The Group has been identified as a Global Systemically Important Bank (G-SIB) by the Financial Stability Board (FSB) since November 2012. The Group's score from the Basel Committee on Banking Supervision's methodology for assessing and identifying G-SIBs has resulted in an additional loss absorbency requirement of 1% of CET1. This requirement is being phased in over the period 1 January 2016 to 1 January 2019. The CRR mandates the Group to publicly disclose the value of its Global Systemically Important Institution (G-SII) indicators on an annual basis. The terms 'G-SIB' and 'G-SII' are interchangeable — 'G-SIB' is used by the FSB and Basel Committee, whereas 'G-SII' is terminology from the CRR. The Standard Chartered PLC 2015 G-SII disclosure is published on: <http://investors.sc.com/en/showresults.cfm?CategoryID=360>

Frequency

In accordance with Group policy the Pillar 3 Disclosures are made annually as at 31 December and are published on the Standard Chartered PLC website aligning with the publication date of the Group's Annual Report and Accounts.

Verification

Whilst the Pillar 3 Disclosures 2016 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. Controls comparable to those for the 2016 Annual Report and Accounts have been applied to confirm compliance with PRA regulations.

- Items excluded on the grounds of materiality: Further quantitative disclosure of specialised lending where the simple risk-weighted approach is used and further qualitative and quantitative disclosures for banking book equities are a requirement under Pillar 3. The Group have not made any further disclosure due to the immateriality of the specialised lending, and banking book equity portfolios subject to this approach.
- Comparatives: The European Banking Authority (EBA) Guidelines do not require comparatives to be presented on implementation therefore comparatives have not been presented for all tables.

1.4 Risk management

The management of risk is a key component of the Group's business. One of the main risks we incur arises from extending credit to customers through our trading and lending operations. Beyond credit risk, we are also exposed to a range of other risk types such as country cross-border, market, liquidity, capital, operational, pension, reputational, conduct and other risks that are inherent in our strategy, product range and geographical coverage.

In the Risk management approach section in the 2016 Annual Report and Accounts we describe our approach and strategy for managing risk. We discuss our risk management objectives, scope and main content of risk reporting, and policies in relation to our main activities and significant risk.

The Group is exposed to several key risks:

- Credit risk (refer to section "Credit risk" on pages 142 to 145 of the 2016 Annual Report and Accounts);
- Country cross-border risk (refer to section "Country cross-border risk" on page 145 of the 2016 Annual Report and Accounts);
- Market risk (refer to section "Market risk" on pages 145 to 146 of the 2016 Annual Report and Accounts);
- Liquidity and Funding risk (refer to section "Liquidity and Funding risk" on pages 147 of the 2016 Annual Report and Accounts);
- Operational risk (refer to section "Operational risk" on pages 147 to 148 of the 2016 Annual Report and Accounts);
- Reputational risk (refer to section "Reputational risk" on page 148 to 149 of the 2016 Annual Report and Accounts);
- Pension risk (refer to section "Pension risk" on page 149 of the 2016 Annual Report and Accounts);
- Strategic risk (refer to section "Strategic risk" on page 149 of the 2016 Annual Report and Accounts).

Credit Risk

Credit risk is the potential for loss due to the failure of a counterparty to meet its obligations to pay the Group in accordance with agreed terms. Credit exposures arise from both the banking and trading books.

Credit risk is managed through a framework that sets out policies and procedures covering the measurement and management of credit risk. There is segregation of duties between transaction originators in the businesses and approvers in the Risk function. Credit exposure limits are approved within a defined credit approval authority framework.

The Group manages its credit exposures following the principle of diversification across products, geographies, industries, collateral types and client segments.

The Group uses the advanced Internal Ratings Based (IRB) approach to calculate credit risk capital requirements with the approval of our relevant regulators. This approach builds on the Group's risk management practices and is the result of a continuing investment in data warehouses and risk models.

For portfolios where the Group does not have IRB approval, or where the exposures are permanently exempt from the IRB approach, the Standardised Approach (SA) is used.

Refer to "Credit risk" (pages 142 to 145) in the 2016 Annual Report and Accounts where we describe the main components of credit risk management, including our credit risk profile, credit risk measurement and policies set in line with risk appetite. For the scope and main content of reporting to senior management, refer to the credit monitoring section on page 144 in the 2016 Annual Report and Accounts.

1.4 Risk Management continued

Market Risk

Market risk is the potential for loss of economic value due to adverse changes in financial market rates or prices. The Group's exposure to market risk arises predominantly from these sources:

- Trading book:
 - The Group provides clients access to financial markets, facilitation of which entails the Group taking moderate market risk positions. All trading teams support client activity; there are no proprietary trading teams. Income earned from market risk-related activities is primarily driven by the volume of client activity rather than risk-taking. From 1 January 2016 Credit and Funding Valuation Adjustment (XVA) risk has been recognised in Trading book market risk.
- Non-trading book:
 - The Asset and Liability Management (ALM) desk is required to hold a liquid assets buffer much of which is held in high-quality marketable debt securities.
 - The Group has capital invested and related income streams denominated in currencies other than US dollars. To the extent that these are not hedged the Group is subject to structural FX risk which is reflected in reserves.

The primary categories of market risk for the Group are interest rate risk, currency exchange rate risk, commodity price risk and Credit valuation adjustment (CVA) credit spread risk.

We use a Value at Risk (VaR) model for the measurement of the market risk capital requirements for part of the trading book exposures where permission to use such models has been granted by the PRA. Where our market risk exposures are not approved for inclusion in VaR models, the capital requirements are determined using standard rules set by the regulatory framework.

Operational Risk

We define operational risk as the potential for loss resulting from inadequate or failed internal processes, people, and systems or from the impact of external events, including legal risks. Operational risk exposures are managed through a set of management processes that drive risk identification, assessment, control and monitoring consistently across the Group. The Group aims to control operational risks to ensure that operational losses (financial or reputational), including any related to conduct of business matters, do not cause material damage to the Group's franchise. The Group applies the Standardised Approach for measuring the capital requirements for operational risk.

1.5 Enhancements and future developments of Pillar 3

The Basel Committee, EU and UK authorities release standards and guidelines and our disclosures are further developed to meet the regulatory and accounting standard requirements as they evolve.

In January 2015, the Basel Committee on Banking Supervision (BCBS) issued the requirements for the first phase of review of the Pillar 3 disclosure. The focus of this phase has been on disclosure in the areas of credit, market, counterparty credit, equity and securitisation risks. In June 2016, the EBA consulted on Guidelines to ensure the harmonised and timely implementation of the revised BCBS Pillar 3 framework in the EU. The EBA Guidelines were finalised in December 2016 and will come into effect from 31 December 2017. However, the Group has adopted a number of templates for year-end 2016 disclosures as recommended for G-SIIs. We have included the EBA table references in the titles of those early adopted templates in brackets.

In August 2016, the PRA issued a statement inviting firms to apply for a temporary modification of the Leverage Ratio part of the PRA Rulebook in response to a recommendation from the Bank of England's (BoE) Financial Policy Committee (FPC) to the PRA in relation to the composition of the total exposure measure for the purposes of calculating the leverage ratio. The FPC had recommended to allow firms to exclude central bank reserves, those assets constituting claims on central banks where they are matched by deposits accepted by the firm that are denominated in the same currency and of identical or

longer maturity, from the exposure measure in the current UK leverage ratio framework.

The principle changes to our Pillar 3 Disclosures 2016 compared with the prior year are:

- Modified UK leverage ratio: The Group has received the PRA's permission for a temporary modification of the Leverage Ratio (see above). This document discloses the modified UK leverage ratio on page 17.
- Credit Risk and Counterparty Credit Risk: Increased granularity of data disclosure in line with the BCBS's revised Pillar 3 Standard and the EBA Guidelines.
- Market Risk: Increased granularity of data disclosure in line with the BCBS's revised Pillar 3 Standard and the EBA Guidelines.
- Significant subsidiaries: The Pillar 3 Disclosures 2016 includes Standard Chartered Bank (Singapore) Ltd and Standard Chartered Bank (Uganda) Ltd as significant subsidiaries as they are Domestically Systemically Important Banks (D-SIBs)

In January 2016, the BCBS issued a second phase of Pillar 3 disclosure requirements. The proposed enhancements issued in this consultative document are to be adopted by either 2017 year-end or the date of the implementation of the underlying policy framework. Taken together with the first phase, they form the consolidated and enhanced Pillar 3 framework. The proposals in this consultative document include:

- the addition of a "dashboard" of key metrics,
- disclosure of hypothetical risk-weighted assets calculated based on the Basel framework's standardised approaches, and
- enhanced granularity for disclosure of prudent valuation adjustments.

The proposals also incorporate additions to the Pillar 3 framework to reflect ongoing reforms to the regulatory framework. These include disclosure requirements for:

- the total loss-absorbing capacity (TLAC) regime for global systemically important banks,
- the proposed operational risk framework, and
- the final standard for market risk

1.6 Accounting and regulatory consolidation

The Pillar 3 Disclosures 2016 are prepared at the Group consolidated level. The accounting policy for financial consolidation is provided in the notes to the financial statements in the 2016 Annual Report and Accounts. All banking subsidiaries are fully consolidated and the treatment is the same for both regulatory and accounting purposes. For associates and joint ventures, the regulatory treatment differs from the accounting policy, which applies the equity accounting method.

The regulatory consolidation approaches used by the Group are shown in the following table, which identifies the principal undertakings, including investments, associates and joint ventures, which are all principally engaged in the business of banking and provision of other financial services.

The primary difference between financial consolidation and regulatory consolidation is PT Bank Permata Tbk, which is equity accounted for financial and fully consolidated for regulatory purposes. PT Bank Permata Tbk's Annual Report and Accounts, in compliance with their local regulations, is published on their website. <https://www.permatabank.com/en/About/Investor-Relations/>

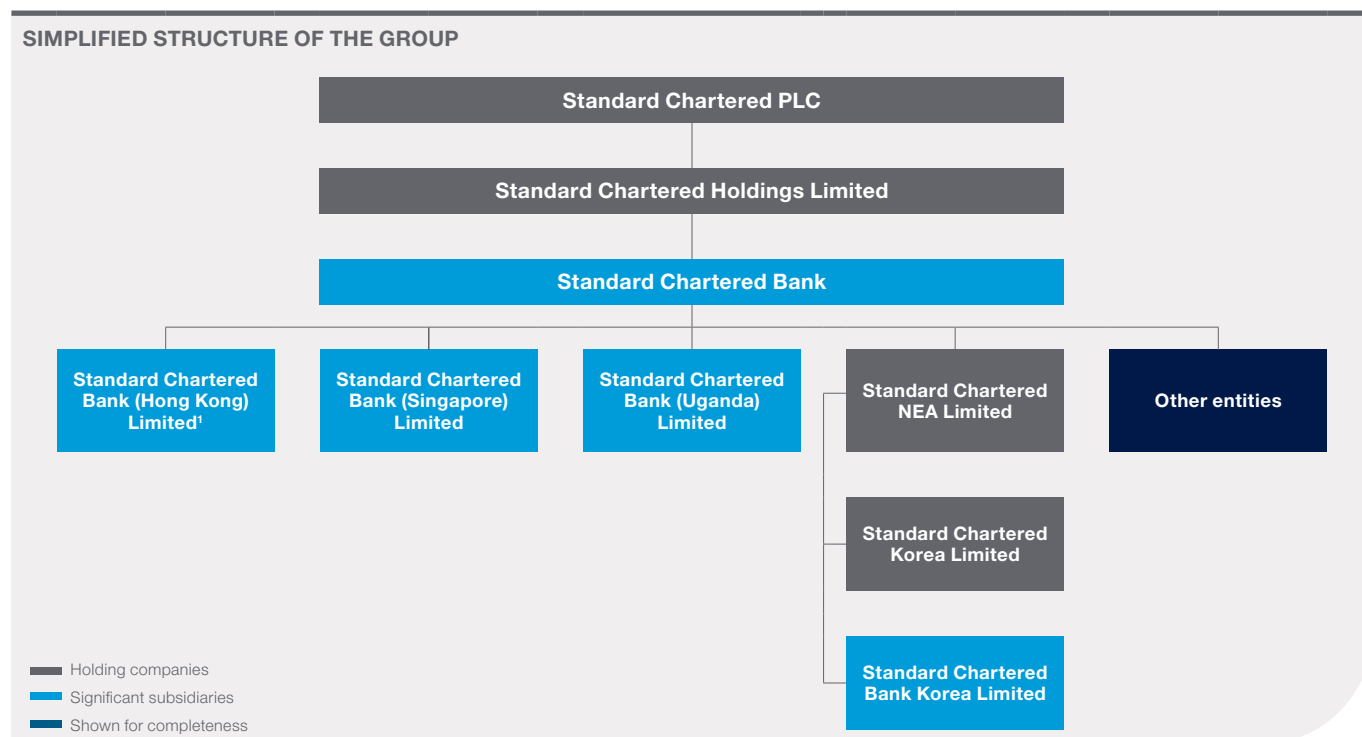
1.6 Accounting and regulatory consolidation continued

Table 1: Regulatory consolidation

Type	Description	Regulatory consolidation	Principal undertakings within each category
Investment	The Group holds no more than 10 per cent of the issued share capital	The Group risk-weights the investment subject to the CRD IV threshold calculation	Agricultural Bank of China
Investment	The Group holds more than 10 per cent and less than 20 per cent of the issued share capital	The Group risk-weights the investment subject to the CRD IV threshold calculation	Asia Commercial Bank China Bohai Bank
Associate	The Group holds at least 20 per cent and up to 50 per cent of the issued share capital	The Group proportionately consolidates its share of the assets, liabilities, income, expenses and exposures	
Joint Venture	The Group enters into a contractual arrangement to exercise joint control over an undertaking	Where the Group's liability to the joint venture is greater than the capital held, full consolidation is undertaken. Otherwise joint ventures are proportionately consolidated	PT Bank Permata Tbk
Subsidiary	The Group holds more than 50 per cent of the issued share capital	The Group fully consolidates the undertaking	Standard Chartered Bank Standard Chartered Bank Korea Limited Standard Chartered Bank Malaysia Berhad Standard Chartered Bank (Pakistan) Limited Standard Chartered Bank (Taiwan) Limited Standard Chartered Bank (Hong Kong) Limited Standard Chartered Bank (China) Limited Standard Chartered Bank (Singapore) Limited Standard Chartered Bank (Thai) Public Company Limited Standard Chartered Bank Nigeria Limited Standard Chartered Bank Kenya Limited Standard Chartered Private Equity Limited, Hong Kong

1.7 Significant subsidiaries

CRR Article 13 concerns the application of disclosure requirements of significant subsidiaries of EU parent institutions and those which are of material significance to their local market. The chart below represents a simplified structure of the Group.



1. Standard Chartered Bank (Hong Kong) Limited is owned 49% by Standard Chartered Holdings Limited and 51% by Standard Chartered Bank

Standard Chartered Bank is the main operating subsidiary of the Group. The Group has four other significant subsidiaries, Standard Chartered Bank (Hong Kong) Limited (regulated by the Hong Kong Monetary Authority (HKMA)), Standard Chartered Bank Korea Limited (regulated by the Financial Supervisory Services (FSS) in Korea), Standard Chartered Bank Singapore Limited (regulated by the Monetary Authority Of Singapore) and Standard Chartered Bank Uganda Limited (regulated by the Bank of Uganda).

Standard Chartered Bank (Singapore) Limited and Standard Chartered Bank (Uganda) Limited qualify as the Group's significant subsidiaries as they are Domestically Systemically Important Banks (D-SIBs). Standard Chartered Bank (Hong Kong) Limited and Standard Chartered Bank Korea Limited disclose separate Pillar 3 reports in compliance with their local regulations. A summary of the disclosure for the significant subsidiaries may be found in Annex 1.

1.8 Comparison of accounting balance sheet and exposure at default

The difference between the basis of consolidation for accounting and regulatory purposes is due to the requirement to proportionately consolidate associates and to fully consolidate one of the Group's joint ventures. The more significant difference between the two bases is the treatment of capital, which is presented in Table 3 based on the Group regulatory balance sheet and not the financial accounting balance sheet.

 For further information on restrictions to movement of funds please refer to the 2016 Annual Report and Accounts Note 31 on page 266.

The following table splits the regulatory balance sheet measured under IFRS into each regulatory risk category which drives the approach applied in the calculation of regulatory exposures and RWAs.

Table 2: Comparison of accounting balance sheet with regulatory risk categories

	2016						
	Assets per Group's balance sheet \$million	Regulatory balance sheet' \$million	Subject to credit risk \$million	Subject to counter-party credit risk \$million	Subject to securitisation framework \$million	Subject to market risk \$million	Not subject to regulatory capital requirements \$million
Assets							
Cash and balances at central banks	70,706	71,658	71,658	–	–	–	–
Financial assets held at fair value through profit or loss	20,077	20,201	3,388	1,902	172	15,062	–
Derivative financial instruments	65,509	65,525	–	65,525	–	65,164	–
Loans and advances to banks	72,609	73,280	51,495	18,072	–	17,885	–
Loans and advances to customers	252,719	260,562	213,821	26,026	16,373	28,289	–
Investment securities	108,972	110,945	103,678	1,447	5,820	–	–
Other assets	38,194	38,729	21,781	–	–	21,430	49
Current tax assets	474	474	474	–	–	–	–
Prepayments and accrued income	2,238	2,302	2,302	–	–	–	–
Interests in associates and joint ventures	1,929	1,216	1,216	–	–	–	–
Goodwill and intangible assets	4,719	4,930	–	–	–	–	4,930
Property, plant and equipment	7,252	7,329	7,329	–	–	–	–
Deferred tax assets	1,294	1,491	1,294	–	–	–	197
Total assets	646,692	658,642	478,436	112,972	22,365	147,830	5,176
Liabilities							
Deposits by banks	36,894	37,019	–	4,022	–	–	32,997
Customer accounts	371,855	381,725	–	33,670	–	–	348,055
Financial liabilities held at fair value through profit or loss	16,598	16,599	–	–	–	3,763	12,836
Derivative financial instruments	65,712	65,715	–	65,715	–	65,258	–
Debt securities in issue	46,700	46,974	–	–	–	–	46,974
Other liabilities	34,111	34,534	713	–	–	13,128	20,694
Current tax liabilities	327	329	–	–	–	–	329
Accruals and deferred income	5,223	5,329	–	–	–	–	5,329
Subordinated liabilities and other borrowed funds	19,523	19,945	–	–	–	–	19,945
of which: considered as Additional Tier 1 capital	–	241	–	–	–	–	241
of which: considered as Tier 2 capital	–	15,774	–	–	–	–	15,774
Deferred tax liabilities	353	354	–	–	–	–	354
Provisions for liabilities and charges	213	220	–	–	–	–	220
Retirement benefit obligation	525	521	–	–	–	–	521
Total liabilities	598,034	609,264	713	103,407	–	82,149	488,253

1.8 Comparison of accounting balance sheet and exposure at default continued

Table 2: Comparison of accounting balance sheet with regulatory risk categories continued

	2015						
	Assets per Group's balance sheet \$million	Regulatory balance sheet \$million	Subject to credit risk \$million	Subject to counter-party credit risk \$million	Subject to securitisation framework \$million	Subject to market risk \$million	Not subject to regulatory capital requirements \$million
Assets							
Cash and balances at central banks	65,312	66,407	66,407	–	–	–	–
Financial assets held at fair value through profit or loss	23,401	23,401	6,530	7,428	96	20,546	–
Derivative financial instruments	63,143	63,169	–	63,169	–	62,319	–
Loans and advances to banks	64,494	65,106	50,052	15,054	–	12,199	–
Loans and advances to customers	257,356	266,997	233,807	11,260	21,931	14,033	–
Investment securities	114,767	115,926	91,287	–	6,489	54	41
Other assets	34,601	35,224	18,999	–	–	17,409	13,430
Current tax assets	388	388	388	–	–	–	–
Prepayments and accrued income	2,174	2,234	2,234	–	–	158	–
Interests in associates and joint ventures	1,937	1,257	1,257	–	–	–	–
Goodwill and intangible assets	4,642	4,848	–	–	–	–	4,848
Property, plant and equipment	7,209	7,293	7,293	–	–	–	–
Deferred tax assets	1,059	1,059	847	–	–	–	212
Total assets	640,483	653,309	479,101	96,911	28,516	126,718	18,531
Liabilities							
Deposits by banks	37,611	37,695	–	7,598	–	–	30,097
Customer accounts	350,633	361,369	–	13,008	–	–	348,361
Financial liabilities held at fair value through profit or loss	20,872	20,872	–	–	–	5,637	20,872
Derivative financial instruments	61,939	61,952	–	61,952	–	61,345	–
Debt securities in issue	59,880	60,199	–	–	–	–	60,199
Other liabilities	32,011	32,344	9,329	–	–	13,567	23,015
Current tax liabilities	769	769	–	–	–	–	769
Accruals and deferred income	5,451	5,540	–	–	–	–	5,540
Subordinated liabilities and other borrowed funds	21,852	22,427	–	–	–	–	22,427
of which: considered as Additional Tier 1 capital	–	1,260	–	–	–	–	1,260
of which: considered as Tier 2 capital	–	17,220	–	–	–	–	17,220
Deferred tax liabilities	293	294	–	–	–	–	294
Provisions for liabilities and charges	215	217	–	–	–	–	217
Retirement benefit obligation	445	439	–	–	–	–	439
Total liabilities	591,971	604,117	9,329	82,558	–	80,549	512,230

The table below shows the effect of regulatory adjustments required to derive the Group's exposure at default (EAD) before collateral for the purposes of calculating its credit risk capital requirements. The total EAD before collateral for credit and counterparty credit risk is further split by geography, industry and maturity in Tables 22 – 24; Standardised credit risk before and after the effect of CRM is presented

in Table 26; Standardised credit and counterparty credit risk by risk weight is presented in Tables 35 – 36 and IRB credit and counterparty credit risk before and after the effect of CRM is presented in Table 30. Information on the Standardised and IRB counterparty credit risk exposures can be found in section 3.9. Further detail on the EAD under the securitisation framework can be found in Table 48.

Table 2: Comparison of accounting balance sheet with regulatory risk categories continued

	2016			2015		
	Subject to credit risk \$million	Subject to counter-party credit risk \$million	Subject to securitisation framework \$million	Subject to credit risk \$million	Subject to counter-party credit risk \$million	Subject to securitisation framework \$million
Total assets amount under regulatory scope of consolidation ¹	478,436	112,972	22,365	479,101	96,911	28,516
Derivatives netting benefit ²	–	(38,737)	–	–	(38,766)	–
Differences due to consideration of provisions	5,800	–	–	7,108	–	–
Differences due to consideration of collateral	–	(25,979)	–	–	(23,252)	–
Differences due to capital deductions	–	–	–	–	–	–
Differences due to off-balance sheet amounts recognised in regulatory exposures	78,433	100,065	1,084	80,567	80,073	810
Differences due to the impact of the use of own-models in exposures	–	–	–	–	–	–
Other	110	459	52	(1,203) ⁴	(488)	151
Regulatory exposure at default pre credit risk mitigation³	562,779	148,780	23,501	565,573	114,478	29,477

1. Regulatory balance sheet includes the full consolidation of PT Bank Permata Tbk, a joint venture (JV)

2. Reflects the effect of master netting agreements in addition to the netting permitted under International Accounting Standard (IAS) 32 requirement

3. Excluding non credit obligation assets

4. Other reported as \$(284) million in 2015 also includes non credit obligation assets of \$(919) million

2 Capital

2.1 Capital management

The Group's capital and leverage position is managed within the Board-approved risk appetite. We utilise capital in support of our clients, the business strategy and to meet regulatory requirements including stress testing and future loss absorption requirements.

The Capital review in the 2016 Annual Report and Accounts on pages 182 to 189 sets out our approach to capital management.

2.2 Capital resources

All capital instruments included in the capital base meet the requirements set out in the CRR for their respective tier of capital, except for those which are subject to a grandfathering period and which will be fully phased out of their respective tier of capital by 1 January 2022.

Table 3 below summarises the consolidated capital position of the Group.

Table 3: Capital base

	2016 \$million	2015 \$million
Total equity per balance sheet	48,658	48,512
Foreseeable dividend net of scrip	(212)	(115)
Other equity instruments (included in Additional Tier 1 Capital)	(5,463)	(3,481)
Non-controlling interests	488	261
Common Equity Tier 1 capital before regulatory adjustments	43,471	45,177

2.2 Capital resources continued

Table 3: Capital base continued

	2016 Transitional position \$million	2016 End point adjustment \$million	2016 End point position \$million	2015 Transitional position \$million
Common Equity Tier 1 (CET1) capital: instruments and reserves				
Capital instruments and the related share premium accounts	5,597	–	5,597	5,596
Of which: Share premium accounts	3,957	–	3,957	3,957
Retained earnings ¹	26,000	–	26,000	29,128
Accumulated other comprehensive income (and other reserves)	11,524	–	11,524	12,180
Non-controlling interests (amount allowed in consolidated CET1)	809	–	809	582
Independently reviewed interim and year-end loss ²	(247)	–	(247)	(2,194)
Foreseeable dividends net of scrip ³	(212)	–	(212)	(115)
Common Equity Tier 1 capital before regulatory adjustments	43,471	–	43,471	45,177
Common Equity Tier 1 capital: regulatory adjustments				
Additional value adjustments	(660)	–	(660)	(564)
Intangible assets	(4,856)	–	(4,856)	(4,820)
Deferred tax assets that rely on future profitability	(197)	–	(197)	(212)
Fair value reserves related to losses on cash flow hedges	85	–	85	38
Negative amounts resulting from the calculation of expected loss	(740)	–	(740)	(569)
Net gains on liabilities at fair value resulting from changes in own credit	(289)	–	(289)	(631)
Defined-benefit pension fund assets	(18)	–	(18)	(4)
Fair value gains from own credit risk related to derivative liabilities	(20)	–	(20)	(34)
Exposure amounts which could qualify for risk weighting	(168)	–	(168)	(199)
Of which: securitisation positions	(134)	–	(134)	(168)
Of which: free deliveries	(34)	–	(34)	(31)
Total regulatory adjustments to Common Equity Tier 1	(6,863)	–	(6,863)	(6,995)
Common Equity Tier 1	36,608	–	36,608	38,182
Additional Tier 1 (AT1) capital: instruments				
Capital Instruments and the related share premium accounts	5,704	(1,735)	3,969	4,611
Of which: classified as equity under applicable accounting standards	5,463	(1,494)	3,969	3,769
Of which: classified as liabilities under applicable accounting standards	241	(241)	–	842
Additional Tier 1 (AT1) capital before regulatory adjustments⁴	5,704	(1,735)	3,969	4,611
Additional Tier 1 capital: regulatory adjustments				
Direct and indirect holdings by an institution of own Additional Tier 1 (AT1) instruments and subordinated loans	(20)	–	(20)	(20)
Total regulatory adjustments to Additional Tier 1 capital	(20)	–	(20)	(20)
Tier 1 capital (T1 = CET1 + AT1)	42,292	(1,735)	40,557	42,773
Tier 2 (T2) capital: instruments and provisions				
Capital instruments and the related share premium accounts	13,587	–	13,587	12,751
Qualifying items and the related share premium accounts subject to phase out from T2	471	(471)	–	640
Qualifying own funds instruments included in T2 issued by subsidiaries and held by third parties	1,118	(399)	719	2,887
Tier 2 capital before regulatory adjustments⁴	15,176	(870)	14,306	16,278
Tier 2 capital: regulatory adjustments				
Direct and indirect holdings by an institution of own Tier 2 instruments and subordinated loans	(30)	–	(30)	(30)
Total regulatory adjustments to Tier 2 capital	(30)	–	(30)	(30)
Tier 2 capital	15,146	(870)	14,276	16,248
Total capital (TC = T1 + T2)	57,438	2,605	54,833	59,021
Total risk-weighted assets	269,445	–	269,445	302,925

2.2 Capital resources continued

Table 4: Capital ratios and risk-weighted assets

	2016 Transitional position \$million	2016 End point adjustment \$million	2016 End point position \$million	2015 Transitional position \$million
Amounts below the thresholds for deduction (before risk weighting)				
Direct and indirect holdings of the capital of financial sector entities where the institution does not have a significant investment in those entities (amount below 10% threshold and net of eligible short positions)	954	–	954	1,284
Direct and indirect holdings by the institution of the CET1 instruments of financial sector entities where the institution has a significant investment in those entities (amount below 10% threshold and net of eligible short positions)	1,347	–	1,347	1,194
Deferred tax assets arising from temporary differences (amount below 10% threshold, net of related tax liability where the conditions in Article 38 (3) are met)	1,173	–	1,173	904
Risk-weighted assets				
Credit risk	211,585	–	211,585	239,541
Credit valuation adjustment risk	2,290	–	2,290	5,861
Operational risk	33,693	–	33,693	35,610
Market risk	21,877	–	21,877	21,913
Total Risk-weighted assets	269,445	–	269,445	302,925
Capital ratios				
Common Equity Tier 1 capital	13.6%	0.0%	13.6%	12.6%
Tier 1 capital	15.7%	(0.6%)	15.1%	14.1%
Total capital	21.3%	(0.9%)	20.4%	19.5%
Capital buffers				
Institution specific buffer requirement (sum of CET1 requirement in accordance with article 92 (1) (a), Pillar 2A CET1 requirement, capital conservation buffer, countercyclical buffer, and systemically important institution buffer expressed as a percentage of risk exposure amount)	7.1%	2.6%	9.7%	5.5%
Of which: capital conservation buffer requirement	0.6%	1.9%	2.5%	N/A
Of which: countercyclical buffer requirement	0.1%	0.0%	0.1%	0.0%
Of which: systematic risk buffer requirement	0.0%	0.0%	0.0%	N/A
Of which: Global systemically important institution (G-SII) or Other Systematically important institution (O-SII) buffer	0.3%	0.7%	1.0%	N/A
Common Equity Tier 1 available to meet buffers (as percentage of risk exposure amount)	7.5%	(0.5%)	7.0%	N/A

1. Retained earnings under CRD IV include the effect of regulatory consolidation adjustments

2. Independently reviewed interim and year-end profits/(losses) are in accordance with the regulatory consolidation

3. Foreseeable dividends as at year end 2016 represents preference share dividends payable in 2017. There are no scrip dividends applicable at year end 2016 due to lack of ordinary dividends

4. Tables 5 and 6 give further details

2.2 Capital resources continued

For regulatory purposes, capital is categorised into two tiers, depending on the degree of permanence and loss absorbency exhibited. These are Tier 1 and Tier 2 capital which are described below.

Tier 1 capital

Tier 1 capital is going concern capital and is available for use to cover risks and losses whilst enabling the organisation to continue trading.

Tier 1 capital comprises permanent share capital, profit and loss account and other eligible reserves, equity non-controlling interests and Additional Tier 1 instruments, after the deduction of certain regulatory adjustments.

Permanent share capital is an item of capital issued by an organisation to an investor, which is fully paid-up and where the proceeds of issue are immediately and fully available.

It can only be redeemed on the winding-up of the organisation. Profit and loss account and other eligible reserves are accumulated resources included in shareholders' funds in an organisation's balance sheet, with certain regulatory adjustments applied.

Equity non-controlling interests represent the equity stakes held by non-controlling shareholders in the Group's undertakings.

Additional Tier 1 securities are deeply subordinated instruments which have loss absorbing qualities such as discretionary coupons, principal write-down or conversion to equity and can therefore be included as Tier 1 capital.

The following table sets out details of the Additional Tier 1 instruments in issue and their primary terms:

Table 5: Additional Tier 1 Capital instruments

Security Ref#	ISIN	Issuer	Description	2016 \$million	2015 \$million
2	GB0008399700	SC PLC	£100 million 8.250% Non-cumulative Irredeemable Preference shares ²	122	146
3	GB0008401324	SC PLC	£100 million 7.375% Non-cumulative Irredeemable Preference shares ²	118	142
4	US85354AA86/USGB84228AT58	SC PLC	\$750 million 6.409% Non-cumulative Redeemable Preference shares ²	747	747
5	US853254AB69 / US853254AC43	SC PLC	\$750 million 7.014% Non-cumulative Redeemable Preference shares ²	747	747
6	USG84228CE61/ US853254AT77	SC PLC	\$2,000 million 6.5% Fixed Rate Resetting Perpetual Subordinated Contingent Convertible Securities	1,987	1,987
7	US853254BA77/ USG84228CQ91	SC PLC	\$2,000 million 7.5% Fixed Rate Resetting Perpetual Subordinated Contingent Convertible Securities	1,983	–
N/A	XS0129229141	SCB	£300 million 8.103% Step-up Callable Perpetual Preferred securities	–	442
N/A	XS0129229141	SCB	£300 million 8.103% Step-up Callable Perpetual Preferred securities	–	530
Total³				5,704	4,741

1. Refer to the Standard Chartered PLC Main Features of Capital Instruments document as published on the Standard Chartered PLC website
N/A references are those redeemed or called so not in the Main Features document

2. These securities are not CRR compliant and will be fully phased out of Tier 1 by 1 January 2022 (2016: \$1,734 million, 2015 \$1,782 million)

3. Reported at carrying value excluding fair value. 2015 balance included ineligible minority interest

2.2 Capital resources continued

Tier 2 capital

Tier 2 capital is gone concern capital to help ensure senior creditors and depositors can be repaid in the event of the organisation's failure. Tier 2 capital consists of capital instruments which are normally of medium to-long-term maturity with an original maturity of at least five years. For regulatory purposes, it is a requirement that these instruments be amortised on a straight-line basis in their final five years

of maturity. The following table sets out the Tier 2 instruments in issue and their primary terms.

Further details of the Group's capital instruments are set out in the Standard Chartered PLC Main Features of Capital Instruments document available on the Group's website at <http://investors.sc.com/en/disclaimer3.cfm>.

Table 6: Tier 2 Capital instruments

Security Ref ¹ #	ISIN	Issuer	Description	2016 \$million	2015 \$million
8	GB0008387283	SC PLC	\$400 million Primary Capital Undated Floating Rate Notes ²	16	44
9	XS0010826633	SC PLC	\$300 million Primary Capital Undated Floating Rate Notes (Series 2) ²	69	80
10	XS0010159159	SC PLC	\$400 million Primary Capital Undated Floating Rate Notes (Series 3) ²	50	64
11	XS0010276466	SC PLC	\$200 million Primary Capital Undated Floating Rate Notes (Series 4) ²	26	50
12	GB0008389008	SC PLC	£150 million Primary Capital Undated Floating Rate Notes ²	15	45
13	US853254AJ95/ XS0874014722	SC PLC	\$2,000 million 3.95% Subordinated Notes 2023	1,994	1,992
14	XS1049699926/ US853254AN08	SC PLC	\$2,000 million 5.7% Subordinated Notes 2044	1,984	1,983
15	XS0803659340	SC PLC	\$1,250 million 4% Subordinated Notes 2022 (callable 2017)	1,250	1,248
16	XS148099641/ US853254BF64	SC PLC	\$1,250 million 4.3% Subordinated Notes 2027	1,239	-
17	XS0736418962	SC PLC	\$1,000 million 5.7% Subordinated Notes 2022	996	995
18	US853254AL42/ XS0969864916	SC PLC	\$1,000 million 5.2% Subordinated Notes 2024	997	996
19a	US853254AK68/ XS0875267394	SC PLC	\$500 million 5.3% Subordinated Notes 2043	491	496
19b	US853254AK68/ XS0875267394	SC PLC	\$250 million 5.3% Subordinated Notes 2043	262	256
20	XS0983704718	SC PLC	€1,250 million 4% Subordinated Notes 2025 (callable 2020)	1,316	1,355
21	XS0858585051	SC PLC	€750 million 3.625% Subordinated Notes 2022	787	809
22	XS1140857316	SC PLC	€500 million 3.125% Subordinated Notes 2024	523	539
23	XS1075419694	SC PLC	£900 million 5.125% Subordinated Notes 2034	1,090	1,302
24	XS1020855588	SC PLC	SGD700 million 4.4% Subordinated Notes 2026 (callable 2021)	484	494
25	US853250AB48/XS0323650787	SCB	\$1,000 million 6.4% Subordinated Notes 2017	73	330
26	XS0130337735/ US853250AA64	SCB	\$700 million 8% Subordinated Notes 2031	287	427
27a	XS0323411016	SCB	€700 million 5.875% Subordinated Notes 2017	109	251
27b	XS0323411016	SCB	€400 million 5.875% Subordinated Notes 2017	62	143
28a	XS0355789271	SCB	£500 million 7.75% Subordinated Notes 2018	154	319
28b	XS0355789271	SCB	£200 million 7.75% Subordinated Notes 2018	62	128
29a	XS0222434200	SCB	£400 million 5.375% Undated Subordinated Step-up Notes (callable 2020) ³	85	171
29b	XS0222434200	SCB	£275 million 5.375% Undated Subordinated Step-up Notes (callable 2020) ³	187	404
30	XS0119816402	SCB	£200 million 7.75% Undated Subordinated Step-up Notes (callable 2022) ³	196	367
31a	XS0356750868	SCB	SGD200 million 5.25% Subordinated Notes 2023 (callable 2018) ³	138	140
31b	XS0356750868	SCB	SGD250 million 5.25% Subordinated Notes 2023 (callable 2018) ³	173	176
32	XS0359358867	SCB	JPY10 billion 3.35% Subordinated Notes 2023 (callable 2018) ³	85	83
33	XS0520042416	SCB HK	\$750 million 5.875% Subordinated Notes 2020	519	656
N/A	XS0698410403	SCB HK	SGD750 million 4.15% Subordinated Notes 2021 (callable 2016)	-	530
34	KR3823014V34	SCBK	KRW90 billion 6.05% Subordinated Notes 2018	18	33
N/A	KR60001111C4	SCBK	KRW270 billion 4.67% Subordinated Notes 2021 (callable 2016)	-	230
N/A	N/A	Permata	\$100 million 9.75% Subordinated Notes 2021 (callable 2016)	-	50
35	BNLI02SB	Permata	IDR1,750 billion 11% Subordinated Notes 2018	38	59
Total⁴				15,775	17,245

1. Refer to the Standard Chartered PLC Main Features of Capital Instruments document as published on the Standard Chartered PLC website
N/A references are those redeemed or called so not in the Main Features document

2. These securities are past their first call date and are callable at the option of the issuer on any future interest payment date, in accordance with their terms and conditions

3. These securities are not CRR compliant and will be fully phased out of Tier 2 by 1 January 2022

4. Reported at carrying value excluding fair value, regulatory amortisation and including ineligible minority interest

2.3 Countercyclical capital buffer

The Group's countercyclical capital buffer (CCyB) requirement is determined by applying various country specific CCyB rates to the Group's qualifying credit exposures in the relevant country (based on the jurisdiction of the obligor) on a weighted average basis.

As at December 2016, Hong Kong, Norway and Sweden had set countercyclical capital buffer rates which were recognised by the BoE's FPC. The HKMA announced a CCyB rate of 0.625 per cent applied from January 2016, while both Norway and Sweden set a 1.5 per cent rate from June 2016. As a result of the Group's exposures to these jurisdictions, the Group's CCyB rate at 31 December 2016 was 0.1 per cent. The majority of this CCyB requirement relates to exposures to Hong Kong, with exposures to other jurisdictions having an immaterial impact on the Group's CCyB (less than 1 basis point). See Table 7 below for relevant credit exposures.

The FPC noted that the PRA would reciprocate the HKMA's increase in the Hong Kong CCyB rate to 1.25 per cent on Hong Kong exposures from January 2017. This results in an estimated 0.1 per cent CCyB for the Group from January 2017, assuming no change in the CCyB rate in Hong Kong and a constant proportion of Hong Kong exposures in the Group.

Table 7 represents the requirement of the EBA/RTS/2014/17 on disclosure for own funds to disclose further relevant information for countries to which we have an exposure. This is also required where no CCyB has been implemented. Countries included in the table below are those where the relevant RWA of the country is greater than 2 per cent of total Group's RWA.

Table 7: Geographical distribution of credit exposures relevant for the calculation of the countercyclical capital buffer

Breakdown by country		2016									
		Sweden	Norway	United Kingdom	Hong Kong	Czech Republic	Iceland	Slovakia	Germany	India	Indonesia
		\$million	\$million	\$million	\$million	\$million	\$million	\$million	\$million	\$million	\$million
General credit exposures	Exposure value for SA	4	–	2,498	3,930	–	–	–	29	4,476	8,915
	Exposure value for IRB	440	228	24,963	63,493	6	–	5	7,904	18,744	3,954
Trading book exposures	Sum of long and short positions of trading book exposures for SA	–	–	22	284	–	–	–	2	1,414	264
	Value of trading book exposures for internal models	–	–	–	–	–	–	–	–	–	–
Securitisation exposures	Exposure value for SA	–	–	–	–	–	–	–	–	–	–
	Exposure value for IRB	–	–	22,582	–	–	–	–	–	–	–
Own funds requirements	General credit exposures	15	4	656	1,603	–	–	–	43	1,347	963
	Trading book exposures	–	–	1	12	–	–	–	–	43	23
	Securitisation exposures	–	–	235	–	–	–	–	–	–	–
	Total	15	4	892	1,615	–	–	–	43	1,390	985
Own funds requirements weights		0.1%	0.0%	6.5%	11.7%	0.0%	0.0%	0.0%	0.3%	10.1%	7.1%
CCyB rate as at 31 Dec 2016		1.5%	1.5%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CCyB rate as at 1 Jan 2017		1.5%	1.5%	0.0%	1.3%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 7 continues on the following page

2.3 Countercyclical capital buffer continued

Table 7: Geographical distribution of credit exposures relevant for the calculation of the countercyclical capital buffer continued

		2016									
Breakdown by country		Singapore	China	Korea	United Arab Emirates	United States	Malaysia	Pakistan	Bangladesh	Nigeria	Other countries
		\$million	\$million	\$million	\$million	\$million	\$million	\$million	\$million	\$million	\$million
General credit exposures	Exposure value for SA	4,788	5,978	1,307	3,267	773	822	609	1,076	542	12,196
	Exposure value for IRB	32,965	10,425	35,031	13,337	20,107	8,662	1,803	2,702	2,852	68,878
Trading book exposures	Sum of long and short positions of trading book exposures for SA	324	1,216	1,148	133	948	1,060	9	73	515	1,983
	Value of trading book exposures for internal models	–	–	–	–	–	–	–	–	–	–
		–	–	–	–	–	–	–	–	–	–
Securitisation exposures	Exposure value for SA	–	–	–	–	–	–	–	–	–	–
	Exposure value for IRB	–	–	–	–	–	–	–	–	–	–
Own funds requirements	General credit exposures	1,197	916	908	826	414	478	136	227	200	3,360
	Trading book exposures	6	38	3	4	–	11	2	7	45	101
	Securitisation exposures	–	–	–	–	–	–	–	–	–	–
	Total	1,203	955	912	830	414	489	138	233	245	3,461
Own funds requirements weights		8.7%	6.9%	6.6%	6.0%	3.0%	3.5%	1.0%	1.7%	1.8%	25.0%
CCyB rate as at 31 Dec 2016		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CCyB rate as at 1 Jan 2017		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 8: Amount of institution specific countercyclical capital buffer

	\$million
Total risk weighted assets (see Table 9: Overview of RWA)	269,445
Institution specific countercyclical capital buffer rate	0.1%
Institution specific countercyclical capital buffer requirement	202

2.4 Capital requirements

The table below presents the RWA and capital requirements calculated as 8 per cent of RWA.

Further information on credit risk RWAs can be found in Table 30 for credit risk exposures under IRB (which include counterparty credit risk);

Table 29 for the RWA flow statements for credit risk exposures under IRB (which include securitisation balances below); Table 26 for exposures under the standardised approach (which include amounts below the threshold for deduction) and section 3.9 for exposures subject to counterparty credit risk.

Table 9: Overview of RWA (OV1)

	2016		2015	
	Risk-weighted assets \$million	Regulatory capital requirement ³ \$million	Risk-weighted assets \$million	Regulatory capital requirement ³ \$million
Credit risk (excluding counterparty credit risk)¹	187,275	14,983	210,590	16,846
Of which Advanced IRB approach (see Table 29)	144,317	11,546	162,259	12,980
Of which Standardised approach (see Table 26)	42,958	3,437	48,331	3,866
Counterparty credit risk²	17,353	1,388	25,713	2,057
Of which Mark-to-Market method	12,800	1,024	17,913	1,433
Of which risk exposure amount for contributions to the default fund of a CCP	338	27	401	32
Of which CVA (see Table 41)	2,290	183	5,861	469
Settlement risk	15	1	7	1
Securitisation exposures in the banking book (see Table 48)	2,933	235	3,848	308
Of which IRB ratings based approach	2,406	193	3,148	252
Of which IRB supervisory formula approach	527	42	700	56
Of which Standardised approach	—	—	—	—
Market risk (see Table 54)	21,877	1,750	21,913	1,753
Of which Internal Model Approach	13,147	1,052	12,075	966
Of which Standardised approach	8,730	698	9,838	787
Large exposure	—	—	—	—
Operational risk (see Table 60)	33,693	2,695	35,610	2,849
Of which Standardised approach	33,693	2,695	35,610	2,849
Amounts below the thresholds for deduction (subject to 250% risk weight) (see Table 26)	6,299	504	5,244	420
Floor Adjustment	—	—	—	—
Total	269,445	21,556	302,925	24,234

1. Credit risk (excluding counterparty credit risk) includes non credit obligation assets

2. Counterparty credit risk includes assets which are assessed under IRB and Standardised approaches

3. The regulatory capital requirement is calculated as 8 per cent of the RWA representing the minimum total capital ratio in accordance with CRR Article 92 (1)

RWA decreased by \$33.5 billion which was mainly due to a decrease in credit and counterparty credit risk RWA. This was due to a reduction driven by exits from the liquidation portfolio, decreases through efficiencies in Financial Markets, reduction from changes in model methodology and policy changes due to the removal of PD uplifts and a change in Taiwan mortgages which moved from the Standardised to the IRB approach.

2.5 Leverage ratio

UK banks are subject to a minimum leverage ratio of 3 per cent, together with a supplementary leverage ratio buffer set at 35 per cent of the corresponding G-SII's and countercyclical capital buffer, as those buffers are applicable to individual banks and as phased in.

For 2016 the Group's current minimum requirement was 3.1 per cent which comprises:

- i) The minimum 3 per cent; and
- ii) A 0.1 per cent G-SII leverage ratio buffer

The Group's leverage ratio is also above the expected future requirement of 3.4 per cent from 2019, which comprises:

- i) the minimum 3 per cent,
- ii) a 0.35 per cent G-SII leverage ratio buffer; and
- iii) a 0.05 per cent countercyclical capital leverage ratio buffer, based on currently known pending countercyclical capital buffer rates and assuming a constant proportion of exposures to the relevant jurisdictions.

The basis of calculating the leverage ratio uses the end-point CRR definition of Tier 1 for the numerator and the CRR definition of leverage exposure as the denominator.

The Group's current leverage ratio of 5.7 per cent is above the current minimum requirement. The increase of 0.2 percentage points in the leverage ratio since December 2015 was due to a small increase in end point Tier 1 capital and a reduction in the exposure measure.

UK leverage ratio

In August 2016, the PRA implemented the FPC's recommendation to allow firms to exclude claims on central banks from the calculation of the leverage exposure measure, to the extent that these are matched by deposits denominated in the same currency. Accordingly, the Group's leverage ratio on a modified basis, excluding qualifying central bank claims from the leverage exposure measure, is 6 per cent.

Table 10: Leverage ratio exposure

	2016 \$million	2015 \$million
Total assets as per published financial statements (see Table 2)	646,692	640,483
Adjustment difference between the accounting scope of consolidation and the regulatory scope of consolidation	11,950	12,826
Adjustments for derivative financial instruments	(5,268)	5,283
Adjustments for securities financing transactions (SFTs)	10,412	11,299
Adjustment for off-balance sheet items (i.e. conversion to credit equivalent amounts of off-balance sheet exposures)	60,535	65,660
Other adjustments	(6,553)	(6,331)
Total leverage ratio exposure	717,768	729,220

2.5 Leverage ratio continued

Table 11: Leverage ratio common disclosure

	2016 \$million	2015 \$million
On-balance sheet exposures (excluding derivatives and SFTs)		
On-balance sheet items (excluding derivatives, SFTs and fiduciary assets, but including collateral) (Asset amounts deducted in determining Tier 1 capital)	548,201 (6,553)	553,376 (6,331)
Total on-balance sheet exposures (excluding derivatives, SFTs and fiduciary assets)	541,648	547,045
Derivative exposures		
Replacement cost associated with all derivatives transactions (ie net of eligible cash variation margin)	17,164	14,329
Add-on amounts for PFE associated with all derivatives transactions (mark-to-market method)	49,607	58,379
Exposure determined under Original Exposure Method	–	–
Gross-up for derivatives collateral provided where deducted from the balance sheet assets pursuant to the applicable accounting framework	–	–
(Deductions of receivables assets for cash variation margin provided in derivatives transactions)	(13,825)	(13,179)
(Exempted CCP leg of client-cleared trade exposures)	–	–
Adjusted effective notional amount of written credit derivatives	10,184	11,707
(Adjusted effective notional offsets and add-on deductions for written credit derivatives)	(2,873)	(2,785)
Total derivative exposures	60,257	68,451
Securities financing transaction exposures		
Gross SFT assets (with no recognition of netting), after adjusting for sales accounting transactions (Netted amounts of cash payables and cash receivables of gross SFT assets)	44,916 –	36,765 –
Counterparty credit risk exposure for SFT assets	10,412	11,299
Derogation for SFTs: Counterparty credit risk exposure in accordance with Article 429b (4) and 222 of Regulation (EU) No 575/2013	–	–
Agent transaction exposures	–	–
(Exempted CCP leg of client-cleared SFT exposure)	–	–
Total securities financing transaction exposures	55,328	48,064
Other off-balance sheet exposures		
Off-balance sheet exposures at gross notional amount (Adjustments for conversion to credit equivalent amounts)	216,052 (155,517)	227,546 (161,886)
Other off-balance sheet exposures	60,535	65,660
Exempted exposures in accordance with CRR Article 429 (7) and (14) (on and off balance sheet)		
(Exemption of intragroup exposures (solo basis) in accordance with Article 429(7) of Regulation (EU) No 575/2013 (on and off balance sheet))	–	–
(Exposures exempted in accordance with Article 429 (14) of Regulation (EU) No 575/2013 (on and off balance sheet))	–	–
Capital and total exposures	–	–
Tier 1 capital (end point)	40,557	40,149
Total leverage ratio exposures	717,768	729,220
Leverage ratio	5.7%	5.5%
Choice on transitional arrangements and amount of derecognised fiduciary items		
Choice on transitional arrangements for the definition of the capital measure	Fully phased in	Fully phased in
Amount of derecognised fiduciary items in accordance with Article 429(11) of Regulation (EU) NO 575/2013	–	–

Table 12: Leverage ratio: Analysis of on-balance sheet exposures (excluding derivatives, SFTs and exempted exposures)

	2016 \$million	2015 ¹ \$million
Total on-balance sheet exposures (excluding derivatives, SFTs, and exempted exposures), of which:	548,201	553,376
Trading book exposures	39,700	36,583
Banking book exposures, of which:	508,501	516,793
Covered bonds	5,004	5,959
Exposures treated as sovereigns	173,174	172,562
Exposures to regional governments, MDB, international organisations and PSE not treated as sovereigns	26	16
Institutions	64,547	59,586
Secured by mortgages of immovable properties	73,790	74,067
Retail exposures	22,789	23,766
Corporates	123,670	126,879
Exposures in default	10,083	10,107
Other exposures (eg equity, securitisations, and other non-credit obligation assets)	35,418	43,851

1. Has been reclassified from other items to Exposures in default.

3 Credit risk

Our approach to credit risk can be found in the Risk management approach in the 2016 Annual Report and Accounts on page 142.

3.1 Internal Ratings Based Approach to credit risk

The Group uses the IRB approach to manage credit risk for the majority of its portfolios. This allows the Group to use its own internal estimates of Probability of Default (PD), Loss Given Default (LGD), Residual Maturity, Exposure at Default (EAD) and Credit Conversion Factor (CCF) to determine an asset risk-weighting. The IRB models cover 77 per cent of the Group's credit RWA (2015: 77 per cent).

PD is the likelihood that an obligor will default on an obligation within 12 months. Banks utilising the IRB approach must assign an internal PD to all borrowers in each borrower grade. EAD is the expected amount of exposure to a particular facility at the point of default. CCF is an internally modelled parameter based on historical experience to determine the amount that is expected to be further drawn down from the undrawn portion of a facility. LGD is the percentage of EAD that a lender expects to lose in the event of obligor default. EAD, CCF and LGD are measured based on expectation in economic downturn periods.

All assets under the IRB approach have sophisticated PD, LGD and EAD/CCF models developed to support the credit decision making process. RWA under the IRB approach is determined by regulatory specified formulae dependent on the Group's estimates of residual maturity, PD, LGD and EAD. The development, use and governance of Corporate and Institutional Banking (CIB) and Retail models under the IRB approach are covered in more detail in Section 3.3 Internal Ratings Based models.

3.2 Standardised approach to credit risk

The Standardised approach is applied to portfolios that are classified as permanently exempt from the IRB approach, and those portfolios that are currently under transition to the IRB approach in accordance with the Group's IRB model roll out plan.

CRR Article 150 allows IRB banks to elect to permanently exclude certain exposures from the IRB approach and use the Standardised approach. These are known as permanent exemptions, and are required to be no greater than 15 per cent of the Group's credit risk RWA.

The permanent exemptions apply to:

- Africa – all retail portfolios
- Private Banking
- Private Equity
- Development organisations
- Jordan
- Purchased receivables
- Hedge funds
- Exposures to, or guaranteed by, central governments and central banks of EEA States, provided they are eligible for a 0% risk weighting under the Standardised approach

The Standardised approach measures credit risk pursuant to fixed risk-weights and is the least sophisticated of the capital requirement calculation methodologies under Basel III. The risk-weight applied under the Standardised approach is prescribed within the CRR and is based on the asset class to which the exposure is assigned.

3.3 Internal Ratings Based models

Model Governance

All IRB models are developed by Group Risk Measurement (GRM). Both new and existing models, as well as changes to existing models, are subject to independent validation by Group Model Validation (GMV) and are reviewed and approved by the Credit Model Assessment

Committee (CMAC) and the Credit and Market Risk Committee (now replaced by the Stress Testing Committee). GRM and GMV are separate departments within Group Risk.

The performance of existing IRB models, including actual against predicted metrics, is monitored regularly by GRM and reported to CMAC on a quarterly basis. In addition, existing models are subject to annual independent validation by GMV. The CMAC sets out internal standards for model development, validation and performance monitoring.

Group Internal Audit is responsible for carrying out independent audit reviews of IRB models development, validation, approval and monitoring.

Probability of default

PDs are estimated based on one of three industry standard approaches, namely the good-bad approach where a sufficient number of internal defaults is available, the shadow-bond approach where there are not sufficient internal defaults but there are external ratings for a large number of obligors, or the constrained expert judgement approach where neither internal defaults nor external ratings are available.

In CIB, the largest portfolios are rated based on the shadow bond approach (Sovereigns, Banks, Large Corporates) or the good-bad approach (Mid Corporates). Central governments and central banks are rated using the sovereign model, and institutions are rated using one of seven models depending on their line of business. Corporate clients are differentiated by their annual sales turnover and rated using one of the corporate models, unless they are classified under specialised lending. Private equity is under permanent exemption and covered by the Standardised approach.

Within CIB, each client is assigned a credit grade and exposures to each client or client group are aggregated consistently with the regulatory Large Exposures requirements.

CIB PD models are calibrated following a through-the-cycle rating philosophy based on historical data that includes a full economic cycle.

Estimates of PD are computed as of 1 January 2016 and are compared with default observations through 31 December 2016.

Our historical default experience for institutions, central governments or central banks is minimal, so the predicted PD reflects a particularly low number of defaults. We experienced no defaults for central governments or central banks during 2016.

The actual default rates for institutions and corporate exposures in 2016 remained below IRB model predictions as at the beginning of 2016, reflecting the impact of the Group's prudent and proactive credit management.

PD models for retail clients under each asset class are developed based on a combination of product and geography following the good-bad approach.

The main drivers of PD models are the application and behavioural scores. The application scores are computed at the point of origination and used for approval decisions, while behavioural scores are updated monthly using customer behaviour and transaction data, and are used for portfolio management. PD models are also segmented by other drivers such as months-on-book and delinquency status.

The actual default rates for the 'Residential mortgages' and 'Qualifying revolving retail' asset classes remained below the model predictions, but actual default rates were above model predictions for the 'Other Retail' and 'Retail SME' asset classes. The higher actual default rate for the 'Other Retail' asset class is primarily due to increased defaults in the UAE low income segments. Likewise, the higher actual default rate for 'Retail SME' was a result of increased defaults in the Korean business clients segments.

3.3 Internal Ratings Based models continued

Loss Given Default

The CIB LGD model is a parameter based model which takes into account risk drivers such as portfolio segment, product, credit grade of the obligor and collateral attached to the exposure. The model is calibrated based on downturn experience. Regulatory floors are applied to unsecured LGD for Sovereigns and to secured facilities.

The calculation of realised versus predicted LGD is affected by the fact that it may take a number of years for the workout process to be completed. As such, an observed recovery value cannot be assigned to the majority of the 2016 defaults, making it meaningless to compare realised versus predicted outcomes in a manner similar to that for PD and EAD.

To address this for corporate and institutions we have adopted an approach based on a four-year rolling period of predicted and realised LGD, which for the current reporting year includes 2013 to 2016 defaults that have completed their workout process as at the end of 2016. This approach compares the four-year rolling predicted LGD, providing the predicted outcome of these resolved defaults one year prior to default, against the realised LGD for the same set of defaults. These two figures are fully comparable, thereby providing a meaningful assessment of the LGD model's performance.

Under this approach, realised LGD values for corporates are lower than the predicted. This is explained by the regulatory guidance to calibrate LGD models to downturn conditions. There were no defaults in the previous four years for central governments and central banks. We experienced very few defaults for institutions during the monitoring period and none of the workout processes were completed as of 31 December 2016. Hence there are no values provided for these exposure classes.

LGDs for retail portfolios follow two approaches:

- (i) LGDs for unsecured products are based on historical loss experience of defaults during a downturn; these are portfolio specific LGD estimates segmented by default status (including restructuring).
- (ii) LGDs for secured products are parameter based estimates mainly driven by how the default is resolved (cure, sale or charge-off). Key LGD parameters are differentiated by segments such as loan-to-value, property type and default status. These parameters are calibrated based on the portfolio's downturn experience.

Retail LGD model development considers defaults from a cohort and considers the actual recoveries up to the end of the workout window which is typically two to three years. For retail asset classes, the

observed LGD from the December 2013 cohort (existing defaults and those defaulted in the next 12 months) was calculated based on actual recoveries observed from January 2014 until December 2016. This is compared to the predicted outcome of the same set of defaults.

Under this approach, realised LGD values for all retail asset classes are lower than predicted, primarily due to the regulatory guidance to calibrate LGD models to downturn conditions. This is most evident in the mortgage portfolios, where predicted LGD values include a significant assumed reduction in property values.

Exposure at Default

EAD takes into consideration the potential drawdown of a commitment as an obligor defaults by estimating the CCF of undrawn commitments.

EAD for corporate and institutional clients is determined on a global basis, while the commercial and retail EAD is dependent on the combination of country and product.

The corporate and institutional EAD model has adopted the momentum approach to estimate the CCF, with the type of facility being one of the key drivers of CCF. The model is calibrated based on downturn experience and floored at 0%.

EAD for retail products differs between revolving products and term products. For revolving products, EAD is computed by estimating the CCF of undrawn commitments, with a floor at 0%. For term products, EAD is set at the outstanding balance plus any undrawn portion.

The comparison of realised versus predicted EAD is summarised in the ratio of EAD of assets that defaulted in 2016 to the outstanding amount at time of default. The ratios for all models are larger than one, indicating that the predicted EAD is higher than the realised outstanding amount at default. This is explained by the regulatory guidance to assign conservatism to the CCF of certain exposure types and to calibrate the models to downturn conditions, as well as by the impact of management action leading to a reduction in actual exposure prior to default.

The Group has a strong monitoring and governance framework in place to identify and mitigate model performance issues. While most models are conservative and over predict PD, LGD and EAD, in cases where the models under predict, a post model adjustment may be taken to ensure adequate capitalisation, in addition to having a remediation plan in place.

The estimates provided in the table are before the application of any conservative adjustment.

Table 13: CIB model results

	PD Predicted 1 January 2016 %	PD Observed 31 December 2016 %	LGD Predicted (2013-2016) %	LGD Realised (2013-2016) %	EAD Predicted/ Realised %	Proportion of total IRB portfolio %
Corporate and Institutional Banking (CIB)						
Central governments or central banks	0.14	–	N/A	N/A	N/A	22
Institutions	0.18	0.04	N/A	N/A	3.07	21
Corporates	1.97	1.39	46.22	29.17	1.19	38
Corporate SME	3.83	3.23	53.55	38.95	1.16	1

Table 14: Retail model results

	PD Predicted 1 January 2016 %	PD Observed 31 December 2016 %	LGD Predicted (2013-2016) %	LGD Realised (2013-2016) %	EAD Predicted/ Observed %	Proportion of total IRB portfolio %
Retail						
Qualifying revolving retail	1.24	0.97	80.10	69.60	1.22	3
Other retail	2.80	3.09	80.41	74.29	1.12	2
Residential mortgages	0.43	0.21	14.38	3.62	1.02	12
Retail SME	1.71	2.41	58.70	36.09	1.04	0

Further detail of default rates for the main exposure classes can be seen in Tables 15–20. The corporate exposure class above has been split into Corporates and Specialised lending, and the Retail exposure class has been aggregated. SME exposure has been presented separately.

3.3 Internal Ratings Based models *continued*

Table 15: IRB – Backtesting of probability of default (PD) for central governments or central banks (CR9)

IRB Exposure Class	2016								
	PD Range %	External Rating equivalent (S&P)	Weighted average PD (prior year) %	Arithmetic average PD by obligors (prior year) %	Number of obligors ¹		Defaulted obligors in the year	of which: new defaulted obligors in the year	Average historical annual default rate %
					31 December 2015	31 December 2016			
Central governments or central banks			0.14	1.04	343	294	–	–	–
	0.000 – 0.015	AAA/AA+			69	43			
	0.016 – 0.025	AA			42	40			
	0.026 – 0.035	AA-			44	21			
	0.036 – 0.045	A+			10	5			
	0.046 – 0.060	A			5	11			
	0.061 – 0.083	A-/BBB+			38	30			
	0.084 – 0.110	BBB			11	12			
	0.111 – 0.170	BBB			9	7			
	0.171 – 0.300	BBB-			11	14			
	0.301 – 0.425	BB+			6	9			
	0.426 – 0.585	BB+/BB			3	5			
	0.586 – 0.770	BB			4	5			
	0.771 – 1.020	BB/BB-			9	10			
	1.021 – 1.350	BB-			7	5			
	1.351 – 1.750	BB-/B+			12	15			
	1.751 – 2.350	B+			12	9			
	2.351 – 3.050	B			14	21			
	3.051 – 4.000	B/B-			18	15			
	4.001 – 5.300	B-			4	4			
	5.301 – 7.000	B-			1	1			
	7.001 – 15.750	CCC/C			12	10			
	15.751 – 50.000	CCC/C			2	2			
	50.001 – 99.999	CCC/C			–	–			
	100	N/A			–	–			

1. Number of obligors is based on the number of counterparties

3.3 Internal Ratings Based models *continued*

Table 16: IRB – Backtesting of probability of default (PD) for Institutions (CR9)

IRB Exposure Class	2016								
	PD Range %	External Rating equivalent (S&P)	Weighted average PD (prior year) %	Arithmetic average PD by obligors (prior year) %	Number of obligors ¹		Defaulted obligors in the year	of which: new defaulted obligors in the year	Average historical annual default rate %
					31 December 2015	31 December 2016			
Institutions			0.18	0.62	2,277	2,186	3	–	0.05
	0.000 – 0.015	AAA/AA+			–	–			
	0.016 – 0.025	AA			–	–			
	0.026 – 0.035	AA-			401	427			
	0.036 – 0.045	A+			138	131			
	0.046 – 0.060	A			191	177			
	0.061 – 0.083	A-/BBB+			166	143			
	0.084 – 0.110	BBB			127	137			
	0.111 – 0.170	BBB			164	131			
	0.171 – 0.300	BBB-			191	172			
	0.301 – 0.425	BB+			118	139			
	0.426 – 0.585	BB+/BB			99	106			
	0.586 – 0.770	BB			67	66			
	0.771 – 1.020	BB/BB-			86	86			
	1.021 – 1.350	BB-			85	76			
	1.351 – 1.750	BB-/B+			89	114			
	1.751 – 2.350	B+			138	81			
	2.351 – 3.050	B			42	80			
	3.051 – 4.000	B/B-			31	22			
	4.001 – 5.300	B-			14	16			
	5.301 – 7.000	B-			23	20			
	7.001 – 15.750	CCC/C			86	44			
	15.751 – 50.000	CCC/C			5	7			
	50.001 – 99.999	CCC/C			4	4			
	100	N/A			12	7			

1. Number of obligors is based on the number of counterparties

3.3 Internal Ratings Based models *continued*

Table 17: IRB – Backtesting of probability of default (PD) for Corporates (excluding SL and SMEs) (CR9)

IRB Exposure Class	2016								
	PD Range %	External Rating equivalent (S&P)	Weighted average PD (prior year) %	Arithmetic average PD by obligors (prior year) %	Number of obligors ¹		Defaulted obligors in the year	of which: new defaulted obligors in the year	Average historical annual default rate %
					31 December 2015	31 December 2016			
Corporates (excluding SL and SMEs)			2.04	2.76	22,149	20,126	137	–	0.89
	0.000 – 0.015	AAA/AA+			–	–			
	0.016 – 0.025	AA			–	–			
	0.026 – 0.035	AA-			550	553			
	0.036 – 0.045	A+			327	300			
	0.046 – 0.060	A			638	579			
	0.061 – 0.083	A-/BBB+			1,089	1,317			
	0.084 – 0.110	BBB			1,045	1,117			
	0.111 – 0.170	BBB			1,692	1,483			
	0.171 – 0.300	BBB-			2,271	2,480			
	0.301 – 0.425	BB+			1,364	1,545			
	0.426 – 0.585	BB+/BB			1,539	1,581			
	0.586 – 0.770	BB			1,254	1,204			
	0.771 – 1.020	BB/BB-			1,204	977			
	1.021 – 1.350	BB-			1,188	928			
	1.351 – 1.750	BB-/B+			1,116	820			
	1.751 – 2.350	B+			1,301	837			
	2.351 – 3.050	B			1,098	788			
	3.051 – 4.000	B/B-			686	538			
	4.001 – 5.300	B-			423	337			
	5.301 – 7.000	B-			287	237			
	7.001 – 15.750	CCC/C			1,608	1,248			
	15.751 – 50.000	CCC/C			171	208			
	50.001 – 99.999	CCC/C			471	166			
	100	N/A			827	883			

1. Number of obligors is based on the number of counterparties

3.3 Internal Ratings Based models *continued*

Table 18: IRB – Backtesting of probability of default (PD) for Retail (excluding SMEs) (CR9)

IRB Exposure Class	2016								
	PD Range %	External Rating equivalent (S&P)	Weighted average PD (prior year) %	Arithmetic average PD by obligors (prior year) %	Number of obligors ¹		Defaulted obligors in the year	of which: new defaulted obligors in the year	Average historical annual default rate %
					31 December 2015	31 December 2016			
Retail (excluding SMEs)			0.76	3.26	4,251,495	4,250,552	92,297	2,001	2.27
	0.000 – 0.015	AAA/AA+			–	–			
	0.016 – 0.025	AA			–	–			
	0.026 – 0.035	AA-			330,209	337,689			
	0.036 – 0.045	A+			65,620	65,230			
	0.046 – 0.060	A			59,517	125,423			
	0.061 – 0.083	A-/BBB+			219,895	316,107			
	0.084 – 0.110	BBB			258,790	201,294			
	0.111 – 0.170	BBB			381,708	440,331			
	0.171 – 0.300	BBB-			417,062	389,140			
	0.301 – 0.425	BB+			160,413	188,058			
	0.426 – 0.585	BB+/BB			215,067	180,612			
	0.586 – 0.770	BB			122,242	110,199			
	0.771 – 1.020	BB/BB-			239,077	206,482			
	1.021 – 1.350	BB-			77,721	82,707			
	1.351 – 1.750	BB-/B+			92,568	73,411			
	1.751 – 2.350	B+			110,023	145,677			
	2.351 – 3.050	B			162,110	164,716			
	3.051 – 4.000	B/B-			188,353	191,884			
	4.001 – 5.300	B-			232,627	227,540			
	5.301 – 7.000	B-			193,740	133,525			
	7.001 – 15.750	CCC/C			388,913	415,650			
	15.751 – 50.000	CCC/C			179,874	81,000			
	50.001 – 99.999	CCC/C			31,562	62,649			
	100	N/A			124,404	111,228			

1. Number of obligors is based on individual pools of clients

3.3 Internal Ratings Based models *continued*

Table 19: IRB – Backtesting of probability of default (PD) for Specialised Lending (SL) (CR9)

IRB Exposure Class	2016								
	PD Range %	External Rating equivalent (S&P)	Weighted average PD (prior year) %	Arithmetic average PD by obligors (prior year) %	Number of obligors ¹		Defaulted obligors in the year	of which: new defaulted obligors in the year	Average historical annual default rate %
					31 December 2015	31 December 2016			
Specialised Lending (SL)			0.99	1.07	326	335	1	–	1.05
	0.000 – 0.015	AAA/AA+			–	–			
	0.016 – 0.025	AA			–	–			
	0.026 – 0.035	AA/AA-			4	4			
	0.036 – 0.045	AA-			–	1			
	0.046 – 0.060	A+			7	3			
	0.061 – 0.083	A			23	5			
	0.084 – 0.110	A-			20	29			
	0.111 – 0.170	BBB+			24	21			
	0.171 – 0.300	BBB			26	17			
	0.301 – 0.425	BBB-BB+			40	15			
	0.426 – 0.585	BB+/BB			40	20			
	0.586 – 0.770	BB			39	39			
	0.771 – 1.020	BB/BB-			25	30			
	1.021 – 1.350	BB-			20	55			
	1.351 – 1.750	BB-/B+			24	15			
	1.751 – 2.350	B+			9	27			
	2.351 – 3.050	B+			10	18			
	3.051 – 4.000	B+/B			1	11			
	4.001 – 5.300	B			1	1			
	5.301 – 7.000	B/B-			1	1			
	7.001 – 15.750	B-/CCC/C			2	11			
	15.751 – 50.000	CCC/C			–	1			
	50.001 – 99.999	CCC/C			–	1			
	100	N/A			10	10			

1. Number of obligors is based on the number of counterparties

3.3 Internal Ratings Based models *continued*

Table 20: IRB – Backtesting of probability of default (PD) for SME (CR9)

IRB Exposure Class	2016								
	PD Range %	External Rating equivalent (S&P)	Weighted average PD (prior year) %	Arithmetic average PD by obligors (prior year) %	Number of obligors ¹		Defaulted obligors in the year	of which: new defaulted obligors in the year	Average historical annual default rate %
					31 December 2015	31 December 2016			
SME			2.79	2.41	60,764	52,137	1,674	94	2.17
	0.000 – 0.015				–	–			
	0.016 – 0.025				–	–			
	0.026 – 0.035				6	9			
	0.036 – 0.045				53	44			
	0.046 – 0.060				42	42			
	0.061 – 0.083				35	35			
	0.084 – 0.110				171	138			
	0.111 – 0.170				367	326			
	0.171 – 0.300				1,010	983			
	0.301 – 0.425				1,018	705			
	0.426 – 0.585				2,822	2,191			
	0.586 – 0.770				10,133	9,894			
	0.771 – 1.020				12,347	11,395			
	1.021 – 1.350				3,866	3,266			
	1.351 – 1.750				3,597	2,927			
	1.751 – 2.350				5,554	3,288			
	2.351 – 3.050				4,505	3,619			
	3.051 – 4.000				4,299	2,674			
	4.001 – 5.300				2,381	1,800			
	5.301 – 7.000				1,505	1,332			
	7.001 – 15.750				2,243	1,818			
	15.751 – 50.000				566	465			
	50.001 – 99.999				1,139	944			
	100				3,105	4,242			

1. Number of obligors is based on the number of counterparties

3.4 Exposure values

The following tables detail the Group's EAD (including counterparty risk) before the effect of collateral but after the effect of substitution, broken down by exposure class and further split by geography, industry and maturity. For credit risk exposures EAD is based on the current outstanding exposure and accrued interest and fees, which are recognised in the Group's balance sheet in accordance with IFRS, plus a proportion of the undrawn component of the facility. The amount of the undrawn facility included is dependent on the product type and for IRB exposure classes this amount is modelled internally.

Table 21: Total and average exposure at default

	2016		2015	
	EAD before the effect of CRM¹ \$million	Average EAD before the effect of CRM¹ \$million	EAD before the effect of CRM¹ \$million	Average EAD before the effect of CRM¹ \$million
IRB Exposure Class				
Central governments or central banks	125,654	133,003	162,232	168,126
Institutions	119,128	123,421	122,310	138,554
Corporates	221,817	222,438	202,743	213,163
Of which specialised lending	6,411	6,640	7,016	7,715
Of which SME	7,819	9,220	9,417	10,658
Retail⁴	93,896	94,713	87,534	88,682
Secured by real estate collateral	66,639	66,954	60,385	60,845
Of which SME	252	281	279	313
Of which Non SME	66,387	66,673	60,106	60,532
Qualifying revolving retail	15,867	16,303	15,817	15,909
Other retail	11,390	11,456	11,332	11,928
Of which SME	875	881	947	1,049
Of which Non SME	10,515	10,575	10,385	10,879
Total IRB²	560,495	573,575	574,819	608,525
Standardised Exposure Class				
Central governments or central banks	44,311	33,646	4,341	3,986
Multilateral development banks	14,922	16,139	18,132	16,835
Institutions	21,414	15,486	11,415	9,102
Corporates	35,352	33,314	26,778	29,539
Of which SME	13,146	14,435	14,632	18,688
Retail⁴	11,974	12,328	13,003	14,550
Of which SME	3,049	3,179	3,291	3,906
Secured on real estate property	9,986	11,530	16,196	17,327
Of which SME	3,233	3,646	4,148	4,344
Past due items	334	317	660	611
Items belonging to regulatory high risk categories	2,614	3,021	3,356	3,785
Other Items³	10,157	10,181	11,351	13,393
Total Standardised	151,064	135,962	105,232	109,128
Total	711,559	709,537	680,051	717,653

1. EAD before the effect of collateral but after substitution

2. Excludes Securitisation exposures and non credit obligation assets

3. Other items include cash, equity holdings, fixed assets, prepayments and accrued income

4. The combined Retail IRB exposure class includes both mortgages (Secured by real estate collateral) and other types of retail exposure. The Standardised Retail exposure class excludes mortgages which are included in a separate class under the heading Secured on real estate property

EAD increased by \$31.5 billion. An increase in the IRB and Standardised corporate exposure classes contributed \$27.6 billion as a result of expansion of the reverse repo business in response to client demand and an increase in repo improving the quality of the funding base. EAD for central governments or central banks under the IRB approach decreased mainly due to the impact of model migration for EU member state exposure with a corresponding increase under the Standardised approach. EAD for secured by real estate collateral under the IRB approach increased due to the migration of the Taiwan mortgage portfolio from the Standardised to the IRB approach, with a corresponding decrease in secured on real estate property under the Standardised approach.

3.4 Exposure values continued

Geographical analysis

The table below provides EAD analysed by the booking location of the exposure. The exposure classes are presented in accordance with CRR rules and are based on counterparty type and differs from the product based approach in the 2016 Annual Report and Accounts.

Table 22: Exposure at default by geography

	2016				
	Greater China and North Asia \$million	ASEAN and South Asia \$million	Africa and Middle East \$million	Europe and Americas \$million	Period End Total \$million
IRB Exposure Class					
Central governments or central banks	59,137	21,671	13,597	31,249	125,654
Institutions	41,724	18,569	6,231	52,604	119,128
Corporates	48,602	41,989	23,174	108,052	221,817
Of which specialised lending	1,298	1,471	282	3,360	6,411
Of which SME	4,018	1,637	924	1,240	7,819
Retail ³	69,497	23,159	1,240	–	93,896
Secured by real estate collateral	49,414	17,226	–	–	66,639
Of which SME	21	231	–	–	252
Of which Non SME	49,393	16,994	–	–	66,387
Qualifying revolving retail	11,050	4,239	578	–	15,867
Other retail	9,033	1,695	662	–	11,390
Of which SME	610	265	–	–	875
Of which Non SME	8,423	1,430	662	–	10,515
Total IRB¹	218,960	105,388	44,242	191,905	560,495
Standardised Exposure Class					
Central governments or central banks	1,845	4,347	460	37,659	44,311
Multilateral development banks	488	1,552	599	12,283	14,922
Institutions	462	1,508	107	19,337	21,414
Corporates	5,297	12,999	1,808	15,248	35,352
Of which SME	3,852	6,665	930	1,699	13,146
Retail ³	2,826	6,200	2,842	106	11,974
Of which SME	688	2,246	115	–	3,049
Secured on real estate property	3,034	3,979	2,272	701	9,986
Of which SME	478	1,900	278	577	3,233
Past due items	78	126	70	60	334
Items belonging to regulatory high risk categories	1,113	985	189	327	2,614
Other Items ²	4,461	2,909	1,242	1,545	10,157
Total Standardised	19,604	34,605	9,589	87,266	151,064
Total	238,564	139,993	53,831	279,171	711,559

1. Excludes Securitisation exposures and non credit obligation assets (See Table 21)

2. Other items include cash, equity holdings, fixed assets, prepayments and accrued income

3. The combined Retail IRB exposure class includes both mortgages (Secured by real estate collateral) and other types of retail exposure. The Standardised Retail exposure class excludes mortgages which are included in a separate class under the heading Secured on real estate property

EAD for central governments or central banks under the IRB approach in Europe and Americas decreased by \$33.9 billion mainly due to the impact of model migration for EU member state exposures with a corresponding increase under the Standardised approach. EAD for institutions in Europe and Americas under the IRB approach decreased \$13.8 billion mainly due to a reduction in derivative EAD. EAD for corporates under the IRB and Standardised approach increased by \$26.6 billion mainly as a result of expansion of the reverse repo business in response to client demand and an increase in repo improving the quality of our funding base. This mainly impacted the Europe & Americas region. EAD for secured by real estate collateral under the IRB approach in Greater China and North Asia increased by \$7.7 billion mostly due to the migration of the Taiwan mortgage portfolio from the Standardised to the IRB approach with a corresponding decrease in secured on real estate property under the Standardised approach.

3.4 Exposure values continued

Table 22: Exposure at default by geography continued

	2015				
	Greater China and North Asia \$million	ASEAN and South Asia \$million	Africa and Middle East \$million	Europe and Americas \$million	Period End Total \$million
IRB Exposure Class					
Central governments or central banks	62,722	20,852	13,477	65,181	162,232
Institutions	36,725	13,785	5,409	66,391	122,310
Corporates	49,899	47,364	24,051	81,429	202,743
Of which specialised lending	1,020	1,698	314	3,984	7,016
Of which SME	5,198	1,820	1,435	964	9,417
Retail ³	61,114	25,134	1,286	–	87,534
Secured by real estate collateral	41,670	18,715	–	–	60,385
Of which SME	38	241	–	–	279
Of which Non SME	41,632	18,474	–	–	60,106
Qualifying revolving retail	10,677	4,573	567	–	15,817
Other retail	8,767	1,846	719	–	11,332
Of which SME	651	296	–	–	947
Of which Non SME	8,116	1,550	719	–	10,385
Total IRB¹	210,460	107,135	44,223	213,001	574,819
Standardised Exposure Class					
Central governments or central banks	342	3,284	495	220	4,341
Multilateral development banks	276	2,773	581	14,502	18,132
Institutions	150	791	135	10,339	11,415
Corporates	4,416	15,074	1,477	5,811	26,778
Of which SME	3,461	7,903	826	2,442	14,632
Retail ³	3,064	6,744	3,092	103	13,003
Of which SME	741	2,371	178	1	3,291
Secured on real estate property	8,403	4,407	2,240	1,146	16,196
Of which SME	695	2,324	68	1,061	4,148
Past due items	179	231	170	80	660
Items belonging to regulatory high risk categories	1,686	839	202	629	3,356
Other Items ²	4,006	3,686	1,679	1,980	11,351
Total Standardised	22,522	37,829	10,071	34,810	105,232
Total	232,982	144,964	54,294	247,811	680,051

1. Excludes Securitisation exposures and non credit obligation assets (See Table 21)

2. Other items include cash, equity holdings, fixed assets, prepayments and accrued income

3. The combined Retail IRB exposure class includes both mortgages (Secured by real estate collateral) and other types of retail exposure. The Standardised Retail exposure class excludes mortgages which are included in a separate class under the heading Secured on real estate property

3.4. Exposure values continued

Industry analysis

The mortgage portfolio makes up 71 per cent of the Retail IRB exposure classes, (2015: 69 per cent).

Table 23: Exposure at default by industry

2016

	Loans to individuals Mortgage \$million	Loans to individuals Other \$million	SME \$million	Commerce \$million	Manu- facturing \$million	Commercial real estate \$million	Government \$million	Financing & insurance & business services \$million	Transport & storage & communi- cation \$million	Other ¹ \$million	Total \$million
IRB Exposure Class											
Central governments or central banks	-	-	-	-	-	-	121,219	3,988	83	364	125,654
Institutions	-	-	-	-	21	-	204	118,903	-	-	119,128
Corporates	-	15	8,281	28,177	46,160	8,776	576	75,043	13,161	41,628	221,817
Of which specialised lending	-	-	462	320	424	684	-	21	839	3,661	6,411
Of which SME	-	-	7,819	-	-	-	-	-	-	-	7,819
Retail ³	66,387	26,382	1,127	-	-	-	-	-	-	-	93,896
Secured by real estate collateral	66,387	-	252	-	-	-	-	-	-	-	66,639
Of which SME	-	-	252	-	-	-	-	-	-	-	252
Of which Non SME	66,387	-	-	-	-	-	-	-	-	-	66,387
Qualifying revolving retail	-	15,867	-	-	-	-	-	-	-	-	15,867
Other retail	-	10,515	875	-	-	-	-	-	-	-	11,390
Of which SME	-	-	875	-	-	-	-	-	-	-	875
Of which Non SME	-	10,515	-	-	-	-	-	-	-	-	10,515
Total IRB¹	66,387	26,397	9,408	28,177	46,181	8,776	121,999	197,934	13,244	41,992	560,495
Standardised Exposure Class											
Central governments or central banks	-	-	-	36	-	-	36,490	1,691	-	6,094	44,311
Multilateral development banks	-	-	-	-	-	-	390	4,301	-	10,231	14,922
Institutions	-	-	-	-	-	-	-	20,758	-	656	21,414
Corporates	-	3	13,146	1,292	1,154	725	4	13,115	1,192	4,721	35,352
Of which SME	-	-	13,146	-	-	-	-	-	-	-	13,146
Retail ³	-	8,925	3,049	-	-	-	-	-	-	-	11,974
Of which SME	-	-	3,049	-	-	-	-	-	-	-	3,049
Secured on real estate property	6,333	1	3,233	79	28	66	-	7	2	237	9,986
Of which SME	-	-	3,233	-	-	-	-	-	-	-	3,233
Past due items	65	105	73	9	11	2	-	2	-	67	334
Items belonging to regulatory high risk categories	9	145	469	260	156	407	-	313	190	665	2,614
Other Items ²	-	-	45	-	11	56	-	38	-	10,007	10,157
Total Standardised	6,407	9,179	20,015	1,676	1,360	1,256	36,884	40,225	1,384	32,678	151,064
Total	72,794	35,576	29,423	29,853	47,541	10,032	158,883	238,159	14,628	74,670	711,559

1. Excludes Securitisation exposures and non credit obligation assets (See Table 21)

2. Other items include cash, equity holdings, fixed assets, prepayments and accrued income

3. The combined Retail IRB exposure class includes both mortgages (Secured by real estate collateral) and other types of retail exposure. The Standardised Retail exposure class excludes mortgages which are included in a separate class under the heading Secured on real estate property

EAD for central governments or central banks under the IRB approach decreased by \$36.6 billion mainly due to the impact of model migration for EU member state exposures with a corresponding increase under the Standardised approach. EAD for corporates in the Financing Insurance & Business Services under the IRB approach increased by \$21.0 billion due to the expansion of the reverse repo business in response to client demand and an increase in repo improving the quality of the funding base. EAD for secured by real estate collateral under the IRB approach increased by \$6.25 billion due to the migration of the Taiwan mortgage portfolio from the Standardised to the IRB approach, with a corresponding decrease in secured on real estate property under the Standardised approach.

3.4. Exposure values continued

Table 23: Exposure at default by industry continued

	2015										
	Loans to individuals mortgage \$million	Loans to individuals other \$million	SME \$million	Commerce \$million	Manu- facturing \$million	Commercial real estate \$million	Government \$million	Financing insurance & business services \$million	Transport & storage & communi- cation \$million	Other ¹ \$million	Total \$million
IRB Exposure Class											
Central governments or central banks	–	–	–	–	34	33	151,932	8,404	157	1,672	162,232
Institutions	–	–	–	–	469	–	914	118,997	1	1,929	122,310
Corporates	–	3	10,029	29,386	45,101	9,602	126	54,024	16,749	37,723	202,743
Of which specialised lending	–	–	612	337	402	1,047	–	25	523	4,070	7,016
Of which SME	–	–	9,417	–	–	–	–	–	–	–	9,417
Retail ³	60,106	26,202	1,226	–	–	–	–	–	–	–	87,534
Secured by real estate collateral	60,106	–	279	–	–	–	–	–	–	–	60,385
Of which SME	–	–	279	–	–	–	–	–	–	–	279
Of which Non SME	60,106	–	–	–	–	–	–	–	–	–	60,106
Qualifying revolving retail	–	15,817	–	–	–	–	–	–	–	–	15,817
Other retail	–	10,385	947	–	–	–	–	–	–	–	11,332
Of which SME	–	–	947	–	–	–	–	–	–	–	947
Of which Non SME	–	10,385	–	–	–	–	–	–	–	–	10,385
Total IRB¹	60,106	26,205	11,255	29,386	45,604	9,635	152,972	181,425	16,907	41,324	574,819
Standardised Exposure Class											
Central governments or central banks	–	–	–	–	–	–	339	–	–	4,002	4,341
Multilateral development banks	–	–	–	–	–	–	964	4,746	–	12,422	18,132
Institutions	–	–	–	–	–	–	–	11,019	–	396	11,415
Corporates	–	76	14,632	1,224	933	291	3	3,799	95	5,725	26,778
Of which SME	–	–	14,632	–	–	–	–	–	–	–	14,632
Retail ³	–	9,712	3,291	–	–	–	–	–	–	–	13,003
Of which SME	–	–	3,291	–	–	–	–	–	–	–	3,291
Secured on real estate property	11,249	9	4,148	188	93	200	–	32	13	264	16,196
Of which SME	–	–	4,148	–	–	–	–	–	–	–	4,148
Past due items	111	189	145	65	36	–	–	3	4	107	660
Items belonging to regulatory high risk categories	6	195	451	288	225	449	–	523	245	974	3,356
Other Items ²	–	6	199	293	8	4	–	69	5	10,767	11,351
Total Standardised	11,366	10,187	22,866	2,058	1,295	944	1,306	20,191	362	34,657	105,232
Total	71,472	36,392	34,121	31,444	46,899	10,579	154,278	201,616	17,269	75,981	680,051

1. Excludes Securitisation exposures and non credit obligation assets (See Table 21)

2. Other items include cash, equity holdings, fixed assets, prepayments and accrued income

3. The combined Retail IRB exposure class includes both mortgages (Secured by real estate collateral) and other types of retail exposure. The Standardised Retail exposure class excludes mortgages which are included in a separate class under the heading Secured on real estate property

3.4 Exposure values continued

Maturity analysis

The table below shows the Group's exposure on a residual maturity basis. This is consistent with the maturity analysis in the 2016 Annual Report and Accounts on page 165 which is based on accounting balances. Approximately 65 per cent (2015: 59 per cent) of the Group's exposure is short term, having residual maturity of one year or less. The CandiB portfolio is predominantly short term with 75 per cent (2015: 70 per cent) of EAD having a residual maturity of one year or less. In Retail, the longer maturity profile of the IRB portfolio is driven by the mortgage book which makes up 71 per cent (2015: 69 per cent) of the portfolio and is traditionally longer term in nature and well secured. Whilst the Other and SME loans in Retail have short contractual maturities, typically they can be renewed and repaid over longer terms in the normal course of business.

Table 24: Exposure at default by maturity

	2016			
	One year or less \$million	One to five years \$million	Over five years \$million	Total \$million
IRB Exposure Class				
Central governments or central banks	93,577	28,752	3,325	125,654
Institutions	99,771	16,491	2,866	119,128
Corporates	156,302	51,666	13,849	221,817
Of which specialised lending	525	2,414	3,472	6,411
Of which SME	4,961	1,895	963	7,819
Retail ³	8,392	20,247	65,258	93,896
Secured by real estate collateral	1,593	995	64,052	66,639
Of which SME	24	9	219	252
Of which Non SME	1,569	986	63,832	66,387
Qualifying revolving retail	2,132	13,117	618	15,867
Other retail	4,667	6,135	588	11,390
Of which SME	275	492	108	875
Of which Non SME	4,392	5,643	480	10,515
Total IRB¹	358,042	117,156	85,298	560,495
Standardised Exposure Class				
Central governments or central banks	38,163	3,588	2,560	44,311
Multilateral development banks	3,312	10,575	1,035	14,922
Institutions	18,163	1,729	1,522	21,414
Corporates	30,067	2,117	3,168	35,352
Of which SME	11,004	568	1,574	13,146
Retail ³	4,787	4,401	2,786	11,974
Of which SME	820	1,155	1,074	3,049
Secured on real estate property	1,776	665	7,545	9,986
Of which SME	1,537	313	1,383	3,233
Past due items	43	142	149	334
Items belonging to regulatory high risk categories	2,366	103	145	2614
Other Items ²	8,745	28	1,384	10,157
Total Standardised	107,422	23,348	20,294	151,064
Total	465,464	140,504	105,592	711,559

1. Excludes Securitisation exposures and non credit obligation assets (See Table 21)

2. Other items include cash, equity holdings, fixed assets, prepayments and accrued income

3. The combined Retail IRB exposure class includes both mortgages (secured by real estate collateral) and other types of retail exposure. The standardised retail exposure class excludes mortgages which are included in a separate class under the heading secured on real estate property

EAD for central governments or central banks under the IRB approach decreased by \$36.6 billion mainly due to the impact of model migration for EU member state exposures with a corresponding increase under the Standardised approach. EAD for corporates increased in both the IRB and Standardised exposure classes by \$27.6 billion as a result of expansion of the reverse repo business in response to client demand and an increase in repo improving the quality of our funding base. EAD for secured by real estate collateral under the IRB approach increased by \$6.25 billion due to the migration of the Taiwan mortgage portfolio from the Standardised to the IRB approach, with a corresponding decrease in secured on real estate property under the Standardised approach.

3.4 Exposure values continued

Table 24: Exposure at default by maturity continued

	2015			
	One year or less \$million	One to five years \$million	Over five years \$million	Total \$million
IRB Exposure Class				
Central governments or central banks	124,142	33,803	4,287	162,232
Institutions	98,881	20,486	2,943	122,310
Corporates	126,396	59,351	16,996	202,743
Of which specialised lending	838	2,340	3,838	7,016
Of which SME	6,611	1,626	1,180	9,417
Retail ³	8,404	19,331	59,798	87,534
Of which secured by real estate collateral	925	954	58,506	60,385
SME	29	9	241	279
Non SME	896	945	58,265	60,106
Of which qualifying revolving retail	2,848	12,309	660	15,817
Of which other retail	4,631	6,068	633	11,332
SME	308	503	136	947
Non SME	4,323	5,565	497	10,385
Total IRB	357,823	132,971	84,024	574,819
Standardised Exposure Class				
Central governments or central banks	2,899	116	1,326	4,341
Multilateral development banks	1,295	16,334	503	18,132
Institutions	8,474	1,335	1,606	11,415
Corporates	22,449	1,235	3,094	26,778
Of which SME	11,870	572	2,190	14,632
Retail ³	5,093	4,809	3,101	13,003
Of which SME	1,114	1,156	1,021	3,291
Secured on real estate property	2,187	914	13,095	16,196
Of which SME	1,976	486	1,686	4,148
Past due items	340	51	269	660
Items belonging to regulatory high risk categories	2,915	211	230	3,356
Other Items ²	9,981	121	1,249	11,351
Total Standardised	55,633	25,126	24,473	105,232
Total	413,456	158,097	108,497	680,051

1. Excludes Securitisation exposures and non credit obligation assets (See Table 21)

2. Other items include cash, equity holdings, fixed assets, prepayments and accrued income

3. The combined Retail IRB exposure class includes both mortgages (secured by real estate collateral) and other types of retail exposure. The standardised retail exposure class excludes mortgages which are included in a separate class under the heading secured on real estate property

3.5 Credit risk mitigation

Potential credit losses from any given account, customer or portfolio are mitigated using a range of tools such as collateral, netting agreements, credit insurance, credit derivatives and other guarantees. The reliance that can be placed on these mitigants is carefully assessed in light of issues such as legal certainty and enforceability, market valuation, correlation and counterparty risk of the guarantor. Where appropriate, credit derivatives are used to reduce credit risks in the portfolio. Due to their potential impact on income volatility, such derivatives are used in a controlled manner with reference to their expected volatility. Collateral is held to mitigate credit risk exposures and risk mitigation policies determine the eligibility of collateral types.

Our approach to credit risk mitigation can be found in the Risk management approach section of the 2016 Annual Report and Accounts on page 143.

The table below shows the unfunded credit protection held by the Group, consisting of credit derivatives and guarantees, and funded credit protection, including financial collateral. Exposure class has been defined based on the guarantor of the exposure.

3.5 Credit risk mitigation continued

Table 25: Effect of guarantees and collateral

	2016		2015	
	Exposures covered by unfunded credit protection \$million	Exposures covered by funded credit protection \$million	Exposures covered by unfunded credit protection \$million	Exposures covered by funded credit protection \$million
IRB Exposure Class				
Central governments or central banks	4,839	4,664	7,143	2,365
Institutions	5,414	30,472	4,030	31,216
Corporates	13,790	62,647	14,943	47,514
Retail ²	4	65,106	6	59,248
Securitisation positions	–	611	–	939
Total IRB	24,047	163,500	26,122	141,282
Standardised Exposure Class				
Central governments or central banks	1,377	119	–	–
Multilateral development banks	706	163	695	–
Institutions	314	12,534	283	5,245
Corporates	12	17,567	61	10,486
Retail ²	2	549	4	625
Secured on real estate property	–	35	–	75
Exposures in default	–	91	–	3
Items belonging to regulatory high risk categories	–	9	–	19
Other items ¹	27	13	44	4
Total Standardised	2,438	31,080	1,087	16,457
Total Exposure	26,485	194,580	27,209	157,739

1. Other items include public sector entities

2. The combined Retail IRB exposure class includes both mortgages (Secured by real estate collateral) and other types of retail exposure. The Standardised Retail exposure class excludes mortgages which are included in a separate class under the heading Secured on real estate property

Funded credit protection for corporates increased in both the IRB and Standardised approaches due to the expansion of the reverse repo business in response to client demand and an increase in repo, improving the quality of our funding base. Funded credit protection for Retail increased under the IRB approach due to the migration of the Taiwan mortgage portfolio from Standardised to the IRB approach.

3.5 Credit risk mitigation continued

The table below presents the EAD before and after the effect of CRM, including credit substitution and collateral, with a further split into on balance sheet and off balance sheet exposures and excluding counterparty credit risk. Off balance sheet exposures are presented before and after the application of standardised CCFs.

Table 26: Standardised approach – credit risk exposure and Credit Risk Mitigation (CRM) effects (CR4)

Standardised Exposure Class	2016					
	Exposures before CCF and CRM ¹		Exposures post CCF and CRM		RWA and RWA density	
	On balance sheet \$million	Off balance sheet \$million	On balance sheet \$million	Off balance sheet \$million	RWA \$million	RWA density %
Central governments or central banks	42,498	49,959	43,695	112	5,143	12
Multilateral development banks	11,885	11,474	12,493	26	–	–
Institutions	3,537	1,862	2,398	33	355	15
Corporates	24,253	30,059	14,240	1,379	15,435	99
Retail	11,754	5,832	11,229	215	8,140	71
Secured on real estate property	9,781	491	9,738	212	5,515	55
Exposures in default	804	18	323	8	330	100
Items belonging to regulatory high risk categories	3,010	467	2,430	50	3,720	150
Other items ²	10,089	86	10,113	27	10,619	105
Total Standardised³	117,611	100,248	106,659	2,062	49,257³	45

1. EAD before the effect of collateral and substitution

2. Other items include public sector entities

3. See Table 9: Overview of RWA (OV1) Standardised approach \$42,958 million and amount below threshold for deduction \$6,299 million

EAD for central governments or central banks increased due to the impact of model migration for EU member state exposures.

EAD for secured on real estate property decreased by \$6.2 billion due to the migration of the Taiwan mortgage portfolio from the Standardised to the IRB approach.

Table 26: Standardised approach – credit risk exposure and Credit Risk Mitigation (CRM) effects (CR4) continued

Standardised Exposure Class	2015					
	Exposures before CCF and CRM ¹		Exposures post CCF and CRM		RWA and RWA density	
	On balance sheet \$million	Off balance sheet \$million	On balance sheet \$million	Off balance sheet \$million	RWA \$million	RWA density %
Central governments or central banks	4,316	280	4,293	16	4,061	94
Multilateral development banks	15,138	13,128	15,810	57	–	–
Institutions	1,419	2,177	1,540	26	284	18
Corporates	26,047	31,106	14,751	664	15,173	98
Retail	12,824	5,538	12,187	236	8,872	71
Secured on real estate property	15,989	436	15,902	193	8,314	52
Exposures in default	658	4	269	1	270	100
Items belonging to regulatory high risk categories	3,537	186	3,298	24	4,983	150
Other items ²	10,983	504	10,976	383	11,618	102
Total Standardised³	90,911	53,359	79,026	1,600	53,575³	66

1. EAD before the effect of collateral and substitution

2. Other items include public sector entities

3. See Table 9: Overview of RWA (OV1) Standardised approach \$48,331 million and amount below threshold for deduction \$5,244 million

3.6 Regulatory expected loss vs. impairment charge

Details of impaired exposures, individual impairment provision and portfolio impairment provision are set out in the Risk profile section of the 2016 Annual Report and Accounts on page 152.

The table below compares the regulatory expected loss at 1 January 2016 against the net impairment charge in the 2016 Annual Report and Accounts, for the IRB portfolio.

Regulatory expected loss is based on a through-the-cycle methodology using risk parameters and observations over a period of time. It is a conservative and appropriately prudent calculation underpinning regulatory capital requirements, but:

- does not take account of any benefit from management actions to reduce exposures to riskier customers, clients or segments as conditions deteriorate.

- does not take account of any diversification benefit;
- and is calculated in accordance with rules which enforce a certain level of conservatism.

Regulatory expected loss therefore bears little resemblance to impairment as defined for accounting purposes. This is illustrated by the table below which shows expected loss consistently higher than impairment.

The net individual impairment charge is a point in time actual charge raised in accordance with accounting standards that require the Group to either provide for or write-off debts when certain conditions are met as described in the problem credit management and provisioning section of the Risk profile section of the 2016 Annual Report and Accounts on pages 157 to 161.

Table 27: Regulatory expected loss

	1st January 2016	31st December 2016	1st January 2015	31st December 2015
	Regulatory expected loss \$million	Net impairment charge \$million	Regulatory expected loss \$million	Net impairment charge \$million
IRB Exposure Class				
Central governments or central banks	93	–	95	–
Institutions	228	79	168	72
Corporates	5,929	2,299	3,925	3,853
Retail, of which	971	89	1,004	453
Secured by real estate collateral	49	21	85	–
Qualifying revolving retail	335	18	360	251
Retail SME	34	9	44	36
Other retail	553	41	516	166
Total IRB	7,221	2,467	5,192	4,378

In 2015, the Group incurred elevated levels of loan impairment including approximately \$2.6 billion relating to a portfolio of assets beyond risk appetite which were downgraded during the year and transferred to the liquidation portfolio. Approximately \$1.6 billion of this loan impairment was incurred prior to this transfer having taken place. As a result, loan impairment during 2015 was only 16 per cent lower than the expected loss level as at 1 January 2015. During 2016, as the majority of this portfolio was exited, the quantum of exposures downgraded fell resulting in lower levels of impairment which was significantly lower than the comparable expected loss levels. The profile of loan impairment being significantly lower than expected loss is consistent with that seen in prior years, with the exception of 2015. The loan impairment performance of the Group is discussed in more detail on pages 157 to 161 of the 2016 Annual Report and Accounts.

3.7 Risk grade profile

Exposures by internal credit grading

For CIB IRB portfolios an alphanumeric credit risk-grading system is used. The grading is based on the Group's internal estimate of probability of default over a one-year horizon, with customers or portfolios assessed against a range of quantitative and qualitative factors. The numeric grades run from 1 to 14 and some of the grades are further sub-classified. Lower credit grades are indicative of a lower likelihood of default. Credit grades 1 to 12 are assigned to performing customers or accounts, while credit grades 13 and 14 are assigned to non-performing or defaulted customers. The Group's credit grades in CIB are not intended to replicate external credit grades, and ratings assigned by external credit assessment institutions (ECAI) are not used in determining internal credit grades. Nonetheless, as the factors used to grade a borrower may be similar, a borrower rated poorly by an ECAI is typically expected to be assigned a weak internal credit grade.

For Retail IRB portfolios, individual client product PDs are used to estimate RWAs and an alphanumeric credit risk-grading system is used only for reporting purposes. For Retail exposures, models generate individual probability of default rates which are used to estimate RWA. These models are based on application and behavioural scorecards which make use of credit bureau information as well as the Group's own data.

IRB models cover a substantial majority of the Group's loans and are used extensively in assessing risks at customer and portfolio level, setting strategy and optimising the Group's risk-return decisions.

The Group makes use of internal risk estimates of PD, LGD and EAD in the areas of:

- Credit Approval and Decision – The level of authority required for the sanctioning of credit requests and the decision made is based on a combination of PD, LGD and EAD of the obligor with reference to the nominal exposure.
- Pricing – In CIB, a pre-deal pricing calculator, which takes into consideration PD, LGD and EAD in the calculation of expected loss and risk-weighted assets, is used for the proposed transactions to ensure appropriate return. In Retail, a standard approach to risk-return assessment is used to assess the risk using PD, LGD and EAD against the expected income for pricing and risk decisions.
- Limit Setting – In CIB, single name concentration limits are determined by PD, LGD and EAD. The limits operate on a sliding scale to ensure that the Group does not have over concentration of low credit quality assets. In Retail, the estimates of PD, LGD and EAD are used in the credit underwriting and portfolio management actions such as credit line increase/decrease and top-up for instalment loans.
- Provisioning – Portfolio Impairment Provisions (PIP) are raised at the portfolio level and are set with reference to expected loss which is based on PD.
- LGD and EAD amongst other quantitative and qualitative factors.
- Risk Appetite – PD, LGD and EAD models provide some of the key inputs into the risk-based methodologies used in the assessment of business and market variables which in turn are key components in the approach taken in setting Risk Appetite; and
- Economic Capital – PD, LGD and EAD are key components of the model used to calculate Economic Capital which is used in the pricing and performance measurement processes at business unit, portfolio and client relationship level.

The table below shows a breakdown of weighted average PD and LGD by major exposure class under the advanced IRB approach for each relevant geographical location. These weighted averages have been calculated using EAD before taking into account the impact of credit risk mitigation.

Table 28: Exposure weighted average PD% and LGD% by geography

	2016				
	Greater China and North Asia ¹ %	ASEAN and South Asia ¹ %	Africa and Middle East ¹ %	Europe and Americas ¹ %	Total %
Exposure weighted average PD%					
Central governments or central banks	0.02	0.13	1.11	0.03	0.16
Institutions	0.08	1.12	1.38	0.25	0.39
Corporates	2.81	8.36	12.26	2.89	4.89
Retail	0.95	2.75	6.88	–	1.47
Total IRB	0.95	4.16	7.15	1.70	2.30
Exposure weighted average LGD%					
Central governments or central banks	45	46	46	42	44
Institutions	25	26	31	19	22
Corporates	37	39	42	31	35
Retail	33	30	97	–	33
Total IRB	35	36	43	30	34

1. The regional split is based on booking location

3.7 Risk grade profile continued

Table 28: Exposure weighted average PD% and LGD% by geography continued

	2015				
	Greater China and North Asia ¹ %	ASEAN and South Asia ¹ %	Africa and Middle East ¹ %	Europe and Americas ¹ %	Total %
Exposure weighted average PD%					
Central governments or central banks	0.02	0.18	1.03	0.02	0.13
Institutions	0.06	1.45	1.35	0.25	0.38
Corporates	3.14	7.44	12.00	6.78	6.66
Retail	1.37	2.74	6.78	–	1.84
Total IRB	1.16	4.15	7.20	2.67	2.74
Exposure weighted average LGD%					
Central governments or central banks	46	45	46	45	46
Institutions	24	23	30	19	23
Corporates	37	38	42	37	38
Retail	35	31	97	–	35
Total IRB	37	36	44	34	36

1. The regional split is based on booking location

The table below shows the significant drivers of RWA movements from 1 January 2016.

Table 29: RWA flow statements of credit risk exposures under IRB (CR8)

	2016	
	RWA amounts ² \$million	Capital requirements \$million
As at 1 January 2016	166,107	13,289
Asset size	(13,280)	(1,088)
Asset quality	(283)	(23)
Model updates	(3,345)	(268)
Methodology and policy	953	76
Acquisitions and disposals	(331)	(26)
Foreign exchange movements	(2,571)	(180)
As at 31 December 2016	147,250¹	11,780

1. See Table 9: Overview of RWA (OV1). Advanced IRB \$144,317 million and securitisation of \$2,933 million

2. Includes securitisation and non credit obligation assets but excludes counterparty credit risk

The decrease of \$3.3 billion due to model updates is mostly due to the impact of model migration resulting in transfers in exposure class between the IRB and Standardised approaches.

3.7 Risk grade profile continued

The following table sets out analysis of credit and counterparty credit risk EAD within the IRB portfolios by regulatory exposure classes. EAD has been calculated after taking into account the impact of credit risk mitigation. Where an exposure is guaranteed or covered by credit derivatives, it is shown against the exposure class of the guarantor or derivative issuer. 79 per cent (2015: 79 per cent) of exposures are classified as credit grades 1 to 5. A further split of the major exposure classes by credit grade can be seen in Tables 31 to 34.

Table 30: IRB – Credit risk exposures by exposure class (CR6)

	2016											
IRB Exposure Class	On-balance sheet exposure \$million	Off-balance sheet exposure pre CCF \$million	Average CCF %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors thou-sands ²	Average LGD ¹ %	Average maturity ¹ \$million	RWA \$million	RWA density %	EL \$million	Value adjustments and Provisions \$million
Central governments or central banks	119,772	176,992	1	125,654	0.16	–	44	498	18,937	15	90	–
Institutions	112,374	197,754	3	119,128	0.39	2	22	305	17,546	15	236	169
Corporates	174,482	235,285	21	221,817	4.89	65	35	444	101,843	46	5,646	5,232
Of which specialised lending	7,444	2,644	27	6,411	7.52	–	27	1,296	4,295	67	197	153
Of which SME	7,198	4,947	25	7,819	9.87	44	36	638	5,035	64	306	288
Retail	75,734	31,205	58	93,896	1.47	4,259	33	–	19,203	20	786	64
Secured by real estate collateral	64,220	2,451	99	66,640	0.61	364	12	–	4,467	7	51	29
Of which SME	250	7	64	253	2.88	1	–	–	–	–	–	–
Of which Non SME	63,970	2,443	99	66,387	0.60	363	13	–	4,467	7	51	29
Qualifying revolving retail	3,242	23,589	54	15,866	2.53	3,300	87	–	4,907	31	292	3
Other retail	8,272	5,166	60	11,390	5.05	595	83	–	9,828	86	443	32
Of which SME	855	404	6	875	5.20	7	76	–	593	68	28	15
Of which Non SME	7,417	4,762	65	10,515	5.03	568	84	–	9,235	88	415	17
Total IRB	482,362	641,236	12	560,495	2.30	4,326	34	423	157,528	28	6,758	5,465

1. Weighted averages are based on exposure at default

2. Number of obligors is based on number of counterparties for central governments or central banks, institutions and corporates and on individual pools of clients for Retail

EAD for central governments or central banks decreased by \$36.6 billion due to the impact of model migration for EU member state exposure. EAD for corporates increased by \$19.1 billion as a result of expansion of the reverse repo business in response to client demand and an increase in repo improving the quality of the funding base. Credit risk RWAs for corporates decreased by \$22.0 billion, mainly due to exits from the liquidation portfolio which also reduced RWA density by 15 percentage points.

	2015											
IRB Exposure Class	On-balance sheet exposure \$million	Off-balance sheet exposure pre CCF \$million	Average CCF %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors thou-sands ²	Average LGD ¹ %	Average maturity ¹ \$million	RWA \$million	RWA density %	EL \$million	Value adjustments and Provisions \$million
Central governments or central banks	153,446	225,857	1	162,232	0.13	–	46	504	20,504	13	93	37
Institutions	117,374	198,940	3	122,310	0.38	2	23	327	15,446	13	228	297
Corporates	153,564	248,250	21	202,743	6.66	72	38	532	123,847	61	5,929	6,514
Of which Specialised lending	7,978	3,942	21	7,016	8.83	–	27	1,273	3,793	54	223	382
Of which SME	8,836	6,673	25	9,417	8.32	50	33	563	6,250	66	269	269
Retail	69,847	29,627	60	87,533	1.84	4,328	35	–	20,235	23	971	64
Secured by real estate collateral	58,285	2,136	98	60,385	0.70	305	12	–	4,349	7	49	27
Of which SME	275	10	69	279	3.24	1	–	–	–	–	–	–
Of which Non SME	58,010	2,126	99	60,106	0.68	304	12	–	4,349	7	49	27
Qualifying revolving retail	3,180	22,670	56	15,817	2.77	3,366	86	–	5,601	35	335	3
Other retail	8,381	4,821	61	11,331	6.66	657	83	–	10,285	91	587	34
Of which SME	897	446	11	947	5.46	11	77	–	699	74	34	15
Of which Non SME	7,484	4,375	66	10,384	6.77	646	83	–	9,586	92	553	19
Total IRB	494,230	702,674	11	574,818	2.74	4,402	36	471	180,032	31	7,221	6,912

1. Weighted averages are based on exposure at default

2. Number of obligors is based on number of counterparties for central governments or central banks, institutions and corporates and on individual pools of clients for Retail

3.7 Risk grade profile continued

The following tables provide further detail on the exposure classes subject to credit and counterparty credit risk, in particular for Central governments or central banks, Institutions, Corporates and Retail. These have been split by internal credit grade which relate to the PD ranges presented. These exposure classes represent 79 per cent (2015: 81 per cent) of the Group's total credit risk exposure before collateral.

Table 31: IRB credit risk exposure by internal PD grade for Central governments or central banks (CR6)

2016														
Group internal ratings	PD range %	On-balance sheet exposure \$million	Off-balance sheet exposure pre CCF \$million	Average CCF %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors ²	Average LGD ¹ %	Average maturity ¹ Days	RWA \$million	RWA density %	Expected Loss \$million	Value adjustments and Provisions \$million	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	55,115	91,802	–	55,303	0.01	43	46	502	2,572	5	3		AAA/AA+
1B	0.016 – 0.025	17,397	33,282	4	19,146	0.02	40	39	450	1,255	7	1		AA/AA-
2A	0.026 – 0.035	29,185	20,718	1	32,271	0.03	21	45	466	3,092	10	4		AA-/A+
2B	0.036 – 0.045	7	277	16	86	0.04	5	49	1,522	26	30	–		A+
3A	0.046 – 0.060	1,721	4,578	1	1,885	0.05	11	45	723	341	18	–		A
3B	0.061 – 0.083	69	–	–	74	0.07	30	46	1,160	22	31	–		A-
4A	0.084 – 0.110	1,255	3,595	–	1,468	0.09	12	46	870	433	30	1		A-
4B	0.111 – 0.170	332	1,403	2	356	0.13	7	46	619	109	31	–		BBB+
5A	0.171 – 0.300	5,873	5,158	1	6,220	0.22	14	46	756	2,872	46	6		BBB/BBB-
5B	0.301 – 0.425	360	4,334	–	360	0.39	10	46	370	180	50	1		BB+
6A	0.426 – 0.585	4	532	–	4	0.51	5	46	365	2	58	–		BB
6B	0.586 – 0.770	1,026	–	–	1,026	0.67	5	46	451	718	70	3		BB
7A	0.771 – 1.020	2,022	3,767	–	2,043	0.88	10	46	380	1,563	77	8		BB-
7B	1.021 – 1.350	519	57	–	519	1.17	5	47	319	437	84	3		B+
8A	1.351 – 1.750	3,033	3,970	1	3,054	1.54	15	46	375	2,923	96	22		B+/B
8B	1.751 – 2.350	425	844	1	435	2.03	9	46	385	463	106	4		B
9A	2.351 – 3.050	772	1,403	2	766	2.67	21	43	417	829	108	9		B-
9B	3.051 – 4.000	287	681	2	267	3.51	15	46	424	328	123	4		B-/CCC
10A	4.001 – 5.300	–	107	–	1	4.62	4	46	365	1	141	–		B-/CCC
11A/B/C	7.001 – 15.750	370	484	–	370	12.36	11	46	366	771	208	21		CCC/C
12A/B/C	15.751 – 50.000	–	–	–	–	–	–	–	–	–	–	–		CCC/C
13	50.001 – 99.999	–	–	–	–	–	–	–	–	–	–	–		N/A
14	100.000	–	–	–	–	–	–	–	–	–	–	–		N/A
Unrated		–	–	–	–	–	–	–	–	–	–	–		N/A
Total (see Table 30)		119,772	176,992	1	125,654	0.16	294	44	498	18,937	15	90	–	

1. Weighted averages are based on exposure at default

2. Number of obligors is based on number of counterparties

EAD for central governments or central banks decreased by \$36.6 billion mainly due to the impact of model migration for EU member state exposure.

3.7 Risk grade profile continued

Table 31: IRB credit risk exposure by internal PD grade for Central governments or central banks (CR6) continued

2015														
Group internal ratings	PD range %	On-balance sheet exposure \$million	Off-balance sheet exposure pre CCF \$million	Average CCF %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors ²	Average LGD ¹ %	Average maturity ¹ Days	RWA \$million	RWA density %	Expected Loss \$million	Value adjustments and Provisions \$million	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	95,365	136,762	–	96,194	0.01	69	46	491	4,333	5	4		AAA/AA+
1B	0.016 – 0.025	11,395	35,041	–	11,947	0.02	42	41	346	652	5	1		AA/AA-
2A	0.026 – 0.035	28,398	20,479	12	35,271	0.03	44	46	563	3,809	11	5		AA-/A+
2B	0.036 – 0.045	1,879	4,120	2	1,995	0.04	10	46	596	275	14	–		A+
3A	0.046 – 0.060	273	1,000	–	337	0.05	5	46	628	56	17	–		A
3B	0.061 – 0.083	286	506	–	289	0.07	38	46	696	63	22	–		A-
4A	0.084 – 0.110	1,857	4,677	–	1,872	0.09	11	46	506	408	22	1		A-
4B	0.111 – 0.170	747	1,634	–	943	0.13	9	46	639	291	31	1		BBB+
5A	0.171 – 0.300	4,511	7,236	–	4,617	0.22	11	44	801	2,125	46	4		BBB/BBB-
5B	0.301 – 0.425	390	2,547	–	390	0.39	6	46	475	207	53	1		BB+
6B	0.586 – 0.770	251	33	–	251	0.67	4	42	531	170	68	1		BB
7A	0.771 – 1.020	2,465	3,060	1	2,506	0.89	9	46	433	1,957	78	10		BB-
7B	1.021 – 1.350	986	910	–	986	1.17	7	46	348	835	85	5		B+
8A	1.351 – 1.750	531	2,498	–	531	1.54	12	46	361	503	95	4		B+/B
8B	1.751 – 2.350	2,748	3,164	–	2,752	2.03	12	46	431	2,943	107	26		B
9A	2.351 – 3.050	271	851	–	271	2.67	14	46	365	312	115	3		B-
9B	3.051 – 4.000	671	1,003	2	658	3.51	18	46	487	831	126	10		B-/CCC
10A	4.001 – 5.300	176	–	–	176	4.62	4	46	379	246	140	4		B-/CCC
11A/B/C	7.001 – 15.750	246	336	–	247	11.07	12	46	365	488	198	13		CCC/C
13	50.001 – 99.999	–	–	–	–	–	–	–	–	–	–	–		N/A
14	100.000	–	–	–	–	–	–	–	–	–	–	–		N/A
Unrated		–	–	–	–	–	–	–	–	–	–	–		N/A
Total (see Table 30)		153,446	225,857	1	162,232	0.13	343	46	504	20,504	13	93	37	

1. Weighted averages are based on exposure at default

2. Number of obligors is based on number of counterparties

3.7 Risk grade profile continued

Table 32: IRB credit risk exposure by internal PD grade for Institutions (CR6)

2016														
Group internal ratings	PD range %	On-balance sheet exposure \$million	Off-balance sheet exposure pre CCF \$million	Average CCF %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors ²	Average LGD ¹ %	Average maturity ¹	RWA \$million	RWA density %	Expected Loss \$million	Value adjustments and Provisions \$million	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	–	–	–	–	–	–	–	–	–	–	–	–	AAA/AA+
1B	0.016 – 0.025	–	–	–	–	–	–	–	–	–	–	–	–	AA/AA-
2A	0.026 – 0.035	43,736	75,167	3	48,040	0.03	427	22	341	2,344	5	3	–	AA-/A+
2B	0.036 – 0.045	9,826	19,401	1	10,693	0.04	131	26	327	729	7	1	–	A+
3A	0.046 – 0.060	15,804	28,505	2	17,056	0.05	177	19	301	960	6	2	–	A
3B	0.061 – 0.083	6,202	16,219	2	6,691	0.07	143	24	295	712	11	1	–	A-
4A	0.084 – 0.110	5,190	8,275	2	5,501	0.09	137	23	257	643	12	1	–	A-
4B	0.111 – 0.170	5,138	10,571	6	6,198	0.13	131	22	243	919	15	2	–	BBB+
5A	0.171 – 0.300	7,943	10,590	3	7,844	0.22	172	26	309	1,832	23	4	–	BBB/BBB-
5B	0.301 – 0.425	10,976	11,436	2	9,222	0.39	139	29	216	3,455	37	11	–	BB+
6A	0.426 – 0.585	1,365	3,354	4	1,363	0.51	106	33	336	667	49	2	–	BB
6B	0.586 – 0.770	1,885	2,353	3	1,790	0.68	66	28	295	854	48	3	–	BB
7A	0.771 – 1.020	626	2,417	10	713	0.90	86	33	195	454	64	2	–	BB-
7B	1.021 – 1.350	1,002	2,059	8	806	1.18	76	38	130	647	80	4	–	B+
8A	1.351 – 1.750	866	3,072	23	1,238	1.54	114	40	114	1,152	93	8	–	B+/B
8B	1.751 – 2.350	547	1,355	10	537	2.04	81	40	104	545	102	4	–	B
9A	2.351 – 3.050	695	1,782	18	758	2.67	80	39	508	823	109	7	–	B-
9B	3.051 – 4.000	105	714	2	91	3.49	22	35	249	105	116	1	–	B-/CCC
10A	4.001 – 5.300	173	128	35	218	4.62	16	15	650	129	59	2	–	B-/CCC
10B	5.301 – 7.000	8	81	11	16	6.16	20	41	141	26	159	–	–	CCC/C
11A/B/C	7.001 – 15.750	42	159	30	70	10.68	44	38	148	120	172	3	–	CCC/C
12A/B/C	15.751 – 50.000	40	6	34	42	32.51	7	41	1	105	248	6	–	CCC/C
13	50.001 – 99.999	36	109	31	70	99.99	4	37	238	325	461	–	–	N/A
14	100.000	169	1	100	171	100	7	41	354	–	–	169	–	N/A
Unrated		–	–	–	–	–	–	–	–	–	–	–	–	N/A
Total (see Table 30)		112,374	197,754	3	119,128	0.39	2,186	22	305	17,546	15	236	169	

1. Weighted averages are based on exposure at default

2. Number of obligors is based on number of counterparties

3.7 Risk grade profile continued

Table 32: IRB credit risk exposure by internal PD grade for Institutions (CR6) continued

2015														
Group internal ratings	PD range %	On-balance sheet exposure \$million	Off-balance sheet exposure pre CCF \$million	Average CCF %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors ²	Average LGD ¹ %	Average maturity ¹ Days	RWA \$million	RWA density %	Ex-pected Loss \$million	Value adjust-ments and Pro-visions \$million	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	–	–	–	–	–	–	–	–	–	–	–	–	AAA/AA+
1B	0.016 – 0.025	–	–	–	–	–	–	–	–	–	–	–	–	AA/AA-
2A	0.026 – 0.035	42,507	75,879	1	45,186	0.03	401	23	379	2,237	5	3	–	AA-/A+
2B	0.036 – 0.045	13,745	21,543	4	14,939	0.04	138	25	338	1,040	7	2	–	A+
3A	0.046 – 0.060	20,586	25,860	1	21,159	0.05	191	18	252	1,265	6	2	–	A
3B	0.061 – 0.083	8,562	19,024	2	9,144	0.07	166	21	268	815	9	1	–	A-
4A	0.084 – 0.110	4,935	8,299	2	5,266	0.09	127	25	315	661	13	1	–	A-
4B	0.111 – 0.170	8,732	16,927	4	9,412	0.13	164	29	293	1,822	19	4	–	BBB+
5A	0.171 – 0.300	9,413	10,770	2	8,614	0.22	191	24	350	1,990	23	5	–	BBB/BBB-
5B	0.301 – 0.425	1,915	4,498	3	1,908	0.39	118	24	308	562	29	2	–	BB+
6A	0.426 – 0.585	506	2,961	4	591	0.51	99	32	433	283	48	1	–	BB
6B	0.586 – 0.770	1,597	1,998	3	1,532	0.68	67	21	437	559	36	2	–	BB
7A	0.771 – 1.020	1,221	2,708	11	1,232	0.92	86	32	309	771	63	4	–	BB-
7B	1.021 – 1.350	729	2,200	7	700	1.20	85	36	189	530	76	3	–	B+
8A	1.351 – 1.750	844	1,214	11	617	1.55	89	40	118	530	86	4	–	B+/B
8B	1.751 – 2.350	847	3,248	9	957	2.05	138	34	158	794	83	6	–	B
9A	2.351 – 3.050	217	626	11	152	2.67	42	40	131	168	110	2	–	B-
9B	3.051 – 4.000	360	207	4	280	3.51	31	15	525	128	46	1	–	B-/CCC
10A	4.001 – 5.300	2	49	21	12	4.80	14	41	95	17	141	–	–	B-/CCC
10B	5.301 – 7.000	9	103	7	13	6.05	23	41	71	20	153	–	–	CCC/C
11A/B/C	7.001 – 15.750	398	679	7	323	11.03	86	31	143	504	156	11	–	CCC/C
12A/B/C	15.751 – 50.000	3	1	100	4	19.08	5	41	461	9	234	–	–	CCC/C
13	50.001 – 99.999	74	143	14	94	99.99	4	63	40	737	782	–	–	N/A
14	100.000	172	3	100	175	100	12	41	679	4	2	174	–	N/A
Total (see Table 30)		117,374	198,940	3	122,310	0.38	2,277	23	327	15,446	13	228	297	

1. Weighted averages are based on exposure at default

2. Number of obligors is based on number of counterparties

3.7 Risk grade profile continued

Table 33: IRB credit risk exposure by internal PD grade for Corporates (CR6)

2016														
Group internal ratings	PD range %	On-balance sheet exposure \$million	Off-balance sheet exposure pre CCF \$million	Average CCF %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors ²	Average LGD ¹ %	Average maturity ¹ Days	RWA \$million	RWA density %	Expected Loss \$million	Value adjustments and Provisions \$million	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	–	–	–	–	–	–	–	–	–	–	–	–	AAA/AA+
1B	0.016 – 0.025	–	–	–	–	–	–	–	–	–	–	–	–	AA/AA-
2A	0.026 – 0.035	21,380	18,515	7	23,285	0.03	566	21	188	1,021	4	3	3	AA-/A+
2B	0.036 – 0.045	2,424	4,678	20	6,171	0.04	302	31	336	586	10	1	1	A+
3A	0.046 – 0.060	18,435	13,110	23	22,858	0.05	585	21	220	1,644	7	2	2	A
3B	0.061 – 0.083	7,715	20,290	21	13,472	0.07	1,342	33	499	2,041	15	3	3	A-
4A	0.084 – 0.110	10,206	20,095	23	15,875	0.09	1,152	47	540	3,741	24	8	8	A-
4B	0.111 – 0.170	16,071	25,156	20	21,381	0.13	1,527	37	444	4,910	23	11	11	BBB+
5A	0.171 – 0.300	12,592	29,228	22	19,098	0.22	2,674	43	508	6,832	36	18	18	BBB/BBB-
5B	0.301 – 0.425	14,657	22,356	18	18,264	0.39	2,219	36	473	7,318	40	26	26	BB+
6A	0.426 – 0.585	7,052	14,660	21	10,100	0.51	3,751	38	470	4,970	49	19	19	BB
6B	0.586 – 0.770	9,053	13,653	23	12,036	0.67	10,951	40	574	7,442	62	32	32	BB
7A	0.771 – 1.020	7,091	11,664	23	9,132	0.89	12,294	42	537	6,429	70	33	33	BB-
7B	1.021 – 1.350	6,424	7,853	25	7,949	1.17	3,889	36	551	5,314	67	33	33	B+
8A	1.351 – 1.750	6,549	8,531	17	6,490	1.54	2,791	41	504	5,485	85	39	39	B+/B
8B	1.751 – 2.350	5,335	7,190	28	6,863	2.05	2,700	36	633	5,619	82	50	50	B
9A	2.351 – 3.050	3,769	4,329	34	4,392	2.70	3,430	36	592	3,961	90	40	40	B-
9B	3.051 – 4.000	4,869	4,391	21	4,623	3.56	2,722	43	526	5,253	114	67	67	B-/CCC
10A	4.001 – 5.300	3,320	2,114	34	3,465	4.63	1,871	38	386	3,776	109	58	58	B-/CCC
10B	5.301 – 7.000	1,914	1,088	22	1,842	6.13	1,435	44	363	2,601	141	48	48	CCC/C
11A/B/C	7.001 – 15.750	5,384	3,991	24	4,165	11.64	2,514	43	536	6,347	152	158	158	CCC/C
12A/B/C	15.751 – 50.000	1,826	551	31	1,737	25.46	586	35	755	3,105	179	152	152	CCC/C
13	50.001 – 99.999	931	136	23	966	99.51	565	47	589	4,574	473	99	99	N/A
14	100.000	7,485	1,706	20	7,653	100.00	4,956	56	469	8,874	116	4,746	4,746	N/A
Unrated		–	–	–	–	–	–	–	–	–	–	–	–	N/A
Total (see Table 30)		174,482	235,285	21	221,817	4.89	64,822	35	444	101,843	46	5,646	5,232	

1. Weighted averages are based on exposure at default

2. Number of obligors is based on number of counterparties

EAD for corporates increased by \$19.1 billion as a result of expansion of the repo and reverse repo business in response to client demand and increase in repo improving the quality of the funding base. Credit risk RWAs for corporates decreased by \$22.0 billion, mainly due to exits from the liquidation portfolio.

3.7 Risk grade profile continued

Table 33: IRB credit risk exposure by internal PD grade for Corporates (CR6) continued

2015														
Group internal ratings	PD range %	On-balance sheet exposure \$million	Off-balance sheet exposure pre CCF \$million	Average CCF %	EAD post CRM and post CCF \$million	Average PD ¹	Number of obligors ²	Average LGD ¹ %	Average maturity ¹ Days	RWA \$million	RWA density %	Expected Loss \$million	Value adjustments and Provisions \$million	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	–	–	–	–	–	–	–	–	–	–	–	–	AAA/AA+
1B	0.016 – 0.025	–	–	–	–	–	–	–	–	–	–	–	–	AA/AA-
2A	0.026 – 0.035	10,456	14,832	15	12,743	0.03	558	23	353	867	7	1	–	AA-/A+
2B	0.036 – 0.045	1,146	6,613	20	6,268	0.04	327	36	393	671	11	1	–	A+
3A	0.046 – 0.060	7,487	13,628	24	12,512	0.05	648	27	395	1,251	10	2	–	A
3B	0.061 – 0.083	7,340	17,281	23	12,232	0.07	1,106	38	632	2,310	19	3	–	A-
4A	0.084 – 0.110	6,730	19,194	23	11,932	0.09	1,081	43	627	2,922	24	5	–	A-
4B	0.111 – 0.170	13,102	25,879	19	18,355	0.13	1,723	45	559	5,550	30	11	–	BBB+
5A	0.171 – 0.300	13,693	30,164	20	20,579	0.22	2,482	42	617	7,742	38	19	–	BBB/BBB-
5B	0.301 – 0.425	13,539	18,925	19	16,257	0.39	2,320	38	495	7,796	48	42	–	BB+
6A	0.426 – 0.585	10,235	17,648	22	12,808	0.51	4,347	38	630	7,396	58	26	–	BB
6B	0.586 – 0.770	7,596	16,904	18	10,704	0.67	11,240	40	474	6,889	64	31	–	BB
7A	0.771 – 1.020	8,279	13,298	22	10,794	0.90	13,463	38	551	7,403	69	38	–	BB-
7B	1.021 – 1.350	5,830	11,293	23	8,403	1.17	4,940	35	565	5,880	70	34	–	B+
8A	1.351 – 1.750	4,562	7,825	21	6,257	1.54	3,895	36	501	4,933	79	36	–	B+/B
8B	1.751 – 2.350	7,699	9,657	22	8,816	2.05	4,566	35	550	7,298	83	64	–	B
9A	2.351 – 3.050	4,977	7,708	21	5,515	2.70	3,831	35	529	4,840	88	53	–	B-
9B	3.051 – 4.000	4,965	6,756	17	4,940	3.56	3,511	35	505	4,875	99	63	–	B-/CCC
10A	4.001 – 5.300	3,140	2,095	22	3,075	4.63	2,300	36	478	3,345	109	53	–	B-/CCC
10B	5.301 – 7.000	2,380	1,506	24	2,403	6.13	1,631	39	423	3,109	129	59	–	CCC/C
11A/B/C	7.001 – 15.750	7,961	4,802	42	5,537	11.90	3,029	25	683	6,642	120	177	–	CCC/C
12A/B/C	15.751 – 50.000	1,447	525	30	1,568	25.67	594	46	496	4,118	263	192	–	CCC/C
13	50.001 – 99.999	1,172	236	40	1,208	99.85	911	45	400	6,234	516	52	–	N/A
14	100.000	9,828	1,481	19	9,837	100	3,743	58	441	21,776	221	4,967	–	N/A
Unrated		–	–	–	–	–	–	–	–	–	–	–	–	N/A
Total (see Table 30)		153,564	248,250	21	202,743	6.66	72,246	38	532	123,847	61	5,929	6,514	

1. Weighted averages are based on exposure at default

2. Number of obligors is based number of counterparties

3.7 Risk grade profile continued

Table 34: IRB credit risk exposure by internal PD grade for Retail (CR6)

2016														
Group internal ratings	PD range %	On-balance sheet exposure \$million	Off-balance sheet exposure pre CCF \$million	Average CCF %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors ² '000	Average LGD ¹ %	Average maturity ¹ Days	RWA \$million	RWA density %	Expected Loss \$million	Value adjustments and Provisions \$million	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	–	–	–	–	–	–	–	–	–	–	–	–	AAA/AA+
1B	0.016 – 0.025	–	–	–	–	–	–	–	–	–	–	–	–	AA/AA-
2A	0.026 – 0.035	18,239	2,635	87	20,524	0.03	338	13	–	296	1	1	–	AA-/A+
2B	0.036 – 0.045	7,357	242	94	7,585	0.04	65	12	–	198	3	–	–	A+
3A	0.046 – 0.060	7,359	1,025	48	7,855	0.05	125	17	–	284	4	1	–	A
3B	0.061 – 0.083	6,560	4,483	39	8,313	0.07	316	32	–	433	5	2	–	A-
4A	0.084 – 0.110	5,220	2,582	60	6,768	0.09	201	34	–	444	7	2	–	A-
4B	0.111 – 0.170	5,383	4,125	60	7,840	0.14	441	41	–	659	8	5	–	BBB+
5A	0.171 – 0.300	6,429	5,140	66	9,826	0.22	390	42	–	1,340	14	9	–	BBB/BBB-
5B	0.301 – 0.425	2,783	1,879	71	4,124	0.36	188	50	–	954	23	7	–	BB+
6A	0.426 – 0.585	2,703	1,500	63	3,654	0.50	181	48	–	1,003	27	9	–	BB
6B	0.586 – 0.770	2,241	881	68	2,839	0.67	110	44	–	902	32	8	–	BB
7A	0.771 – 1.020	1,588	2,024	42	2,432	0.88	207	54	–	956	39	12	–	BB-
7B	1.021 – 1.350	1,411	545	62	1,749	1.17	83	50	–	853	49	10	–	B+
8A	1.351 – 1.750	1,031	457	67	1,335	1.54	74	58	–	816	61	12	–	B+/B
8B	1.751 – 2.350	1,370	720	54	1,762	2.07	147	53	–	1,198	68	19	–	B
9A	2.351 – 3.050	1,079	495	46	1,306	2.67	166	71	–	1,201	92	25	–	B-
9B	3.051 – 4.000	1,203	666	53	1,553	3.53	192	70	–	1,485	96	38	–	B-/CCC
10A	4.001 – 5.300	1,047	492	39	1,240	4.51	228	75	–	1,359	110	42	–	B-/CCC
10B	5.301 – 7.000	607	255	46	721	6.07	134	78	–	885	123	34	–	CCC/C
11A/B/C	7.001 – 15.750	940	822	32	1,207	10.00	416	79	–	1,841	153	96	–	CCC/C
12A/B/C	15.751 – 50.000	551	203	40	628	36.35	81	68	–	1,113	177	158	–	CCC/C
13	50.001 – 99.999	13	11	–	13	99.99	63	55	–	38	297	4	–	N/A
14	100.000	620	23	10	622	100.00	111	58	–	945	152	292	–	N/A
Unrated		–	–	–	–	–	–	–	–	–	–	–	–	N/A
Total (see Table 30)		75,734	31,205	58	93,896	1.47	4,259	33	–	19,203	20	786	64	

1. Weighted averages are based on exposure at default

2. Number of obligors is based on individual pools of clients

EAD for Retail increased \$6.4 billion due to the migration of the Taiwan mortgage portfolio from the Standardised approach to the IRB approach.

3.7 Risk grade profile continued

Table 34: IRB credit risk exposure by internal PD grade for Retail (CR6) continued

2015														
Group internal ratings	PD range %	On-balance sheet exposure \$million	Off-balance sheet exposure pre CCF \$million	Average CCF %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors ² '000	Average LGD ¹ %	Average maturity ¹ Days	RWA \$million	RWA density %	Expected Loss \$million	Value adjustments and Provisions \$million	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	–	–	–	–	–	–	–	–	–	–	–	–	AAA/AA+
1B	0.016 – 0.025	–	–	–	–	–	–	–	–	–	–	–	–	AA/AA-
2A	0.026 – 0.035	16,857	2,376	85	18,887	0.03	330	14	–	276	1	1	–	AA-/A+
2B	0.036 – 0.045	6,540	239	92	6,760	0.04	66	12	–	175	3	–	–	A+
3A	0.046 – 0.060	5,892	515	54	6,171	0.05	60	14	–	228	4	–	–	A
3B	0.061 – 0.083	4,487	2,832	40	5,607	0.07	220	30	–	303	5	1	–	A-
4A	0.084 – 0.110	5,073	3,210	60	7,013	0.09	259	36	–	438	6	2	–	A-
4B	0.111 – 0.170	4,896	3,545	58	6,951	0.14	382	39	–	560	8	4	–	BBB+
5A	0.171 – 0.300	5,813	5,009	66	9,098	0.22	418	42	–	1,176	13	9	–	BBB/BBB-
5B	0.301 – 0.425	2,595	1,906	71	3,948	0.36	161	49	–	891	23	7	–	BB+
6A	0.426 – 0.585	2,433	1,713	66	3,573	0.50	215	50	–	1,005	28	9	–	BB
6B	0.586 – 0.770	2,473	1,014	68	3,163	0.67	122	43	–	994	31	9	–	BB
7A	0.771 – 1.020	1,646	2,323	43	2,638	0.89	239	55	–	1,046	40	13	–	BB-
7B	1.021 – 1.350	1,477	533	68	1,841	1.17	78	46	–	838	46	10	–	B+
8A	1.351 – 1.750	1,194	544	70	1,575	1.53	93	54	–	901	57	13	–	B+/B
8B	1.751 – 2.350	1,467	581	60	1,815	2.06	112	48	–	1,120	62	18	–	B
9A	2.351 – 3.050	1,229	595	46	1,503	2.71	180	67	–	1,320	88	27	–	B-
9B	3.051 – 4.000	1,142	612	42	1,400	3.50	214	71	–	1,356	97	34	–	B-/CCC
10A	4.001 – 5.300	1,204	661	61	1,604	4.55	233	71	–	1,656	103	52	–	B-/CCC
10B	5.301 – 7.000	863	349	36	990	6.02	200	76	–	1,194	121	45	–	CCC/C
11A/B/C	7.001 – 15.750	1,178	742	38	1,490	10.09	399	79	–	2,280	153	118	–	CCC/C
12A/B/C	15.751 – 50.000	502	264	55	599	26.62	189	73	–	1,226	205	112	–	CCC/C
13	50.001 – 99.999	175	42	33	193	80.77	32	73	–	236	122	111	–	N/A
14	100.000	711	22	26	714	100.00	126	63	–	1,016	142	376	–	N/A
Unrated		–	–	–	–	–	–	–	–	–	–	–	–	N/A
Total (see Table 30)		69,847	29,627	60	87,533	1.84	4,328	35	–	20,235	23	971	64	

1. Weighted averages are based on exposure at default

2. Number of obligors is based on individual pools of clients

3.8 Standardised risk weight profile

External ratings, where available, are used to assign risk weights for Standardised approach (SA) exposures. These external ratings must come from EU approved rating agencies, known as External Credit Assessment Institutions (ECAI); which currently includes Moody's, Standard & Poor's and Fitch. The Group uses the ECAI ratings from these agencies in its day to day business, which are tracked and kept updated. Assessments provided by approved ECAI are mapped to credit quality steps as prescribed by the CRR. A mapping from credit quality step to risk weight for each of the standardised exposure classes can be found in the following link: www.fca.org.uk/publication/archive/fsa-ecais-standardised.pdf

The Group currently does not use assessments provided by export credit agencies for the purpose of evaluating RWA in the Standardised approach.

The following tables set out an analysis of EAD and EAD after CRM associated with each risk weight as prescribed in Part Three, Title II, Chapter 2 of the CRR, including credit and counterparty credit risk. Regulatory risk weights based on the exposure classes are applied to unrated exposures.

Table 35: Standardised approach – exposures by asset classes and risk weights (pre CRM pre CCF) (CR5)

Standardised Exposure Class	2016													Total	Of which unrated
	Risk weight														
	0%	2%	4%	20%	35%	50%	75%	100%	150%	250%	Others	Deducted			
Central governments or central banks	87,532	–	–	20	–	3,693	–	508	–	1,173	27	–	92,953	3,351	
Multilateral development banks	25,727	–	–	–	–	–	–	–	–	–	–	–	25,727	148	
Institutions	0	20,067	–	1,650	–	2,188	–	151	–	–	–	–	24,057	9,459	
Corporates	–	–	–	12,651	–	32	–	53,648	–	–	–	–	66,331	55,028	
Retail	–	–	–	–	–	–	17,567	–	–	–	–	–	17,567	–	
Secured on real estate property	–	–	–	–	3,733	3,578	–	2,164	–	–	793	–	10,268	–	
Exposures in default	–	–	–	–	–	–	–	460	–	–	–	–	460	276	
Items belonging to regulatory high risk categories	–	–	–	–	–	–	–	–	3,047	–	–	–	3,047	3,047	
Other items	1,368	–	–	47	–	–	–	5,875	–	1,347	1,552	–	10,190	9,033	
Total Standardised	114,627	20,067	–	14,368	3,733	9,491	17,567	62,806	3,047	2,520	2,372	–	250,598	80,342	

EAD pre CRM and CCF for central governments or central banks increased by \$88.4 billion due to the impact of model migration for EU member state exposures. EAD for secured on real estate property decreased by \$6.2 billion due to the migration of the Taiwan mortgage portfolio from the Standardised to the IRB approach.

Table 35: Standardised approach – exposures by asset classes and risk weights (pre CRM pre CCF) (CR5) continued

Standardised Exposure Class	2015													Total	Of which unrated
	Risk weight														
	0%	2%	4%	20%	35%	50%	75%	100%	150%	250%	Others	Deducted			
Central governments or central banks	116	–	–	–	–	2,743	–	446	–	904	388	–	4,597	2,645	
Multilateral development banks	30,513	–	–	–	–	–	–	–	–	–	–	–	30,513	1,398	
Institutions	–	10,512	172	479	–	2,159	–	121	–	–	–	–	13,443	6,230	
Corporates	–	–	–	3,508	–	313	–	56,832	–	–	–	–	60,653	56,563	
Retail	–	–	–	–	–	–	18,343	–	–	–	–	–	18,343	–	
Secured on real estate property	–	–	–	–	4,587	3,942	–	2,396	–	–	5,507	–	16,433	–	
Exposures in default	–	–	–	–	–	–	–	275	–	–	–	–	275	275	
Items belonging to regulatory high risk categories	–	–	–	–	–	–	–	–	3,704	–	–	–	3,704	3,704	
Other items	1,406	–	–	87	–	–	–	7,335	–	1,194	1,469	–	11,491	10,353	
Total Standardised	32,035	10,512	172	4,074	4,587	9,157	18,343	67,405	3,704	2,098	7,364	–	159,451	81,168	

3.8 Standardised risk weight profile continued

Table 36: Standardised approach – exposures by asset classes and risk weights (post CRM post CCF) (CR5)

	2016												Of which unrated
	Risk weight												
	0%	2%	20%	35%	50%	75%	100%	150%	250%	Others	Deducted	Total	
Standardised Exposure Class													
Central governments or central banks	38,915	–	20	–	3,764	–	285	–	1,173	27	–	44,184	3,470
Multilateral development banks	14,752	–	–	–	–	–	–	–	–	–	–	14,752	564
Institutions	–	7,251	753	–	105	–	131	–	–	–	–	8,240	6,623
Corporates	–	–	991	–	14	–	15,890	–	–	–	–	16,895	15,983
Retail	–	–	–	–	–	11,445	–	–	–	–	–	11,445	–
Secured on real estate property	–	–	–	3,694	3,457	–	2,070	–	–	733	–	9,954	–
Exposures in default	–	–	–	–	–	–	330	–	–	–	–	330	324
Items belonging to regulatory high risk categories	–	–	–	–	–	–	–	2,483	–	–	–	2,483	2,483
Other items	1,368	–	74	–	–	–	5,804	–	1,347	1,551	–	10,144	8,961
Total Standardised	55,035	7,251	1,838	3,694	7,340	11,445	24,510	2,483	2,520	2,311	–	118,426	38,408

EAD post CRM post CCF for central governments or central banks increased by \$39.9 billion due to the impact of model migration for EU member state exposure. EAD for secured on real estate property decreased by \$6.2 billion due to the migration of the Taiwan mortgage portfolio from the Standardised to the IRB approach.

Table 36: Standardised approach – exposures by asset classes and risk weights (post CRM post CCF) (CR5) continued

Standardised Exposure Class	2015												Total	Of which unrated
	Risk weight													
	0%	2%	20%	35%	50%	75%	100%	150%	250%	Others	Deducted			
Central governments or central banks	56	–	–	–	2,720	–	240	–	904	388	–	4,308	2,621	
Multilateral development banks	18,115	–	–	–	–	–	–	–	–	–	–	18,115	1,148	
Institutions	–	5,265	541	–	69	–	121	–	–	–	–	5,996	5,119	
Corporates	–	–	755	–	154	–	15,669	–	–	–	–	16,578	15,779	
Retail	–	–	–	–	–	12,425	–	–	–	–	–	12,425	–	
Secured on real estate property	–	–	–	4,522	3,867	–	2,314	–	–	5,409	–	16,112	–	
Exposures in default	–	–	–	–	–	–	270	–	–	–	–	270	270	
Items belonging to regulatory high risk categories	–	–	–	–	–	–	–	3,322	–	–	–	3,322	3,322	
Other items	1,406	–	75	–	–	–	7,226	–	1,194	1,469	–	11,370	10,244	
Total Standardised	19,577	5,265	1,371	4,522	6,810	12,425	25,840	3,322	2,098	7,266	–	88,496	38,503	

3.9. Counterparty credit risk

Counterparty credit risk (CCR) is the risk that the Group's counterparty in a foreign exchange, interest rate, commodity, equity or credit derivative contract defaults prior to maturity date of the contract and that the Group at the time has a claim on the counterparty. CCR arises predominantly in the trading book, but also arises in the non-trading book due to hedging of external funding.

CCR is managed within the overall credit risk appetite for corporate and financial institutions and CCR limits are set for individual counterparties (including central clearing counterparties) and specific portfolio concentrations. Such limits take into account the credit quality and nature of the counterparty and are set in exposure value terms.

The Group reduces its credit exposures to counterparties by entering into contractual netting agreements which result in a single amount owed by or to the counterparty through netting the sum of the positive (amounts owed by the counterparty) and negative (amounts owed by the Group) mark-to-market (MTM) values of these transactions. Following International Accounting Standard (IAS) 32 requirements, the Group is permitted to offset assets and liabilities and present these net on the Group's balance sheet, only if there is a legally enforceable right to set off and the Group intends to settle on a net basis or realise the asset and liability simultaneously.

Wrong way risk

Wrong way risk occurs when an exposure increase is coupled with a decrease in the credit quality of the obligor. Specifically, as the MTM on a derivative contract increases in favour of the Group, the driver of this MTM change also reduces the ability of the counterparty to meet its payment, margin call or collateral posting requirements. The Group employs various policies and procedures to ensure that wrong way risk exposures are recognised upfront and monitored.

Exposure value calculation

Exposure values for regulatory capital requirement purposes on over the counter traded products are calculated according to the CCR Current Exposure Method. This is calculated as the sum of the current replacement cost and the potential future credit exposure. The current replacement cost is the USD equivalent amount owed by the counterparty to the Group for various financial derivative transactions. The potential future credit exposure is an add-on based on a percentage of the notional principal of each transaction. Such percentages are prescribed by CRR guidelines and vary according to

the underlying asset class and tenor of each trade. The benefit from master netting agreements is applied to the portfolio of counterparty trades in the CCR calculation according to the Net to Gross Ratio rules provided in the CRR articles.

The Group has credit policies and procedures in place setting out the criteria for collateral to be recognised as a credit risk mitigant, including requirements concerning legal certainty, priority, concentration, correlation, liquidity and valuation parameters such as frequency of review and independence. In particular, the Group seeks to negotiate Credit Support Annexes (CSAs) with counterparties on a case by case basis, where collateral is deemed a necessary or desirable mitigant to the exposure. The credit terms of a CSA are specific to each legal document and determined by the credit risk approval unit responsible for the counterparty. The nature of the collateral is specified in the legal document and is typically cash or highly liquid securities.

A daily operational process takes place to calculate the MTM on all trades captured under CSAs. Additional collateral will be called from the counterparty if total uncollateralised MTM exposure exceeds the threshold and minimum transfer amount specified in the CSA. Additional collateral may be required from the counterparty to provide an extra buffer to the daily variation margin process.

In line with market convention, the Group negotiates CSA terms for certain counterparties where the thresholds related to each party are dependent on their ECAI long term rating. Such clauses are typically mutual in nature. It is therefore recognised that a downgrade in the Group's rating could result in counterparties seeking additional collateral calls to cover negative MTM portfolios where thresholds are lowered. The amount of collateral that the Group would be required to provide given a one-notch credit rating downgrade is approximately \$420 million.

The Group also has policies and procedures in place setting out the criteria for guarantees to be recognised as a credit risk mitigant. Where guarantees meet regulatory criteria the Group treats the exposure as guarantor risk for the purpose of counterparty credit risk capital.

The following tables cover the credit exposure on derivative transactions after taking into account the benefits from legally enforceable netting agreements and the capital requirement by derivative type. The notional values settled with central counterparties and on a recognised trading exchange are also shown.

Table 37: Counterparty credit risk

	2016				
	EAD before netting benefit \$million	Netting benefits \$million	Netted current credit exposure \$million	Collateral held \$million	Net derivatives credit exposure \$million
Derivative contracts	125,514	73,545	51,969	8,949	43,020
Repo style transactions	96,194	–	96,194	79,011	17,183
Credit derivatives	1,391	774	617	140	477
Total	223,099	74,319	148,780	88,100	60,680

	2015				
	EAD before netting benefit \$million	Netting benefits \$million	Netted current credit exposure \$million	Collateral held \$million	Net derivatives credit exposure \$million
Derivative contracts	127,192	67,822	59,370	6,225	53,145
Repo style transactions	54,528	–	54,528	43,025	11,503
Credit derivatives	1,341	761	580	133	447
Total	183,061	68,583	114,478	49,383	65,095

3.9. Counterparty credit risk continued

The following tables cover the notional value, the credit exposure on derivative transactions after taking into account the benefits from legally enforceable netting agreements and the capital requirement by derivative types.

Table 38: Counterparty credit risk by product type

	2016			2015		
	Notional value \$million	Netted current credit exposures \$million	Regulatory capital requirement \$million	Notional value \$million	Netted current credit exposures \$million	Regulatory capital requirement \$million
Derivative contracts:						
Interest rate contracts	3,096,740	9,330	148	2,780,857	11,129	208
Foreign exchange contracts	3,185,190	38,021	733	3,171,976	37,251	951
Equity and stock index options	2,535	146	4	9,384	3,603	38
Commodity contracts	80,920	4,473	126	96,984	7,387	224
Credit derivatives:						
Credit default swaps	23,808	426	7	21,744	298	6
Total return swaps	1,294	190	6	1,817	282	6
Total derivatives	6,390,487	52,586	1,024	6,082,762	59,950	1,433
Repo style transactions:						
Repo	–	53,448	78	–	20,827	55
Reverse repo	–	42,746	76	–	33,701	68
Total	6,390,487	148,780	1,178	6,082,762	114,478	1,556

Repo and reverse repo balances increased \$41.7 billion due to the expansion of the reverse repo business in response to client demand and an increase in repo transactions improving the quality of the funding base.

Table 39: Counterparty credit risk analysis (CCR8)

	2016	
	EAD post CRM \$million	RWAs \$million
Exposures to QCCPs		
Trade exposure	5,793	116
Of which OTC derivatives	3,197	64
Of which exchange-traded derivatives	1,794	36
Of which SFTs	802	16
Collateral posted	1,460	29
Prefunded default fund contributions	178	338
Total	7,431	483

The following table covers the notional amounts of credit derivative transactions segregated between protection bought and sold within each product type.

Table 40: Credit derivatives exposures (CCR6)

	2016			2015		
	Bought \$million	Sold \$million	Total ¹ \$million	Bought \$million	Sold \$million	Total ¹ \$million
Notionals						
Credit default swaps	13,960	9,708	23,668	10,461	11,283	21,744
Total return swaps	886	408	1,294	1,103	424	1,527
Other Credit derivatives	72	68	140	290	–	290
Total notionals	14,918	10,184	25,101	11,854	11,707	23,561
Fair values						
Positive fair value (asset)	82	90	171	205	133	338
Negative fair value (liability)	301	170	472	282	32	314

1. Principally related to intermediary activity for Trading

3.9. Counterparty credit risk continued

The following table shows the exposure value and related RWA for the regulatory credit valuation adjustment charge.

Table 41: Credit valuation adjustment (CVA) capital charge (CCR2)

	2016		2015	
	Exposure Value \$million	Risk weighted ¹ assets \$million	Exposure Value \$million	Risk weighted ¹ assets \$million
Total portfolios subject to the Advanced Method	–	–	–	–
(i) VaR component (including the 3x multiplier)	–	–	–	–
(ii) Stressed VaR component (including the 3x multiplier)	–	–	–	–
All portfolios subject to the Standardised Method	24,900	2,290	27,004	5,861
Based on Original Exposure Method	–	–	–	–
Total subject to the CVA capital charge	24,900	2,290	27,004	5,861

1. See Table 9: Overview of RWA (OV1)

Risk weighted assets for CVA decreased by \$3.6 billion mostly driven by new CVA hedging activity from the beginning of 2016. CVA hedges are recognised in the RWA calculation and have no effect on the exposure value.

The following tables set out an analysis of EAD after the effect of collateral associated with each risk weight prescribed in Part Three, Title II, Chapter 2 of the CRR for counterparty credit risk.

Table 42: Standardised approach – CCR exposures by regulatory portfolio and risk (CCR3)

	2016													
	Risk weight												Of which	
	0%	2%	40%	10%	20%	50%	70%	75%	100%	150%	Others	Total	unrated	
Standardised Exposure Class														
Central governments or central banks	374	–	–	–	4	–	–	–	–	–	–	378	–	
Multilateral development banks	2,232	–	–	–	–	–	–	–	–	–	–	2,232	74	
Institutions	–	5,792	–	–	–	17	–	–	–	–	–	5,809	–	
Corporates	–	–	–	–	858	1	–	–	420	–	–	1,279	542	
Retail	–	–	–	–	–	–	–	–	–	–	–	–	–	
Secured on real estate property	–	–	–	–	–	–	–	–	–	–	–	–	–	
Exposures in default	–	–	–	–	–	–	–	–	–	–	–	–	–	
Items belonging to regulatory high risk categories	–	–	–	–	–	–	–	–	–	3	–	3	1	
Other items	–	–	–	–	–	–	–	–	4	–	–	4	4	
Total Standardised	2,606	5,792	–	–	862	18	–	–	424	3	–	9,705	621	

	2015													
	Risk weight												Of which	
	0%	2%	40%	10%	20%	50%	70%	75%	100%	150%	Others	Total	unrated	
Standardised Exposure Class														
Central governments or central banks	–	–	–	–	–	–	–	–	–	–	–	–	–	
Multilateral development banks	2,250	–	–	–	–	–	–	–	–	–	–	2,250	45	
Institutions	–	4,429	–	–	–	–	–	–	–	–	–	4,429	–	
Corporates	–	–	–	–	626	28	–	–	522	–	–	1,176	548	
Retail	–	–	–	–	–	–	–	2	–	–	–	2	2	
Secured on real estate property	–	–	–	–	–	–	–	–	3	–	–	3	3	
Exposures in default	–	–	–	–	–	–	–	–	–	–	–	–	–	
Items belonging to regulatory high risk categories	–	–	–	–	–	–	–	–	–	–	–	–	–	
Other items	–	–	–	–	–	–	–	–	10	–	–	10	10	
Total Standardised	2,250	4,429	–	–	626	28	–	2	535	–	–	7,870	608	

3.9. Counterparty credit risk continued

The following tables provide further detail on the exposure classes subject to counterparty credit risk, in particular for Central governments or central banks, Institutions and Corporates. These have been split by internal credit grade which relate to the PD ranges presented.

Table 43: IRB – CCR exposures by PD scale for Central governments or central banks (CCR4)

2016									
Group internal ratings	PD range %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors ²	Average LGD ¹ %	Average maturity ¹ Days	RWA \$million	RWA density %	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	331	0.01	21	39	187	7	2	AAA/AA+
1B	0.016 – 0.025	4,225	0.02	29	15	159	81	2	AA/AA-
2A	0.026 – 0.035	1,711	0.03	8	21	264	82	5	AA-/A+
2B	0.036 – 0.045	7	0.04	1	51	365	1	14	A+
3A	0.046 – 0.060	39	0.05	3	46	148	3	8	A
3B	0.061 – 0.083	69	0.07	1	46	1,197	22	32	A-
4A	0.084 – 0.110	94	0.09	6	46	122	13	14	A-
4B	0.111 – 0.170	–	–	–	–	–	–	–	BBB+
5A	0.171 – 0.300	9	0.22	5	46	365	3	33	BBB/BBB-
5B	0.301 – 0.425	10	0.39	1	46	365	5	50	BB+
6A	0.426 – 0.585	4	0.51	1	46	365	2	50	BB
6B	0.586 – 0.770	–	–	–	–	–	–	–	BB
7A	0.771 – 1.020	1	0.89	1	46	365	–	56	BB-
7B	1.021 – 1.350	126	1.17	1	46	22	91	72	B+
8A	1.351 – 1.750	43	1.54	1	46	365	31	72	B+/B
8B	1.751 – 2.350	–	–	–	–	–	–	–	B
9A	2.351 – 3.050	3	2.67	6	46	959	2	67	B-
9B	3.051 – 4.000	20	3.51	5	46	1,204	17	85	B-/CCC
10A	4.001 – 5.300	–	–	–	–	–	–	–	B-/CCC
10B	5.301 – 7.000	–	–	–	–	–	–	–	CCC/C
11A/B/C	7.001 – 15.750	–	–	–	–	–	–	–	CCC/C
12A/B/C	15.751 – 50.000	–	–	–	–	–	–	–	CCC/C
13	50.001 – 99.999	–	–	–	–	–	–	–	N/A
14	100.000	–	–	–	–	–	–	–	N/A
Unrated		–	–	–	–	–	–	–	N/A
Total		6,692	0.07	91	20	199	360	5	

1. Weighted averages are based on exposure at default

2. Number of obligors is based on number of counterparty

3.9. Counterparty credit risk continued

Table 43: IRB – CCR exposures by PD scale for Central governments or central banks (CCR4) continued

2015									
Group internal ratings	PD range %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors ²	Average LGD ¹ %	Average maturity ¹ Days	RWA \$million	RWA density %	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	1,414	0.01	22	42	129	18	1	AAA/AA+
1B	0.016 – 0.025	3,235	0.02	31	29	147	82	3	AA/AA-
2A	0.026 – 0.035	615	0.03	8	35	803	71	12	AA-/A+
2B	0.036 – 0.045	258	0.04	4	38	103	13	5	A+
3A	0.046 – 0.060	–	0.05	1	46	365	–	12	A
3B	0.061 – 0.083	74	0.07	5	46	1,598	28	38	A-
4A	0.084 – 0.110	526	0.09	3	46	41	63	12	A-
4B	0.111 – 0.170	2	0.13	3	46	365	1	23	BBB+
5A	0.171 – 0.300	390	0.22	1	21	20	46	12	BBB/BBB-
5B	0.301 – 0.425	23	0.39	1	46	365	12	49	BB+
6A	0.426 – 0.585	–	–	–	–	–	–	–	BB
6B	0.586 – 0.770	40	0.67	2	22	13	10	26	BB
7A	0.771 – 1.020	–	–	–	–	–	–	–	BB-
7B	1.021 – 1.350	50	1.17	2	46	19	36	72	B+
8A	1.351 – 1.750	22	1.54	3	46	272	19	87	B+/B
8B	1.751 – 2.350	–	2.03	1	46	365	–	105	B
9A	2.351 – 3.050	–	2.67	1	46	365	–	69	B-
9B	3.051 – 4.000	55	3.51	5	46	1,601	67	121	B-/CCC
10A	4.001 – 5.300	–	–	–	–	–	–	–	B-/CCC
10B	5.301 – 7.000	–	–	–	–	–	–	–	CCC/C
11A/B/C	7.001 – 15.750	–	–	–	–	–	–	–	CCC/C
12A/B/C	15.751 – 50.000	–	–	–	–	–	–	–	CCC/C
13	50.001 – 99.999	–	–	–	–	–	–	–	N/A
14	100.000	–	–	–	–	–	–	–	N/A
Unrated		–	–	–	–	–	–	–	N/A
Total		6,704	0.09	92	34	211	466	7	

1. Weighted averages are based on exposure at default

2. Number of obligors is based on number of counterparty

3.9. Counterparty credit risk continued

Table 44: IRB – CCR exposures by PD scale for Institutions (CCR4)

2016									
Group internal ratings	PD range %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors ²	Average LGD ¹ %	Average maturity ¹ days	RWA \$million	RWA density %	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	–	–	–	–	–	–	–	AAA/AA+
1B	0.016 – 0.025	–	–	–	–	–	–	–	AA/AA-
2A	0.026 – 0.035	16,716	0.03	126	13	239	546	3	AA-/A+
2B	0.036 – 0.045	1,952	0.04	38	21	356	146	7	A+
3A	0.046 – 0.060	11,339	0.05	71	12	303	397	4	A
3B	0.061 – 0.083	3,715	0.07	50	19	366	391	11	A-
4A	0.084 – 0.110	2,156	0.09	38	14	192	169	8	A-
4B	0.111 – 0.170	2,699	0.13	47	13	245	275	10	BBB+
5A	0.171 – 0.300	3,332	0.22	62	14	291	484	15	BBB/BBB-
5B	0.301 – 0.425	2,544	0.39	37	12	159	398	16	BB+
6A	0.426 – 0.585	315	0.51	38	16	591	103	33	BB
6B	0.586 – 0.770	470	0.67	29	15	558	143	30	BB
7A	0.771 – 1.020	56	0.89	28	17	513	21	38	BB-
7B	1.021 – 1.350	38	1.17	38	27	316	21	55	B+
8A	1.351 – 1.750	155	1.54	51	31	101	114	74	B+/B
8B	1.751 – 2.350	22	2.03	33	17	181	10	45	B
9A	2.351 – 3.050	173	2.67	81	21	1,746	151	87	B-
9B	3.051 – 4.000	–	3.51	8	41	365	–	136	B-/CCC
10A	4.001 – 5.300	–	4.62	12	31	365	–	111	B-/CCC
10B	5.301 – 7.000	–	–	–	–	–	–	–	CCC/C
11A/B/C	7.001 – 15.750	–	13.77	5	41	365	–	223	CCC/C
12A/B/C	15.751 – 50.000	–	–	–	–	–	–	–	CCC/C
13	50.001 – 99.999	–	–	–	–	–	–	–	N/A
14	100.000	–	–	–	–	–	–	–	N/A
Unrated		–	–	–	–	–	–	–	N/A
Total		45,682	0.12	792	13	280	3,369	7	

1. Weighted averages are based on exposure at default

2. Number of obligors is based on number of counterparty

3.9. Counterparty credit risk continued

Table 44: IRB – CCR exposures by PD scale for Institutions (CCR4) continued

2015									
Group internal ratings	PD range %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors ²	Average LGD ¹ %	Average maturity ¹ days	RWA \$million	RWA density %	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	–	–	–	–	–	–	–	AAA/AA+
1B	0.016 – 0.025	–	–	–	–	–	–	–	AA/AA-
2A	0.026 – 0.035	14,611	0.03	160	14	246	543	4	AA-/A+
2B	0.036 – 0.045	5,691	0.04	47	21	407	479	8	A+
3A	0.046 – 0.060	16,912	0.05	69	15	245	973	6	A
3B	0.061 – 0.083	5,148	0.07	53	15	277	404	8	A-
4A	0.084 – 0.110	2,570	0.09	39	20	425	345	13	A-
4B	0.111 – 0.170	2,713	0.13	58	14	291	311	11	BBB+
5A	0.171 – 0.300	3,037	0.22	61	14	385	506	17	BBB/BBB-
5B	0.301 – 0.425	1,091	0.39	28	15	281	226	21	BB+
6A	0.426 – 0.585	174	0.51	44	34	923	113	65	BB
6B	0.586 – 0.770	813	0.67	23	13	573	227	28	BB
7A	0.771 – 1.020	120	0.89	30	14	969	39	32	BB-
7B	1.021 – 1.350	18	1.17	40	37	459	14	78	B+
8A	1.351 – 1.750	8	1.54	41	38	365	8	102	B+/B
8B	1.751 – 2.350	184	2.03	62	13	198	74	40	B
9A	2.351 – 3.050	2	2.67	19	39	365	2	116	B-
9B	3.051 – 4.000	5	3.51	13	19	365	3	70	B-/CCC
10A	4.001 – 5.300	–	4.62	6	41	365	–	149	B-/CCC
10B	5.301 – 7.000	–	6.05	11	41	365	–	165	CCC/C
11A/B/C	7.001 – 15.750	1	10.79	24	39	365	2	186	CCC/C
12A/B/C	15.751 – 50.000	–	–	–	–	–	–	–	CCC/C
13	50.001 – 99.999	–	–	–	–	–	–	–	N/A
14	100.000	–	–	–	–	–	–	–	N/A
Unrated		–	–	–	–	–	–	–	N/A
Total		53,098	0.09	828	23	295	4,269	8	

1. Weighted averages are based on exposure at default

2. Number of obligors is based on number of counterparty

3.9. Counterparty credit risk continued

Table 45: IRB – CCR exposures by PD scale for Corporates (CCR4)

2016									
Group internal ratings	PD range %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors ²	Average LGD ¹ %	Average maturity ¹ Days	RWA \$million	RWA density %	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	–	–	–	–	–	–	–	AAA/AA+
1B	0.016 – 0.025	–	–	–	–	–	–	–	AA/AA-
2A	0.026 – 0.035	16,624	0.03	280	11	107	350	2	AA-/A+
2B	0.036 – 0.045	1,515	0.04	213	20	208	88	6	A+
3A	0.046 – 0.060	15,676	0.05	350	11	109	558	4	A
3B	0.061 – 0.083	3,868	0.07	867	28	360	523	14	A-
4A	0.084 – 0.110	3,363	0.09	731	42	656	817	24	A-
4B	0.111 – 0.170	7,409	0.13	893	18	335	960	13	BBB+
5A	0.171 – 0.300	2,870	0.22	1,582	36	369	958	33	BBB/BBB-
5B	0.301 – 0.425	4,850	0.39	911	32	249	1,444	30	BB+
6A	0.426 – 0.585	1,868	0.51	848	24	285	635	34	BB
6B	0.586 – 0.770	1,072	0.67	672	49	706	919	86	BB
7A	0.771 – 1.020	632	0.89	510	51	669	534	84	BB-
7B	1.021 – 1.350	403	1.17	436	56	523	449	111	B+
8A	1.351 – 1.750	223	1.54	350	57	690	296	133	B+/B
8B	1.751 – 2.350	569	2.03	275	50	761	464	81	B
9A	2.351 – 3.050	166	2.67	190	44	711	198	119	B-
9B	3.051 – 4.000	293	3.51	202	63	513	404	138	B-/CCC
10A	4.001 – 5.300	47	4.62	108	62	393	86	183	B-/CCC
10B	5.301 – 7.000	13	6.08	61	43	564	21	162	CCC/C
11A/B/C	7.001 – 15.750	162	11.22	369	57	1,286	411	254	CCC/C
12A/B/C	15.751 – 50.000	30	25.73	35	67	1,150	105	350	CCC/C
13	50.001 – 99.999	10	99.99	22	18	1,791	14	140	N/A
14	100.000	25	100.00	232	59	631	36	144	N/A
Unrated		–	–	–	–	–	–	–	N/A
Total		61,688	0.39	10,137	21	252	10,270	17	

1. Weighted averages are based on exposure at default

2. Number of obligors is based on number of counterparty

Table 45: IRB – CCR exposures by PD scale for Corporates (CCR4) continued

2015									
Group internal ratings	PD range %	EAD post CRM and post CCF \$million	Average PD ¹ %	Number of obligors ²	Average LGD ¹ %	Average maturity ¹ days	RWA \$million	RWA density %	Standard & Poor's external rating equivalent
1A	0.000 – 0.015	–	–	–	–	–	–	–	AAA/AA+
1B	0.016 – 0.025	–	–	–	–	–	–	–	AA/AA-
2A	0.026 – 0.035	7,652	0.03	346	11	151	197	3	AA-/A+
2B	0.036 – 0.045	498	0.04	223	33	510	58	12	A+
3A	0.046 – 0.060	5,027	0.05	406	18	325	380	8	A
3B	0.061 – 0.083	2,638	0.07	739	42	678	578	22	A-
4A	0.084 – 0.110	3,253	0.09	655	41	845	885	27	A-
4B	0.111 – 0.170	4,485	0.13	990	29	632	1,058	24	BBB+
5A	0.171 – 0.300	3,279	0.22	1,400	47	599	1,421	43	BBB/BBB-
5B	0.301 – 0.425	4,776	0.39	822	24	339	1,602	34	BB+
6A	0.426 – 0.585	1,583	0.51	899	45	644	1,117	71	BB
6B	0.586 – 0.770	1,437	0.67	688	48	538	1,167	81	BB
7A	0.771 – 1.020	540	0.89	611	52	669	519	96	BB-
7B	1.021 – 1.350	939	1.17	574	57	617	1,105	118	B+
8A	1.351 – 1.750	474	1.54	595	54	757	645	136	B+/B
8B	1.751 – 2.350	655	2.03	682	56	565	1,001	153	B
9A	2.351 – 3.050	281	2.68	462	36	529	221	79	B-
9B	3.051 – 4.000	377	3.51	272	48	684	562	149	B-/CCC
10A	4.001 – 5.300	44	4.62	144	40	412	53	122	B-/CCC
10B	5.301 – 7.000	121	6.08	70	67	640	210	174	CCC/C
11A/B/C	7.001 – 15.750	545	13.35	407	25	251	581	107	CCC/C
12A/B/C	15.751 – 50.000	81	26.06	28	69	415	232	287	CCC/C
13	50.001 – 99.999	18	99.99	29	51	665	106	581	N/A
14	100.000	165	100.00	185	55	742	257	156	N/A
Unrated		–	–	–	–	–	–	–	N/A
Total		38,868	1.08	11,227	30	479	13,955	36	

1. Weighted averages are based on exposure at default

2. Number of obligors is based on number of counterparty

3.10 Securitisation

Securitisation is defined as a structure where the cash flow from a pool of assets is used to service obligations to at least two different tranches or classes of creditors.

Securitisations may be categorised as either:

- traditional securitisation: assets are sold to a Special Purpose Entity (SPE), which finances the purchase by issuing notes in different tranches with different risk and return profiles. Cash flow arising from those assets is used by the SPE to service its debt obligations; or
- synthetic transaction: a securitisation whereby only the credit risk, or part of the credit risk of a pool of assets is transferred to a third party via credit derivatives. The pool of assets remains on the Group's balance sheet.

Securitisation activities are undertaken by the Group for a variety of purposes, by various businesses acting in a different capacity:

- Risk mitigation, funding and capital management (as Originator);
- Fee generation (as arranger/ lead manager); and
- Risk taking (as investor)

The Group has \$23.5 billion (2015: \$30.8 billion) of EAD classified as securitisation positions, as shown in Table 48 on page 62. These transactions meet the criteria to qualify as securitisation positions under the PRA's securitisation framework and the particulars of these transactions are discussed below.

Asset Backed Securities

The carrying value of Asset Backed Securities (ABS) of \$6.0 billion (2015: \$7.7 billion), held either as investments or arranged for clients, represents 1 per cent of the Group's total assets (2015: 1 per cent).

The year-on-year decrease in this portfolio is mainly attributable to natural amortisations, reduction in the Group's legacy portfolio and reduced ABS positions in the liquidity portfolio purchased by the Asset and Liability Management (ALM) desk. These purchases by ALM are governed by a set of portfolio limits and standards which include an aggregate portfolio limit besides sub limits on the underlying collateral types, jurisdictions, originators, issue size, seniority, rating and tenor.

The credit quality of the ABS exposures remains strong 97 per cent of the overall portfolio is rated A- or better, and over 86 per cent of the overall portfolio is rated as AAA. The portfolio is broadly diversified across asset classes and geographies. The portfolio has an average credit grade of AA+.

38 per cent of the overall portfolio is invested in Residential Mortgage Backed Securities (RMBS), with a weighted average credit rating of AAA (AAA in 2015).

27 per cent of the overall portfolio is in Credit Cards ABS and 23 per cent in Auto ABS, with a weighted average credit rating of AAA.

12 per cent of the overall portfolio is in Other ABS, which mainly includes securities backed by diversified payment types and trade receivables with a weighted credit rating of A.

The notional and carrying values of the ABS purchased or retained by the Group are shown in the table below analysed by underlying asset type. ABS are accounted for as financial assets. For further details regarding recognition and impairment, refer to note 23 to the financial statements of the 2016 Annual Report and Accounts on page 249. The ABS portfolio is assessed frequently for objective evidence of impairment. In 2016, there were no additional impairments in the portfolio, with write backs on impaired book seen through asset sales.

Valuation of retained interest is initially and subsequently determined using market price quotations where available or internal pricing models that utilise variables such as yield curves, prepayment speeds, default rates, loss severity, interest rate volatilities and spreads. The assumptions used for valuation are based on observable transactions in similar securities and are verified by external pricing sources, where available.

The ABS portfolio is closely managed by a centralised dedicated team. The team has developed a detailed analysis and reporting framework of the underlying portfolio to allow senior management to make an informed holding decision with regards to specific assets, asset classes or parts of an asset class. These ABS portfolio reports are closely monitored by the Risk function in the Group.

Table 46: Securitisation: ABS purchased or retained

	2016			2015		
	Carrying value of asset backed securities \$million	Notional amount		Carrying value of asset backed securities \$million	Notional amount	
		Traditional securitisation programmes \$million	Synthetic securitisation programmes \$million		Traditional securitisation programmes \$million	Synthetic securitisation programmes \$million
Residential Mortgage Backed Securities (RMBS)	2,248	2,248	–	2,983	2,988	–
Collateralised Debt Obligations (CDOs)	8	28	–	15	35	–
Commercial Mortgage Backed Securities (CMBS)	19	50	–	38	75	–
Auto Asset Backed Securities	1,381	1,382	–	1,435	1,438	–
Credit Cards Asset Backed Securities	1,639	1,638	–	2,696	2,705	–
Other Asset Backed Securities	696	694	3	566	567	–
	5,991	6,040	3	7,733	7,808	–
Of which included within:						
Financial assets held at fair value through profit or loss	172	169	3	96	96	–
Investment securities – available-for-sale	4,330	4,380	–	6,489	6,551	–
Investment securities – loans and receivables	1,489	1,491	–	1,148	1,161	–
	5,991	6,040	3	7,733	7,808	–

3.10 Securitisation continued

Credit & Portfolio Management

The Group via its Credit & Portfolio Management (CPM) unit buys synthetic protection for its banking book credit portfolio. Securitisation provides capacity for client-focused growth and improves efficiency of economic and regulatory capital. The Group as the originator performs multiple roles, including protection buyer, calculation agent and credit event monitor agent. The protection buyer executes and maintains securitisation transactions. The calculation agent computes periodic coupon payments and loss payouts. The credit event monitor agent validates and provides notifications of credit events.

The ALM unit performs a different role, acting as deposit taker for funds collected from the credit protection providers. Deposits collected eliminate counterparty risk for transactions where the Group is the protection buyer.

The securitised assets consist of commercial loans and trade finance facilities extended by the Group's branches and subsidiaries to borrowers mainly from the emerging markets in Asia, Africa and Middle East. The securitised assets are subject to changes in general economic conditions, performance of relevant financial markets, political events and developments or trends in a particular industry. Historically, the trading volume of loans in these emerging markets has been small relative to other more developed debt markets due to limited liquidity in the secondary loan market.

The securitised assets are originated by the Group in its ordinary course of business. Given the synthetic nature of securitisations originated by CPM, the securitised assets remain on the Group's balance sheet and continue to be subject to the Group's credit review and monitoring process and risk methodology. Accordingly retained positions are not hedged.

In its role as credit event monitor agent, CPM monitors the credit risk of the underlying securitised assets by leveraging on the Group's client and risk management system.

As of 31 December 2016 \$37 million of Trade Finance (2015: \$52 million) and \$45 million of Commercial Loans (2015: \$26 million) totalling \$82 million (2015: \$78 million) of securitised exposures were classified as impaired and past due. The year on year decrease in Trade Finance is mainly attributable to one large securitisation transaction maturing in 2016 and hence the impaired and past due referenced have dropped off. The year on year increase in Commercial Loans is mainly driven by continued seasoning of the securitisation programme.

The Group has six synthetic securitisation transactions originated and managed by CPM, with an aggregate hedge capacity of \$17.5 billion (2015: \$23 billion). Of the six transactions, three are private transactions with bilateral investors and three are public transactions distributed to a broad spectrum of investors. All six transactions are structured as non-disclosed pools for reason of client confidentiality. No new securitisation transaction was originated in 2016 to replace matured transactions.

CPM as the originator has not acted as sponsor to securitise third-party exposures and does not manage or advise any third-party entity that invests in the securitisation positions. Table 47 below provides details of current securitisation programmes originated and managed by the Group.

The Group has engaged in structures, such as the ones outlined in Table 47, in order to transfer credit risk of a pool of assets to a third party via credit derivatives.

Typically, these synthetic securitisation transactions are facilitated through entities which are considered to be SPEs for accounting purposes.

In these transactions, the underlying assets are not sold into the relevant SPE. Instead, the credit risk of the underlying assets is transferred to the SPEs synthetically via credit default swaps whereby the SPEs act as sellers of credit protection and receive premiums paid by the Group in return. The SPEs in turn issue credit-linked notes to third party investors who fund the credit protection in exchange for

coupon on the notes purchased. The premium received by the SPEs and interest earned on the funded amount of the purchased notes are passed through to the third-party investors as coupon on the purchased notes. Payment to the third-party investors is made in accordance with the priority of payments stipulated in the transaction documents.

Governance of securitisation activities

Securitisation transactions proposed for funding and capital management must obtain support from the Operational Balance Sheet Committee (OBSC), which manages the capital requirements of the business. For securitisation transaction that will lead to reduction in regulatory capital, it must be submitted to the PRA for review and only upon receipt of non-objection letter will the said transaction be executed.

Execution of each securitisation transaction must either be under a Product Program Framework or an individual Transaction Programme Authorisation; such that all relevant support, control and risk functions are involved in the transaction. Specifically, Compliance covers issues like confidentiality of clients' information and insider information, Group Tax provides an opinion on taxation, Group Risk advises on the regulatory treatment and Finance advises on the accounting treatment and facilitates communication with the regulator.

Basel III for securitisation positions

The calculation of risk-weighted exposure amounts for securitisation positions is based on the following two calculation methods advised by the PRA:

- IRB method for third-party senior securitisation positions bought and securitisation positions originated and retained by the Group (including haircuts due to currency and collateral mismatch); and
- Standardised approach for the residual risk-weighted exposure amounts for all other securitisation positions originated by the Group and sold. For instance, risk-weight substitution under the Standardised approach is adopted in unfunded transactions where cash collateral is with a third party

All existing securitisation transactions originated by the Group, in Table 47, meet the credit risk transfer requirement to be accounted for as securitisations under the CRR.

Accounting

The Group's approach to accounting for SPEs can be found in the notes to the financial statements in the 2016 Annual Report and Accounts.

All programmes listed in the tables below are rated by an external credit assessment institution, namely Moody's.

3.10 Securitisation continued

Table 47: Securitisation programmes (as originator)

2016

	Underlying facilities hedged	Public / Private	Start date	Scheduled maturity	Maximum notional \$million	Retained exposures ¹ \$million	Outstanding exposures ² \$million	Capital requirement before securitisation \$million	Capital requirement after securitisation ³ \$million
Start IX	Commercial Loan	Public	Apr-14	Oct-17	1,485	1,395	1,335	82	19
Sumeru II	Commercial Loan	Private	Dec-14	Jun-18	3,495	3,255	3,097	162	71
Shangren III	Trade Finance	Private	Jun-15	Sep-18	3,990	3,760	3,766	214	65
Sealane III	Trade Finance	Public	Jun-15	Dec-18	2,994	2,835	2,812	157	54
Start X	Commercial Loan	Public	Sep-15	Mar-19	3,497	3,264	3,184	189	76
Baruntse	Commercial Loan	Private	Nov-15	May-19	1,997	1,865	1,789	109	42
Total					17,458	16,374	15,983	913	327

Table 47: Securitisation programmes (as originator) continued

2015

	Underlying facilities hedged	Public / Private	Start date	Scheduled maturity	Maximum notional \$million	Retained exposures ¹ \$million	Outstanding exposures ² \$million	Capital requirement before securitisation \$million	Capital requirement after securitisation ³ \$million
Start VIII	Commercial Loan	Public	Nov-12	May-16	1,490	1,395	1,260	75	24
Mana IV	Trade Finance	Private	Jun-14	Jun-16	3,986	3,760	3,697	186	57
Start IX	Commercial Loan	Public	Apr-14	Oct-17	1,491	1,395	1,327	84	25
Sumeru II	Commercial Loan	Private	Dec-14	Jun-18	3,500	3,255	3,098	201	76
Shangren III	Trade Finance	Private	Jun-15	Sep-18	3,990	3,760	3,692	191	64
Sealane III	Trade Finance	Public	Jun-15	Dec-18	2,995	2,835	2,758	149	55
Start X	Commercial Loan	Public	Sep-15	Mar-19	3,500	3,264	3,181	210	78
Baruntse	Commercial Loan	Private	Nov-15	May-19	2,000	1,865	1,770	116	45
Total					22,952	21,529	20,783	1,212	424

The following tables show the distribution of the Group's securitisation exposures across risk-weights and how these relate to external credit ratings. The vast majority of the Group's exposure to securitisation programmes is to the higher-rated tranches. Rating based approach is

used to calculate risk-weights for all the rated tranches. Those exposures where the Group uses the supervisory formula approach to determine credit risk capital requirements relates to certain originated securitisations.

Table 48: Securitisation positions by risk-weight category

2016

Credit Assessments Moody's	Risk weight %	Originated						ABS		Total	
		Senior		Non Senior		Non Granular Pools		Exposure \$ million	Capital requirement \$ million	Exposure \$ million	Capital requirement \$ million
		Exposure \$ million	Capital requirement \$ million	Exposure \$ million	Capital requirement \$ million	Exposure \$ million	Capital requirement \$ million				
Aaa	7% to 20%	13,100	78	430	4	–	–	5,206	30	18,736	113
Aa	8% to 25%	–	–	–	–	–	–	102	1	102	1
A1	10% to 35%	–	–	1,625	26	–	–	69	1	1,694	26
A2	12% to 35%	–	–	–	–	–	–	34	–	34	–
A3	20% to 35%	–	–	475	14	–	–	555	9	1,030	23
Baa1	35% to 50%	–	–	434	18	–	–	–	–	434	18
Baa2	60% to 75%	–	–	–	–	–	–	25	1	25	1
Baa3	100%	–	–	135	11	–	–	–	–	135	11
Ba1	250%	–	–	–	–	–	–	–	–	–	–
Ba2	425%	–	–	–	–	–	–	–	–	–	–
Ba3	650%	–	–	–	–	–	–	–	–	–	–
Supervisory formula		–	–	1,126	42	–	–	–	–	1,126	42
Deductions		–	–	133	–	–	–	52	–	184	–
Total¹		13,100	78	4,358	115	–	–	6,043	42	23,501	235¹

1. See Table 9: Overview of RWA (OV1)

3.10. Securitisation continued

Table 48: Securitisation positions by risk-weight category continued

2015											
Credit Assessments Moody's	Risk weight %	Originated						ABS		Total	
		Senior		Non Senior		Non Granular Pools		Exposure \$ million	Capital require- ment \$ million	Exposure \$ million	Capital require- ment \$ million
		Exposure \$ million	Capital require- ment \$ million	Exposure \$ million	Capital require- ment \$ million	Exposure \$ million	Capital require- ment \$ million				
Aaa	7% to 20%	17,463	104	515	5	–	–	7,079	42	25,057	151
Aa	8% to 25%	–	–	–	–	–	–	132	–	132	–
A1	10% to 35%	–	–	1,845	28	–	–	22	–	1,867	28
A2	12% to 35%	–	–	–	–	–	–	88	1	88	1
A3	20% to 35%	–	–	766	23	–	–	330	6	1,096	29
Baa1	35% to 50%	–	–	509	22	–	–	50	1	559	23
Baa2	60% to 75%	–	–	–	–	–	–	50	2	50	2
Baa3	100%	–	–	215	18	–	–	–	–	215	18
Ba1	250%	–	–	–	–	–	–	–	–	–	–
Ba2	425%	–	–	–	–	–	–	–	–	–	–
Ba3	650%	–	–	–	–	–	–	–	–	–	–
Supervisory formula		–	–	1,471	56	–	–	–	–	1,471	56
Deductions		–	–	168	–	–	–	57	–	225	–
Total ¹		17,463	104	5,489	152	–	–	7,808	52	30,760	308 ¹

1. See Table 9: Overview of RWA (OV1)

In the following table, securitisation programmes present the maximum notional of the securitised exposures by geography.

Table 49: Securitisation positions by region

	2016			2015		
	Securitisation programmes \$million	ABS \$million	Total \$million	Securitisation programmes \$million	ABS \$million	Total \$million
Greater China & North Asia	5,902	514	6,416	7,735	632	8,367
ASEAN & South Asia	5,909	899	6,808	8,047	993	9,040
Africa & Middle East	3,272	579	3,851	4,677	413	5,090
Europe & Americas	2,375	4,051	6,426	2,493	5,770	8,263
Total	17,458	6,043	23,501	22,952	7,808	30,760

3.11. Encumbered and unencumbered assets

The following disclosures of encumbered and unencumbered assets are based on the requirements in Part Eight of the CRR and related guidelines issued by the EBA on 27 June 2014.

Table 50: Encumbered and unencumbered assets

	2016				2015			
	Carrying amount of encumbered assets \$million	Fair value of encumbered assets \$million	Carrying amount of unencumbered assets \$million	Fair value of unencumbered assets \$million	Carrying amount of encumbered assets \$million	Fair value of encumbered assets \$million	Carrying amount of unencumbered assets \$million	Fair value of unencumbered assets \$million
Assets of Reporting Institution	23,529		634,650		21,810	–	680,390	–
Equity Instruments	–	–	2,856	2,856	–	–	7,255	7,255
Debt Securities	4,331	4,331	121,267	121,267	5,565	5,565	124,223	124,244
Other Assets ¹	19,564		510,368		16,741	–	547,186	–

1. All remaining regulatory balance sheet assets

Table 51: Encumbered assets/collateral received and associated liabilities

	2016		2015	
	Matching liabilities contingent liabilities or securities lent \$million	Assets, collateral received and own debt securities issued other than covered bonds and ABSs encumbered \$million	Matching liabilities contingent liabilities or securities lent \$million	Assets, collateral received and own debt securities issued other than covered bonds and ABSs encumbered \$million
Carrying amount of selected financial liabilities	47,978	51,709	27,476	29,763

In accordance to the threshold criteria set out by the Supervisory Standards issued by the PRA (SS11/14) in Compliance with the EBA's Guidelines on the disclosure of encumbered and unencumbered assets, the Group is not required to report the fair value of encumbered collateral received.

As at 31 December 2016, the reason the median value of the Group's encumbered and unencumbered assets differ from the Group's disclosures in the 2016 Annual Report and Accounts is mainly due to the basis of calculation as per EBA Guidelines, which is based on median values using monthly data.

Table 52: Median value versus annual disclosure comparative

	Group Median Value		Group ARA value	
	2016 \$billion	2015 \$billion	2016 \$billion	2015 \$billion
Encumbered Asset	24	22	26	20
Unencumbered Asset	635	680	621	620

Encumbered assets represent those on-balance sheet assets pledged or used as collateral in respect of certain Group liabilities. Debt securities are predominantly related to repurchase agreements. Other assets include Hong Kong government certificates of indebtedness, which secure currency notes in circulation and cash collateral pledged against derivatives. Taken together, these encumbered assets represent 3.6 per cent (2015: 3.2 per cent) of total assets, continuing the Group's historical low level of encumbrance.

4 Market risk

Market risk is the potential for loss of economic value due to adverse changes in financial market rates or prices. The Group's exposure to market risk arises predominantly from these sources:

- **Trading book:** The Group provides clients access to financial markets, facilitation of which entails the Group taking moderate market risk positions. All trading teams support client activity; there are no proprietary trading teams. Hence, income earned from market risk-related activities is primarily driven by the volume of client activity rather than risk-taking. From 1 January 2016 Credit and Funding Valuation Adjustment (XVA) risk has been recognised in trading book market risk.
- **Non-trading book:**
 - The Asset and Liability Management ALM desk is required to hold a liquid assets buffer much of which is held in high-quality marketable debt securities.
 - The Group has capital invested and related income streams denominated in currencies other than US dollars. To the extent that these are not hedged the Group is subject to structural FX risk which is reflected in reserves.

Interest rate risk from non-trading book portfolios is transferred to local ALM desks under the supervision of local Asset and Liability Committees. ALM deals in the market in approved financial instruments in order to manage the net interest rate risk, subject to approved Value-at-Risk (VaR) and risk limits.

The primary categories of market risk for the Group are:

- **interest rate risk:** arising from changes in yield curves, credit spreads and implied volatilities on interest rate options;
- **currency exchange rate risk:** arising from changes in exchange rates and implied volatilities on foreign exchange options.
- **commodity price risk:** arising from changes in commodity prices and implied volatilities on commodity options; covering energy, precious metals, base metals and agriculture; and
- **credit spread risk:** arising from changes in the credit spread of its derivatives' counterparties through CVA accounting.

Trading book

The trading book contains positions held with trading intent or hedges for such positions. The Trading Book Policy Statement identifies the policies and procedures determining the positions included in the trading book and their risk management and valuation. The Market Risk Framework sets out the Group's standard systematic approach to risk managing market risk. All trading book desks are subject to market risk limits. Market and Traded Credit Risk, an independent risk control function, monitors the limits and reports daily to senior management.

Valuation framework

Valuation of financial assets and liabilities held at fair value is subject to an independent review by Valuation Control within the Finance function. For those financial assets and liabilities whose fair value is determined by reference to externally quoted prices or market observable pricing inputs or to a valuation model, an assessment is made by Valuation Control against external market data and consensus services. Valuation Control also ensures adherence to the valuation adjustment policies to incorporate bid/ask spreads, model risk and other reserves, and, where appropriate, to mark all positions in accordance with prevailing accounting and regulatory guidelines.

The Valuation and Benchmarks Committee (VBC), a sub-committee of the Market Traded Credit Risk Committee, provides oversight and governance of all Financial Markets valuation adjustment and price testing policies and reviews the results of the valuation control process on a monthly basis. In addition, the VBC also provides governance over the Group's benchmark rates review process.

Our approach to market risk can be found in the Risk management approach section in the 2016 Annual Report and Accounts on page 145.

Management VaR

Management VaR is one of the tools used by management to monitor the total market risk within the trading and banking books.

Regulatory VaR

Regulatory VaR is used to estimate the potential loss, from market movements, across trading book positions for which the Bank has received permission to apply the Internal Model Approach (IMA). Regulatory VaR, including Stressed VaR and Risk Not in VaR (RNIV) measures, is used to calculate market risk RWAs for positions falling under the IMA permission.

Regulatory VaR vs Management VaR

Variable	Regulatory VaR	Management VaR
Confidence level	99%	97.5%
Historical Observation Period	260 business days unweighted	260 business days unweighted
Liquidity Horizon	1 day Scaled to 10-day VaR by multiplying by the square root of 10.	1 day Scaled to 10-day VaR by multiplying by the square root of 10.
Updating Frequency	1 day	1 day
Scope	As approved by the PRA, under Internal Model Approval (IMA)	All non-structural market risk exposures across the trading and non-trading books.

The VaR simulation applies full revaluation to all products, except for the simpler products where appropriate sensitivity-based approaches are applied:

- **FX and simple cash flow products:** first order sensitivities are applied
- **Bonds:** reflecting first order sensitivities and convexity

Both management and regulatory VaR simulations apply the same valuation approaches.

The VaR simulations currently generally apply relative returns to most market risk factors except interest rates where absolute changes in zero coupon yields are applied.

The PRA has granted the Group permission to apply IMA for the following entities:

Standard Chartered Bank	Solo and consolidated
Standard Chartered Bank (Singapore) Ltd	Consolidated
Standard Chartered Bank (Hong Kong) Ltd	Consolidated
Standard Chartered Securities (India) Ltd	Consolidated
Standard Chartered Bank (Brasil) S.A. – Banco de Investimento	Consolidated
Standard Chartered Bank (China) Ltd	Consolidated
Standard Chartered Investments and Loans (India) Ltd	Consolidated
PT Standard Chartered Securities Indonesia	Consolidated
Standard Chartered Bank Korea Ltd	Consolidated
Standard Chartered Bank Malaysia Berhad	Consolidated
Standard Chartered Bank (Taiwan) Ltd	Consolidated
Standard Chartered Bank (Thai) PCL	Consolidated
Standard Chartered Bank (Vietnam) Ltd	Consolidated

Backtesting

Backtesting is performed to ensure that the VaR model is fit for purpose. It measures the ability of the model to correctly reflect the potential level of losses under normal trading conditions, for a certain confidence level.

A backtesting breach is recorded when the net trading P&L loss in one day is greater than the estimated VaR for the same day. Prudential regulation specifies that a model with fewer than 5 backtesting exceptions in a 12 month period is deemed to be in the 'green zone'. During 2016, the Group remained in the 'green zone'.

Stressed VaR

Stressed VaR applies the same model as for regulatory VaR but using a one year historical observation period from a stressed period relevant to the trading book portfolio. In 2016 the stressed period applied was the 260 business days ending 30 June 2009 reflecting the Global Financial Crisis.

Stress testing

Group-wide stress testing is performed to measure the potential loss on a portfolio of financial positions due to low probability market events or risk to the Group posed by a breakdown of risk model assumptions.

So stress testing supplements the use of VaR as the primary measure of risk. The roles and responsibilities of the various business functions are set out in a Market Risk Stress Testing Policy.

Market risk changes

The average level of Total Trading and Non-trading VaR in 2016 was lower than in 2015 by 4 per cent and the actual level of Total VaR as at end December was 17 per cent lower than in 2015. These declines were both primarily due to reduced market volatility in the historical time series. In 2015 the VaR had been elevated by events such as the devaluation of Chinese renminbi in August 2015 and uncertainty about the timing of anticipated US interest rate rises.

Foreign exchange VaR increased due to increased market volatility in the historical time series following the devaluation of the Nigerian Naira in June 2016 and increased FX positions in the second half of the year.

Non-trading book equity risk VaR decreased in 2016 due to reduced non-listed Private Equity holdings.

Table: 53 Daily value at risk (VaR at 97.5%, one day)

	2016				2015			
	Average \$million	High ¹ \$million	Low ¹ \$million	Actual ² \$million	Average \$million	High ¹ \$million	Low ¹ \$million	Actual ² \$million
Trading and Non-trading								
Interest rate risk ³	27.7	32.7	24.1	25.3	26.9	35.5	18.9	30.7
Foreign exchange risk	6.3	12.2	3.7	9.4	4.9	9	2.3	4.8
Commodity risk	1.9	3.1	1	1.4	1.6	2.6	0.7	1.6
Equity risk	10	13.1	6.9	8.1	13.7	18.2	9.7	11
Total⁴	31.6	38.8	26.4	29.9	32.9	45.9	24.4	36.1
Trading⁵								
Interest rate risk ³	6.7	10.3	4.7	6.8	7	8.8	5.3	6.4
Foreign exchange risk	6.3	12.2	3.7	9.4	4.9	9	2.3	4.8
Commodity risk	1.9	3.1	1	1.4	1.6	2.6	0.7	1.6
Equity risk	0.4	1.3	0.07	0.08	1.7	2.8	0.7	0.8
Total⁴	10.6	18.7	7.5	11.6	9.9	13.2	6.8	9.7
Non-trading								
Interest rate risk ³	26.3	31.4	21.5	22.8	24.1	34.6	15.6	30.3
Equity risk	9.8	12.5	6.9	8.1	12.9	17.9	9.2	10.4
Total³	30.7	35.1	24.6	27.3	29.6	37.8	23.2	31.4

The following table sets out how trading and non-trading VaR is distributed across the Group's products:

Table 53: Daily value at risk (VaR at 97.5%, one day) continued

	2016				2015			
	Average \$million	High ¹ \$million	Low ¹ \$million	Actual ² \$million	Average \$million	High ¹ \$million	Low ¹ \$million	Actual ² \$million
Trading and Non-trading	31.6	38.8	26.4	29.9	32.9	45.9	24.4	36.1
Trading⁵								
Rates	5.2	8.6	3.3	5.8	5.5	7	3.5	5.1
Global Foreign Exchange	6.3	12.2	3.7	9.4	4.9	9	2.3	4.8
Credit Trading & Capital Markets	3	5.3	2.2	3.2	2.7	4.3	1.9	2.4
Commodities	1.9	3.1	1	1.4	1.6	2.6	0.7	1.6
Equities	0.4	1.3	0.07	0.08	1.7	2.8	0.7	0.8
Total⁴	10.6	18.7	7.5	11.6	9.9	13.2	6.8	9.7
XVA⁶	9.8	12	6.6	6.6	–	–	–	–
Non-trading								
Asset & Liability Management	26.3	31.4	21.5	22.8	24.1	34.6	15.6	30.3
Listed private equity	9.8	12.5	6.9	8.1	12.9	17.9	9.2	10.4
Total²	30.7	35.1	24.6	27.3	29.6	37.8	23.2	31.4

1. Highest and lowest VaR for each risk factor are independent and usually occur on different days

2. Actual one day VaR at year end date

3. Interest rate risk VaR includes credit spread risk arising from securities held for trading or available-for-sale. Footnote 6 explains where the Interest rate risk VaR also includes XVA risk

4. The total VaR shown in the tables above is not a sum of the component risks due to offsets between them

5. Trading book for market risk is defined in accordance with the EU Capital Requirements Regulation (CRD IV/CRR) Part 3 Title I Chapter 3 which restricts the positions permitted in the trading book. This regulatory definition is narrower than the accounting definition of the trading book within IAS39 'Financial Instruments: Recognition and Measurement'

6. XVA (Credit and Funding Valuation Adjustment): The XVA trading desk was mandated to actively hedge the market exposures arising from the recognition of CVA commencing 1 January 2016. The XVA desk VaR is included in the Trading and Non-trading Interest Rate and Total VaR results from 1 August 2016, but does not contribute to the Trading Interest Rate or Total VaR figures

Market risk regulatory capital requirements

The PRA specifies minimum capital requirements against market risk in the trading book. Interest rate risk in the non-trading book is covered separately under the Pillar 2 framework.

The PRA has granted the Group permission to use the Internal Model Approach (IMA) covering the majority of interest rate, foreign exchange,

precious metals, base metals, energy and agriculture market risk in the trading book. Positions outside the IMA scope are assessed according to standard PRA rules.

The minimum regulatory market risk capital requirements for the trading book are presented below for the Group.

Table 54: Market risk regulatory capital requirements

	2016		2015	
	Risk-Weighted Assets \$million	Regulatory capital requirement \$million	Risk-Weighted Assets \$million	Regulatory capital requirement \$million
Market risk capital requirements for trading book				
Interest rate ¹	3,918	314	3,713	297
Equity	17	1	163	13
Options	877	70	3,200	256
Commodity ²	217	17	187	15
Foreign exchange ²	3,701	296	2,575	206
Internal Models Approach ³	13,147	1,052	12,075	966
Total⁴	21,877	1,750	21,913	1,753

1. Securitisation positions contributed \$5.1 million to the interest rate position risk requirement (PRR) and \$63.3 million to interest rate RWA as at 31 December 2016 (securitised positions contributed \$1.7 million to the interest rate PRR and \$20.9 million to interest rate RWA as at 31 December 2015)

2. Commodity and foreign exchange cover non-trading book as well as trading book

3. Where the risks are not within the approved scope of the internal models approach, they are captured in the relevant category above based on the Standardised approach

4. See Table 9: Overview of RWA (OV1)

Table 55: Market risk under standardised approach (MR1)

	2016		2015	
	Risk-Weighted Assets \$million	Regulatory capital requirement \$million	Risk-Weighted Assets \$million	Regulatory capital requirement \$million
Outright products				
Interest rate risk	3,918	314	3,713	297
Equity risk	17	1	163	13
Foreign exchange risk	3,701	296	2,575	206
Commodity risk	217	17	187	15
Options	877	70	3,200	256
Simplified approach	–	–	–	–
Delta-plus method	–	–	–	–
Scenario approach	877	70	3,200	256
Securitisation (specific risk) ¹	63	5	21	2
Total	8,730	698	9,838	787

1. Securitisation (specific risk) is included in the Interest Rate Risk RWA number

Internal Models Approach

The table below shows the average, high and low Stressed VaR for the period January to December 2016 and the actual position on

31 December 2016. The Stressed VaR results reflect only the Group portfolio covered by the internal model approach and are calculated at a 99 per cent confidence level.

Table 56: IMA values for trading portfolios (MR3)

	2016				2015			
	Average \$million	High ¹ \$million	Low ¹ \$million	Actual ² \$million	Average \$million	High ¹ \$million	Low ¹ \$million	Actual ² \$million
VaR (10 day 99%)-	67	92	32	63	40	118	19	39
Stressed VaR (10 day 99%)-	189	274	97	123	131	199	78	85
Incremental Risk Charge (99.99%)	–	–	–	–	–	–	–	–
Comprehensive Risk capital charge (99.9%)	–	–	–	–	–	–	–	–

1. Highest and lowest VaR for each risk factor are independent and usually occur on different days

2. Actual one day VaR as at period end date

Table 57: Market risk under internal models approach (MR2-A)

	2016	
	Risk-Weighted Assets \$million	Regulatory capital requirement \$million
VaR (higher of values a and b)	3,161	253
(a) Previous day's VaR	905	72
(b) Average of the daily VaR	3,161	253
SVaR (higher of values a and b)	7,931	634
(a) Latest SVaR	2,000	160
(b) Average of the SVaR	7,931	634
Other ¹	2,055	164
Total²	13,147	1,051

1. Other IMA capital add-ons for market risks not fully captured in either VaR or SVaR. More details on Risks not in VaR can be found in the 2016 Annual Reports and Accounts on page 172

2. There are zero IRC and CRM as the Group has not received model permissions for specific interest rate risk comprehensive risk measure

The below table shows the RWA flow statements of market risk exposures under the Internal Models Approach.

Table 58: RWA flow statements of market risk exposures under an IMA (MR2-B)

	2016						Total capital requirements \$million
	VaR \$million	SVaR \$million	IRC \$million	CRM \$million	Other ¹ \$million	Total RWA \$million	
As at 31 December 2015	2,559	5,782	–	–	3,736	12,078	966
Regulatory adjustment	–	–	–	–	–	–	–
RWAs post adjustment as at 31 December 2015	2,559	5,782	–	–	3,736	12,078	966
Movement in risk levels	(1,423)	(2,426)	–	–	(982)	(4,831)	(386)
Model updates/changes	–	–	–	–	(700)	(700)	(56)
Methodology and policy	2,025	4,575	–	–	–	6,600	528
As at 31 December 2016	3,161	7,931	–	–	2,054	13,147	1,052
Regulatory adjustment	–	–	–	–	–	–	–
RWAs post adjustment as at 31 December 2016	3,161	7,931	–	–	2,054	13,147	1,052

1. Other IMA capital add-ons for market risks not fully captured in either VaR or SVaR. More details on Risks not in VaR can be found in the 2016 Annual Reports and Accounts on page 172

Backtesting

Regulatory backtesting is applied at both Group and Solo levels. In 2016, negative exceptions due to exceptional market volatility occurred on two days: one at Group level (two in 2015) and two at Solo level (one in 2015). These occasions were:

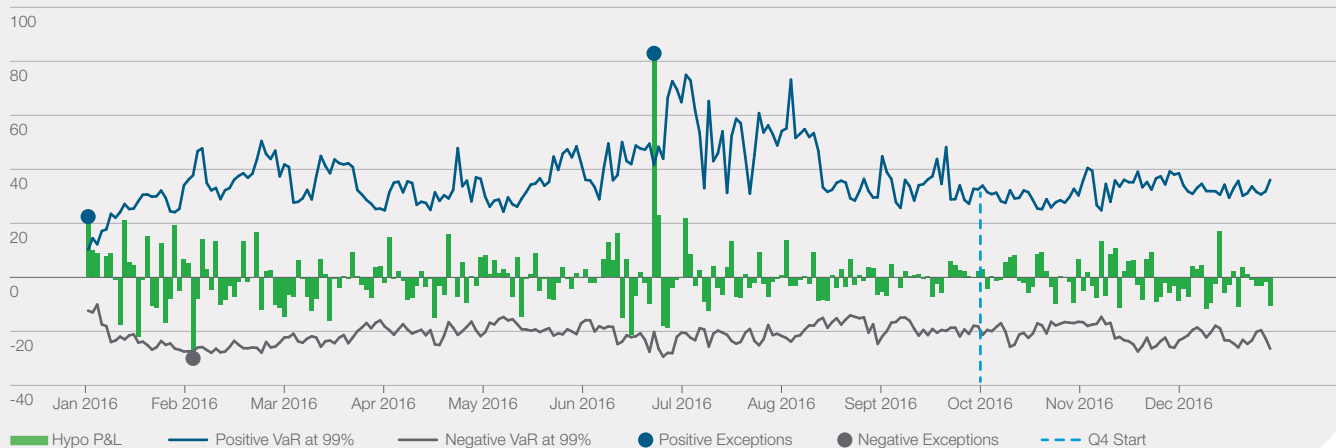
- 4 February: Weak US economic data lowered expectations of a Federal Reserve rate hike causing the US dollar to depreciate against other currencies
- 17 June: Opinion polls ahead of the UK EU referendum on 23 June indicated a shift towards the UK remaining in the EU. This caused appreciation of major currencies against the US dollar

Two exceptions in a year due to market events are within the 'green zone' applied internationally to internal models by bank supervisors (Basel Committee on Banking Supervision: 'Supervisory framework for the use of "backtesting" in conjunction with the internal models approach to market risk capital requirements', January 1996).

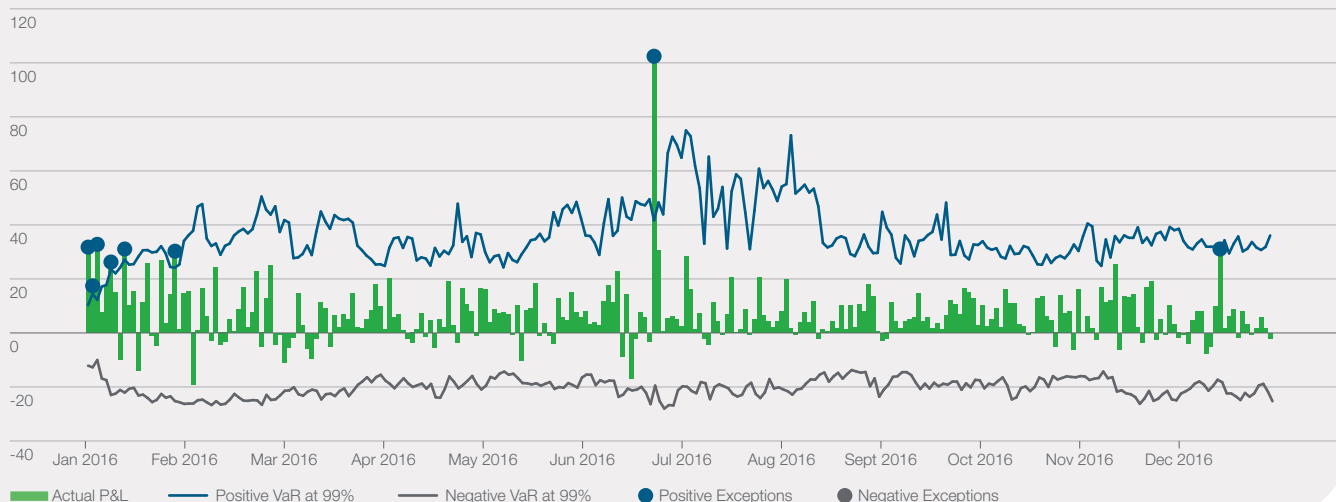
The graphs below illustrate the performance of the VaR model used in the Group capital calculations. They compare the 99 percentile loss confidence level given by the VaR model with the Hypothetical and Actual P&L of each day given the real market movements. Actual

backtesting P&L excludes from trading P&L: brokerage expense, fees & commissions, non-market-related accounting valuation adjustments and accounting debit valuation adjustments. Hypothetical backtesting P&L further excludes P&L from new deals and market operations.

**2016 BACKTESTING CHART
FOR INTERNAL MODEL APPROACH REGULATORY TRADING BOOK AT GROUP LEVEL
WITH HYPOTHETICAL PROFIT AND LOSS (P&L) VERSUS VaR (99 PER CENT, ONE DAY)**



**2016 BACKTESTING CHART
FOR INTERNAL MODEL APPROACH REGULATORY TRADING BOOK AT GROUP LEVEL
WITH ACTUAL PROFIT AND LOSS (P&L) VERSUS VaR (99 PER CENT, ONE DAY)**



The 2016 IMA Group level backtesting chart outliers are all positive, reflecting the additional elements of actual P&L (compared to hypothetical). There were eight such positive actual outliers in 2016, six in January 2016.

5 Interest rate risk in the banking book

Interest rate risk in the banking book is predominantly managed by the ALM function. Interest rate risk positions are measured, reported and monitored independently against limits on a daily basis.

Assumptions on loan prepayment and behaviour of deposits are country and product specific. Transfer pricing of interest rate risk is overseen by local ALCOs in accordance with the Group's Fund Transfer Pricing Policy.

The interest rate risk in the client businesses outside of the trading

book is transferred to ALM where it is managed on an integrated basis. The risk is measured and reported on an economic value basis irrespective of accounting treatments and summarised in Table 59. This table reflects ALM's interest rate risk profile (at year end) and is a measure of the economic value sensitivity that would result from increasing interest rates by 1 basis point (instantaneous parallel shift). The PV01 is controlled and monitored at country and currency level. Any basis risk that is not transferred and cannot be hedged by ALM is reported and overseen at local ALCOs.

Table 59: Non-trading book PV01 by currency

	2016	2015
	Actual ¹ \$million	Actual ¹ \$million
By currency		
HKD	0.0	0.3
INR	(0.5)	(0.6)
KRW	(0.4)	(0.5)
RMB ²	(0.3)	(0.5)
SGD	0.0	0.1
USD ³	(0.8)	0.0
Other	(1.3)	(0.8)
Total Non-trading book	(3.3)	(2.0)

1. Actual PV01 at period end date

2. RMB includes onshore CNY and CNH

3. The figures may not add up due to rounding

The changes during 2016 reflect consistent balance sheet management activities as well as the relatively benign interest rate environment leading ALM to actively hedge longer dated interest rate risk.

Interest rate risk originated in Group Treasury arises primarily from the investment into the Group of equity and other non-rate sensitive capital resources. The resulting interest-rate risk has a structural component and remains in Group Treasury.

6 Operational risk

Measurement

The Group uses the Standardised Approach to assess its regulatory and internal capital requirements for operational risk. Under the Standardised Approach, a regulatory defined beta coefficient is applied to the average gross income for the previous three years across each of the eight business lines prescribed

in the CRR, to determine the operational risk capital requirement. Our approach to the management of operational risk can be found in the Risk management approach section of the 2016 Annual Report and Accounts on page 147 to 148. The table below details the operational risk capital requirement for the Group:

Table 60: Operational risk regulatory capital requirement and RWA by business

	2016		2015	
	Risk-Weighted Assets ¹ \$million	Regulatory capital requirement \$million	Risk-Weighted Assets ¹ \$million	Regulatory capital requirement \$million
Corporate and Institutional Banking	16,703	1,336	20,547	1,644
Commercial Clients	4,385	351	3,803	304
Private Banking Clients	959	77	871	70
Retail Clients	8,953	716	9,652	772
Central & Other Items	2,693	215	737	59
Total	33,693	2,695	35,610	2,849

1. See Table 9: Overview of RWA (OV1)

7 Forward looking statements

This document may contain “forward-looking statements” that are based on current expectations or beliefs, as well as assumptions about future events. These forward-looking statements can be identified by the fact that they do not relate only to historical or current facts. Forward-looking statements often use words such as “may”, “could”, “will”, “expect”, “intend”, “estimate”, “anticipate”, “believe”, “plan”, “seek”, “continue” or other words of similar meaning. By their very nature, such statements are subject to known and unknown risks and uncertainties and can be affected by other factors that could cause actual results, and the Group’s plans and objectives, to differ materially from those expressed or implied in the forward-looking statements. Recipients should not place reliance on, and are cautioned about relying on, any forward-looking statements.

There are several factors which could cause actual results to differ materially from those expressed or implied in forward-looking statements. The factors that could cause actual results to differ materially from those described in the forward-looking statements include (but are not limited to) changes in global, political, economic, business, competitive, market and regulatory forces or conditions, future exchange and interest rates, changes in tax rates, future business combinations or dispositions and other factors specific to the Group.

Any forward-looking statement contained in this document is based on past or current trends and/or activities of the Group and should not be taken as a representation that such trends or activities will continue in the future. No statement in this document is intended to be a profit forecast or to imply that the earnings of the Group for the current year or future years will necessarily match or exceed the historical or published earnings of the Group. Each forward-looking statement speaks only as of the date of the particular statement.

Except as required by any applicable laws or regulations, the Group expressly disclaims any obligation to revise or update any forward-looking statement contained within this document, regardless of whether those statements are affected as a result of new information, future events or otherwise.

Nothing in this document shall constitute, in any jurisdiction, an offer or solicitation to sell or purchase any securities or other financial instruments, nor shall it constitute a recommendation or advice in respect of any securities or other financial instruments or any other matter.

Annex 1

Standard Chartered significant subsidiaries Capital resources of significant subsidiaries

For local capital adequacy purposes, a range of approaches are applied in accordance with the regulatory requirements in force in each jurisdiction. Wherever possible, the approaches adopted at the Group level are applied locally.

CRR Article 13 concerns the application of disclosure requirements of significant subsidiaries of EU parent institutions and those subsidiaries which are of material significance to their local market.

The capital resources of the Group's significant subsidiaries under CRR Article 13 are presented below.

The capital resources of these subsidiaries are calculated in accordance with the regulatory requirements applicable in the countries in which they are incorporated, and therefore cannot be aggregated, but are presented to align with the Group format.

Table A: Capital resources of significant subsidiaries

	2016					2015				
	Standard Chartered Bank ¹ \$million	Standard Chartered Bank (HK) Ltd \$million	Standard Chartered Bank Korea Ltd \$million	Standard Chartered Bank (Singapore) Ltd \$million	Standard Chartered Bank (Uganda) Ltd \$thousands	Standard Chartered Bank ¹ \$million	Standard Chartered Bank (HK) Ltd \$million	Standard Chartered Bank Korea Ltd \$million	Standard Chartered Bank (Singapore) Ltd \$million	Standard Chartered Bank (Uganda) Ltd \$thousands
Local Regulator	PRA	HKMA ²	FSS ³	MAS ⁴	BOU ⁵	PRA	HKMA ²	FSS ³	MAS ⁴	BOU ⁵
Common Equity Tier 1 capital before regulatory adjustments	44,019	7,160	3,825	1,388	31	41,756	7,189	3,609	1,337	31
Regulatory adjustments	(6,451)	(1,004)	(95)	(120)	(1)	(6,568)	(1,095)	(59)	(82)	(3)
Common Equity Tier 1 capital	37,568	6,156	3,730	1,267	30	35,188	6,094	3,550	1,255	28
Additional Tier 1 (AT1) capital: instruments	5,480	497	–	127	–	4,452	497	–	89	–
Tier 1 capital (T1 = CET1 + AT1)	43,048	6,653	3,730	1,395	30	39,640	6,591	3,550	1,344	28
Tier 2 capital	17,144	1,750	16	571	1	15,334	1,233	405	591	5
Total capital (TC = T1 + T2)	60,192	8,403	3,747	1,966	31	54,974	7,824	3,954	1,935	33
Total risk-weighted assets	268,199	45,562	23,921	9,864	177	300,114	42,693	27,385	11,007	167
Capita; Ratios										
Common Equity Tier 1	14.0%	13.5%	15.6%	12.8%	16.9%	11.7%	14.3%	13.0%	11.4%	16.8%
Tier 1 Capital	16.1%	14.6%	15.6%	14.1%	16.9%	13.2%	15.4%	13.0%	12.2%	16.8%
Total Capital	22.4%	18.4%	15.7%	19.9%	17.5%	18.3%	18.3%	14.4%	17.6%	19.8%

1. Standard Chartered Bank disclosed in the table above aligns with the capital section of the Standard Chartered Bank Accounts

2. Hong Kong Monetary Authority

3. Financial Supervisory Services

4. Monetary Authority Of Singapore

5. Bank of Uganda

Standard Chartered Bank (Singapore) Limited and Standard Chartered Bank (Uganda) Limited qualify as the Group's significant subsidiaries as they are Domestically Systemically Important Banks (D-SIBs).

Capital management – Standard Chartered Bank

The Capital section of the 2016 Standard Chartered Bank Accounts sets out our approach to capital management. Tables B & C below summarise the consolidated capital position of Standard Chartered Bank.

Table B: Capital resources

	2016 Transitional position \$million	2016 End point adjustment \$million	2016 End point position \$million	2015 Transitional position \$million
Standard Chartered Bank				
Common Equity Tier 1 (CET1) capital: instruments and reserves				
Capital instruments and the related share premium accounts	26,820	–	26,820	23,032
Of which: Share premium accounts	296	–	296	296
Retained earnings ¹	20,549	–	20,549	19,147
Accumulated other comprehensive income (and other reserves)	(5,481)	–	(5,481)	112
Non-controlling interests (amount allowed in consolidated CET1)	2,797	–	2,797	2,326
Independently reviewed interim and year-end loss ²	(503)	–	(503)	(2,746)
Foreseeable dividends net of scrip	(163)	–	(163)	(115)
Common Equity Tier 1 capital before regulatory adjustments	44,019	–	44,019	41,756
Common Equity Tier 1 capital: regulatory adjustments				
Additional value adjustments	(660)	–	(660)	(564)
Intangible assets	(4,432)	–	(4,432)	(4,395)
Deferred tax assets that rely on future profitability	(197)	–	(197)	(212)
Fair value reserves related to losses on cash flow hedges	73	–	73	38
Negative amounts resulting from the calculation of expected loss	(740)	–	(740)	(567)
Gains on liabilities at fair value resulting from changes in own credit	(289)	–	(289)	(631)
Defined-benefit pension fund assets	(18)	–	(18)	(4)
Fair value gains from own credit risk related to derivative liabilities	(20)	–	(20)	(34)
Exposure amounts which could qualify for risk weighting	(168)	–	(168)	(199)
Of which: securitisation positions	(134)	–	(134)	(168)
Of which: free deliveries	(34)	–	(34)	(31)
Total regulatory adjustments to Common Equity Tier 1	(6,451)	–	(6,451)	(6,568)
Common Equity Tier 1 capital	37,568	–	37,568	35,188
Additional Tier 1 (AT1) capital: instruments				
Capital Instruments and the related share premium accounts	5,500	(1,500)	4,000	4,472
Additional Tier 1 (AT1) capital before regulatory adjustments	5,500	(1,500)	4,000	4,472
Additional Tier 1 capital	5,480	(1,500)	3,980	4,452
Tier 1 capital (T1 = CET1 + AT1)	43,048	(1,500)	41,548	39,640
Tier 2 (T2) capital: instruments and provisions				
Capital instruments and the related share premium accounts	15,930	–	15,930	12,625
Qualifying items and share premium accounts subject to phase out from T2	865	(865)	–	31
Qualifying own funds instruments included in T2 issued by subsidiaries and held by third parties	379	(131)	248	2,708
Tier 2 capital before regulatory adjustments	17,174	(996)	16,178	15,364
Tier 2 capital: regulatory adjustments				
Direct and indirect holdings by an institution of own Tier 2 instruments and subordinated loans	(30)	–	(30)	(30)
Total regulatory adjustments to Tier 2 capital	(30)	–	(30)	(30)
Tier 2 capital	17,144	(996)	16,148	15,334
Total capital (TC = T1 + T2)	60,192	(2,496)	57,696	54,974

Table C: Capital ratios and risk-weighted assets

	2016 Transitional position \$million	2016 End point adjustment \$million	2016 End point position \$million	2015 Transitional position \$million
Standard Chartered Bank				
Amounts below the thresholds for deduction (before risk weighting)				
Direct and indirect holdings of the capital of financial sector entities where the institution does not have a significant investment in those entities (amount below 10% threshold and net of eligible short positions)	954	–	954	1,284
Direct and indirect holdings by the institution of the CET1 instruments of financial sector entities where the institution has a significant investment in those entities (amount below 10% threshold and net of eligible short positions)	1,347	–	1,347	1,194
Deferred tax assets arising from temporary differences (amount below 10% threshold, net of related tax liability where the conditions in Article 38 (3) are met)	1,493	–	1,493	904
Risk-weighted assets				
Credit risk	210,303	–	210,303	238,140
Credit valuation adjustment	2,290	–	2,290	5,860
Operational risk	33,729	–	33,729	34,201
Market risk	21,877	–	21,877	21,913
Total risk-weighted assets³	268,199	–	268,199	300,114
Capital ratios and buffers				
CET1 capital	14.0%	–	14.0%	11.7%
Tier 1 capital	16.1%	(0.6)%	15.5%	13.2%
Total capital	22.4%	(0.9)%	21.5%	18.3%

1. Retained earnings under CRD IV include the effect of regulatory consolidation adjustments

2. Independently reviewed interim and year-end profits/(loss) for CRD IV are in accordance with the regulatory consolidation

3. The risk-weighted assets are not covered by the scope of the Audit

Table D: Credit risk regulatory capital requirements of significant subsidiaries

Credit Risk Capital Requirements	2016			2015		
	Standard Chartered Bank ¹ \$million	Standard Chartered Bank (HK) Ltd \$million	Standard Chartered Bank Korea Ltd \$million	Standard Chartered Bank ¹ \$million	Standard Chartered Bank (HK) Ltd \$million	Standard Chartered Bank Korea Ltd \$million
Local Regulator	PRA	HKMA ²	FSS ³	PRA	HKMA ²	FSS ³
IRB Exposure Class						
Central governments or central banks	1,492	79	–	1,603	79	–
Institutions	1,137	325	–	915	194	–
Corporates	7,292	1,064	583	8,796	1,098	513
Retail, of which	1,536	793	494	1,619	696	453
Secured by real estate collateral	357	430	189	348	360	166
Qualifying revolving retail	393	110	22	448	128	29
Retail SME	47	17	19	56	16	–
Other retail	739	236	264	767	192	258
Equity	–	–	13	–	–	32
Securitisation positions	235	15	–	308	17	–
Non-credit obligation assets	46	–	–	45	–	–
Other	–	406	7	–	305	7
Total IRB	11,738	2,682	1,098	13,286	2,389	1,005
Standardised Exposure Class						
Central governments or central banks	412	–	2	325	–	1
Institutions	28	3	42	13	5	48
Corporates	1,235	137	89	1,224	143	328
Retail	651	21	–	710	18	10
Secured on real estate property	441	8	–	665	10	–
Past due items	22	6	–	22	6	–
Items belonging to regulatory high risk categories	244	–	98	323	–	97
Other items	846	161	120	926	173	126
Total Standardised	3,880	336	351	4,208	355	611
Counterparty credit risk capital component	1,205	20	159	1,556	26	186
Credit valuation adjustment risk	183	19	77	–	25	94
Settlement risk	1	–	–	1	–	–
Total Credit Risk (including CVA)	17,007	3,057	1,684	19,051	2,795	1,896

1. Standard Chartered Bank disclosed in the table above aligns with the capital section of the Standard Chartered Bank Accounts

2. Hong Kong Monetary Authority

3. Financial Supervisory Services

Table E. Leverage ratio common disclosure – Standard Chartered Bank

Capital and total exposures	2016 \$million	2015 \$million
Tier 1 capital	41,548	37,188
Total leverage ratio exposures	717,874	728,921
Leverage ratio	5.8%	5.1%

Table F: Market risk regulatory capital requirements for significant subsidiaries

Market Risk regulatory capital Requirements for Trading Book	2016			2015		
	Standard Chartered Bank ¹ \$million	Standard Chartered Bank (HK) Ltd \$million	Standard Chartered Bank Korea Ltd \$million	Standard Chartered Bank ¹ \$million	Standard Chartered Bank (HK) Ltd \$million	Standard Chartered Bank Korea Ltd \$million
Local Regulators	PRA	HKMA²	FSS³	PRA	HKMA²	FSS³
Interest rate	313	123	17	297	94	30
Equity	1	–	7	13	8	4
Options	70	–	–	256	–	–
Commodity	17	–	–	15	–	–
Foreign exchange	296	12	–	206	30	–
Internal Models Approach	1,052	7	60	966	6	92
Total	1,750	142	84	1,753	138	126
Market Risk – RWA	21,877	1,770	1,055	21,913	1,721	1,576

1. Standard Chartered Bank disclosed in the table above aligns with the capital section of the Standard Chartered Bank Accounts

2. Hong Kong Monetary Authority

3. Financial Supervisory Services

Table G: Operational risk regulatory capital requirement for significant subsidiaries

Subsidiary	Local Regulators	2016		2015	
		Regulatory capital \$million	Risk-Weighted Assets \$million	Regulatory capital \$million	Risk-Weighted Assets \$million
Standard Chartered Bank	PRA	2,695	33,693	2,736	34,201
Standard Chartered Bank (HK) Ltd	HKMA	446	5,577	485	6,063
Standard Chartered Bank Korea Ltd	FSS	145	1,810	169	2,115

Acronyms

ABS	Asset Backed Securities	OBSC	Operational Balance Sheet Committee
ALCO	Asset and Liability Committee	OTC	Over the counter
ALM	Asset and Liability Management	NII	Net Interest Income
AT1	Additional Tier 1	PD	Probability of Default
BCBS	Basel Committee on Banking Supervision	PFE	Potential Future Exposure
BRC	Board Risk Committee	PIP	Portfolio Impairment Provision
CCF	Credit Conversion Factor	PIT	Point in Time
CCR	Counterparty Credit Risk	PM	Portfolio Management
CCyB	Countercyclical capital buffer	PRA	Prudential Regulation Authority
CDOs	Collateralised Debt Obligations	PV01	Present Value 01
CET1	Common Equity Tier 1	PVA	Prudent Valuation Adjustment
CIB	Corporate, Institutional and Banking	QCCP	Qualifying Central Counterparty
CMBS	Commercial Mortgage Backed Securities	RMB	Renminbi
CPM	Credit & Portfolio Management	RMBS	Residential Mortgage Backed Securities
CRD	Capital Requirements Directive	RNIV	Risk not in VaR
CRM	Credit Risk Mitigation	RWA	Risk-Weighted Assets
CRO	Chief Risk Officer	SA	Standardised Approach
CRR	Capital Requirements Regulation	SFT	Securities Financing Transactions
CSA	Credit Support Annex	SIF	Significant Influence Function
CVA	Credit Valuation Adjustment	SME	Small and Medium-sized Enterprise
EAD	Exposure at default	SPE	Special Purpose Entity
EBA	European Banking Authority	SVaR	Stressed VaR
ECAI	External Credit Assessment Institutions	T1	Tier 1 capital
EL	Expected loss	T2	Tier 2 capital
FCA	Financial Conduct Authority	TC	Total capital
FPC	Financial Policy Committee	TLAC	Total loss-absorbing capacity
FSS	Financial Supervisory Service (South Korea)	TTC	Through the cycle
GCRO	Group Chief Risk Officer	VaR	Value at Risk
G-SIB	Global Systemically Important Bank	VBC	Valuation and Benchmarks Committee
G-SII	Global Systemically Important Institution	XVA	Credit and Funding Valuation Adjustment
HKMA	Hong Kong Monetary Authority		
IAS	International Accounting Standard		
IFRS	International Financial Reporting Standards		
IMA	Internal Model Approach		
IRB	Internal Ratings Based		
IRC	Incremental Risk Charge		
IFRS	International Financial Reporting Standards		
LGD	Loss Given Default		
MAC	Model Assessment Committee		
MR	Market Risk		
O-SII	Other Systemically Important Institution		

Glossary

Arrears	A debt or other financial obligation is considered to be in a state of arrears when payments are overdue. Loans and advances are considered to be delinquent when consecutive payments are missed. Also known as 'delinquency'.
Available for Sale	Non-derivative financial assets that are designated as available for sale or are not classified as loans and receivables; held to maturity investments, or financial assets at fair value through profit or loss.
ASEAN	Association of South East Asian Nations (ASEAN) which includes the Group's operation in Brunei, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam.
Asset Backed Securities (ABS)	Securities that represent an interest in an underlying pool of referenced assets. The referenced pool can comprise any assets which attract a set of associated cash flows but are commonly pools of residential or commercial mortgages and in the case of Collateralised Debt Obligations (CDOs), the reference pool may be ABS.
Attributable profit to ordinary shareholders	Profit for the year after non-controlling interests and the declaration of dividends on preference shares classified as equity.
Backtesting	A statistical technique used to monitor and assess the accuracy of a model, and how that model would have performed had it been applied in the past.
Basel II	The capital adequacy framework issued by the Basel Committee on Banking Supervision (BCBS) in June 2006 in the form of the 'International Convergence of Capital Measurement and Capital Standards'.
Basel III	In December 2010, the BCBS issued the Basel III rules text, which were updated in June 2011, and represents the details of strengthened global regulatory standards on bank capital adequacy and liquidity. The new requirements will be phased in and fully implemented by 1 January 2019.
Basis point (bps)	One hundredth of a per cent (0.01 per cent); 100 basis points is 1 percent. Used in quoting movements in interest rates or yields on securities.
Capital conservation buffer	A capital buffer prescribed by regulators under Basel III and designed to ensure banks build up capital buffers outside periods of stress which can be drawn down as losses are incurred. Should a bank's CET1 capital fall within the capital conservation buffer range, capital distributions will be constrained by the regulators.
Capital Requirements Directive (CRD)	A capital adequacy legislative package adopted by EU member states. CRD IV comprises a recast Capital requirements Directive and a new Capital Requirements Regulation. The package implements the Basel III capital proposals together with transitional arrangements for some of its requirements. CRD IV came into force on 1 January 2014.
Capital resources	Sum of Tier 1 and Tier 2 capital after regulatory adjustments.
Central Counterparty (CCP)	A CCP is a clearing house that acts as an intermediary between counterparties for certain products that are traded in one or more financial markets.
Common Equity Tier 1 capital	Common Equity Tier 1 capital consists of the common shares issued by the bank and related share premium, retained earnings, accumulated other comprehensive income and other disclosed reserves, eligible non-controlling interests and regulatory adjustments required in the calculation of Common Equity Tier 1.
Common Equity Tier 1 ratio	Common Equity Tier 1 capital as a percentage of risk-weighted assets .
Countercyclical capital buffer (CCyB)	A capital buffer prescribed by regulators under Basel III which aims to sure that capital requirements take account of the macro-financial environment in which banks operate. This will provide the banking sector with additional capital to protect it against potential future losses when excess credit growth in the financial systems as a whole is associated with an increase in system-wide risk.
Counterparty credit risk	The risk that a counterparty defaults before satisfying its obligations under a contract.
CRD IV	Represents the Capital Requirements Directive (CRD) and Capital Requirements Regulation (CRR) that implement the Basel III proposals in Europe.
Credit Conversion Factor (CCF)	Either prescribed by BIPRU/CRR or modelled by the bank, an estimate of the amount the Group expects a customer to have drawn further on a facility limit at the point of default.
Credit Default Swap (CDS)	A derivative contract where a buyer pays a fee to a seller in return for receiving a payment in the event of a credit event (for example bankruptcy, payment default on a reference asset or assets, or downgrades by an rating agency) on an underlying obligation.
Credit quality step	Credit quality steps (CQS) are used to derive the risk-weight to be applied to exposures treated under the Standardised approach to credit risk.

Credit risk	Credit risk is the potential for loss due to the failure of a counterparty to meet its obligations to pay the Group in accordance with agreed terms and can arise from both the banking and trading books.
Credit risk mitigation (CRM)	Credit risk mitigation is a process to mitigate potential credit losses from any given account, customer or portfolio by using a range of tools such as collateral, netting agreements, credit insurance, credit derivatives and other guarantees.
Credit support annex	A legal document that regulates collateral for OTC derivative transactions between two parties.
Credit Valuation Adjustment (CVA)	Additional regulatory capital in respect of mark to market losses associated with derivative transactions.
Debit Valuation Adjustment (DVA)	Adjustments required to Tier 1 capital to derecognise any unrealised fair value gains and losses associated with fair valued liabilities that are attributable to the market's perception of the Group's credit worthiness.
Equity price risk	The financial risk involved in holding equity in a particular investment. Arises from changes in the prices of equities, equity indices, equity baskets and implied volatilities on related options.
Expected Loss (EL)	The Group measure of anticipated loss for exposures captured under an internal ratings based credit risk approach for capital adequacy calculations. It is measured as the Group-modelled view of anticipated loss based on Probability of Default (PD) , Loss Given Default (LGD) and Exposure at Default (EAD) , with a one-year time horizon.
Exposure	Credit exposures represent the amount lent to a customer, together with any undrawn commitment.
Exposure at default (EAD)	The estimation of the extent to which the Group may be exposed to a customer or counterparty in the event of, and at the time of, that counterparty's default. At default, the customer may not have drawn the loan fully or may already have repaid some of the principal, so that exposure is typically less than the approved loan limit.
External Credit Assessment Institutions (ECAI)	For the Standardised Approach to credit risk for sovereigns, corporates and institutions, external ratings are used to assign risk-weights. These external ratings must come from PRA approved rating agencies, known as External Credit Assessment Institutions (ECAI) ; namely Moody's, Standard & Poor's, Fitch, Dun & Bradstreet.
Fair value	The value of an asset or liability when it is transacted on an arm's length basis between knowledgeable and willing parties.
Financial Policy Committee (FPC)	The Financial Policy Committee is an independent committee at the Bank of England and is charged with a primary objective of identifying, monitoring and taking action to remove or reduce systemic risks with a view to protecting and enhancing the resilience of the UK financial system. The FPC has a secondary objective to support the economic policy of the Government.
Foreseeable dividends net of scrip	Includes both Ordinary and Preference share dividends reasonably expected to be paid out of any future residual interim or year end profits. In case of ordinary dividends, the amount of foreseeable dividends deducted from the interim or year-end profits is equal to the amount of interim or year-end profits multiplied by the dividend payout ratio. In case of preference share dividends, the amount of foreseeable dividends is equal to the amount accrued during the relevant reporting period payable at a future date.
Foundation Internal Ratings Based (Foundation IRB) Approach	A method of calculating credit risk capital requirements using internal PD models but with supervisory estimates of LGD and conversion factors for the calculation of EAD .
Free delivery	When a bank takes receipt of a debt or equity security, a commodity or foreign exchange without making payment, or where a bank delivers a debt or equity security, a commodity or foreign exchange without receiving payment.
Greater China	Greater China includes the Group's operation in the People's Republic of China, the Hong Kong Special Administrative Region of the People's Republic of China and Taiwan.
Global Systemically Important Bank (G-SIB)	In November 2011, the FSB published an integrated set of policy measures, which included identification of G-SIBs, using a methodology developed by BCBS. The group of G-SIBs is updated annually based on new data and published by the FSB each November. G-SIBs are subject to higher capital buffer requirements, Total Loss-Absorbing Capacity (TLAC) requirements, resolvability requirements and higher supervisory expectations and are being phased in from 1 January 2016.
Haircut	A haircut, or volatility adjustment, ensures the value of exposures and collateral are adjusted to account for the volatility caused by foreign exchange or maturity mismatches, when the currency and maturity of an exposure differ materially to the currency and maturity of the associated collateral.
Held-to-maturity	Held-to-maturity assets are non-derivative financial assets with fixed or determinable payments and fixed maturities that the Group's management has the intention and ability to hold to maturity.
Impaired loans	Loans where individually assessed impairment provisions have been raised and also include loans which are collateralised or where indebtedness has already been written down to the expected realisable value. The impaired loan category may include loans, which, while impaired, are still performing.

Individually assessed loan impairment provisions	Also known as specific impairment provisions. Impairment is measured individually for assets that are individually significant to the Group. Typically assets within the Corporate and Institutional and Commercial client segments of the Group are assessed individually.
Individual impairment charge	The amount of individually assessed loan impairment provisions that are charged to the income statement in the reporting period.
Individual liquidity guidance	Guidance given to the Group about the amount, quality and funding profile of liquidity resources that the PRA has asked the Group to maintain.
Institution	A credit institution or an investment firm.
Internal Capital Adequacy Assessment Process (ICAAP)	A requirement on institutions under Pillar 2 of the Basel II/Basel III framework to undertake a comprehensive assessment of their risks and to determine the appropriate amounts of capital to be held against these risks where other mitigants are not available.
Internal Model Approach (IMA)	The approach used to calculate market risk capital and RWA with an internal market risk model approved by the PRA under the terms of CRD IV/CRR . Formerly referred to as CAD2.
Interest rate risk (IRR)	Interest rate risk arises due to the investment of equity and reserves into rate-sensitive assets, as well as some tenor mismatches between debt issuance and placements.
Internal ratings-based approach ('IRB')	An approach used to calculate risk-weighted assets based on a firm's own estimates of certain parameters.
Items belonging to regulatory high-risk categories	In relation to the Standardised approach to credit risk , items which attract a risk-weight of 150 per cent. This includes exposures arising from venture capital business and certain positions in collective investment schemes.
Leverage ratio	A ratio introduced under CRD IV that compares Tier 1 capital to total exposures, including certain exposures held off balance sheet as adjusted by stipulated credit conversion factors . Intended to be a simple, non-risk based backstop measure.
Loans and advances	This represents lending made under bilateral agreements with customers entered into in the normal course of business and is based on the legal form of the instrument. An example of a loan product is a home loan.
Loss Given Default (LGD)	LGD is the percentage of an exposure that a lender expects to lose in the event of obligor default in economic downturn periods.
Mark-to-market approach	One of the approaches available to banks to calculate the exposure value associated with derivative transactions. The approach calculates the current replacement cost of derivative contracts, by determining the market value of the contract and considering any potential future exposure .
Market risk	The potential for loss of earnings or economic value due to adverse changes in financial market rates or prices.
Maturity or Residual Maturity (in the context of RWAs)	The time from the reporting date to the contractual maturity date of an exposure, capped at five years. Maturity is considered as part of the calculation of risk-weights for the Group's exposures treated under the IRB approach to credit risk and for the calculation of market risk capital requirements.
MENAP	Middle East, North Africa and Pakistan (MENAP) includes the Group's operation in Afghanistan, Bahrain, Egypt, Islamic Republic of Iran, Iraq, Jordan, Lebanon, Oman, Pakistan, Occupied Palestinian Territory, Qatar, Saudi Arabia and United Arab Emirates (UAE).
Minimum capital requirement	Minimum capital required to be held for credit , market and operational risk .
Model validation	The process of assessing how well a model performs using a predefined set of criteria including the discriminatory power of the model, the appropriateness of the inputs, and expert opinion.
Multilateral Development Banks	An institution created by a group of countries to provide financing for the purpose of development. Under the Standardised approach to credit risk , eligible multilateral development banks attract a zero per cent risk-weight.
North East (NE) Asia	North East (NE) Asia includes the Group's operation in the Democratic Republic of Korea and Japan.
Operational risk	The potential for loss arising from the failure of people, process, or technology, or the impact of external events.
Over-the-Counter (OTC) traded products/OTC derivatives	A bilateral transaction that is not exchange traded and is valued using valuation models.

Past due items	A loan payment that has not been made as of its due date.
Pillar 1	The first Pillar of the three pillars of Basel II/Basel III which provides the approach to the calculation of the minimum capital requirements for credit, market and operational risk . Minimum capital requirements are 8 per cent of the Group's risk-weighted assets .
Pillar 2	Pillar 2, 'Supervisory Review', requires banks to undertake a comprehensive assessment of their risks and to determine the appropriate amounts of capital to be held against these risks where other suitable mitigants are not available.
Pillar 3	Pillar 3 aims to provide a consistent and comprehensive disclosure framework that enhances comparability between banks and further promotes improvements in risk practices.
Point in time (PIT)	Considers the economic conditions at the point in the economic cycle at which default occurs when estimating the probability of default .
Portfolio Impairment Provision (PIP)	The amount of loan impairment provisions assessed on the collective portfolio that are charged to the income statement in the reporting period.
Potential Future Exposure (PFE)	As estimate of the potential exposure that may arise on a derivative contract in future, used to derive the exposure amount.
Probability of Default (PD)	PD is an internal estimate for each borrower grade of the likelihood that an obligor will default on an obligation within 12 months.
Present Value 01	This represents the change in present value of an asset or liability for a 1 basis point change in the nominal yield curve.
Prudential Regulatory Authority (PRA)	The Prudential Regulatory Authority is responsible for the prudential regulation and supervision of banks, building societies, credit unions, insurers and major investment firms.
Prudent Valuation Adjustment (PVA)	This represents adjustments to Tier 1 capital where the prudent value of a position in the trading book is assessed by the Group as being materially below the fair value recognised in the financial statements.
Qualifying Central Counterparty (QCCP)	A QCCP is a CCP that has been authorised and is subject to a certain minimum level of regulation by local regulators or overseer authorities.
Qualifying Revolving Retail Exposure (QRRE)	Retail IRB exposures that are revolving, unsecured, and, to the extent they are not drawn, immediately and unconditionally cancellable, such as credit cards.
Regulatory capital	Regulatory capital represents the sum of Tier 1 Capital and Tier 2 Capital after taking into account any regulatory adjustments.
Repurchase agreement (repo)/ reverse repurchase agreement (reverse repo)	A short-term funding agreement which allows a borrower to sell a financial asset, such as ABS or Government bonds as collateral for cash. As part of the agreement the borrower agrees to repurchase the security at some later date, usually less than 30 days, repaying the proceeds of the loan. For the party on the other end of the transaction (buying the security and agreeing to sell in the future) it is a reverse repurchase agreement or reverse repo.
Residential Mortgage-Backed Securities (RMBS)	Securities that represent interests in a group of residential mortgages. Investors in these securities have the right to cash received from future mortgage payments (interest and/or principal).
Residual maturity	The remaining maturity of a facility from the reporting date until either the contractual maturity of the facility or the effective maturity date.
Retail Internal Ratings Based (Retail IRB) Approach	In accordance with the PRA handbook BIPRU 4.6/CRR, the approach to calculating credit risk capital requirements for eligible retail exposures.
Risk appetite	Risk appetite is an expression of the amount of risk we are willing to take in pursuit of our strategic objectives, reflecting our capacity to sustain losses and continue to meet our obligations arising from a range of different stress trading conditions.
Risk-weighted assets (RWAs)	A measure of a bank's assets adjusted for their associated risks, expressed as a percentage of an exposure value in accordance with the applicable Standardised or IRB approach rules.
RWA density	The risk-weighted asset as a percentage of exposure at default.
Scrip dividends	Dividends paid to existing shareholders in securities instead of cash payment.
Securities Financing Transactions (SFT)	The act of loaning a stock, derivative, other security to an investor.

Securitisation	Securitisation is a process by which debt instruments are aggregated into a pool, which is used to back new securities. A company sells assets to a special purpose entity (SPE) who then issues securities backed by the assets based on their value. This allows the credit quality of the assets to be separated from the credit rating of the original company and transfers risk to external investors.
Securitisation position(s)	The positions assumed by the Group following the purchase of securities issued by Asset-Backed Securitisation programmes or those retained following the origination of a securitisation programme.
South Asia	South Asia includes the Group's operation in the People's Republic of Bangladesh, India, Nepal and Sri Lanka.
Specialised lending	Specialised lending exposures are defined as an exposure to an entity which was created specifically to finance and/or operate physical assets,, where the contractual arrangements given the lender a substantial degree of control over the assets and the income that they generate and the primary source of repayment of the obligation is the income generated by the assets being financed, rather than the independent capacity of a broader commercial enterprise.
Special Purpose Entities (SPEs)	SPEs are entities that are created to accomplish a narrow and well defined objective. There are often specific restrictions or limits around their ongoing activities. Transactions with SPEs take a number of forms, including: the provision of financing to fund asset purchases, or commitments to provide finance for future purchases; derivative transactions to provide investors in the SPE with a specified exposure; the provision of liquidity or backstop facilities which may be drawn upon if the SPE experiences future funding difficulties; and direct investment in the notes issued by SPEs.
Standardised Approach	In relation to credit risk , a method for calculating credit risk capital requirements using External Credit Assessment Institutions (ECAI) ratings and supervisory risk-weights. In relation to operational risk , a method of calculating the operational risk capital requirement by the application of a supervisory defined percentage charge to the gross income of eight specified business lines.
Stressed Value at Risk (VaR)	A regulatory market risk measure based on potential market movements for a continuous one-year period of stress for a trading portfolio.
Sub-prime	Sub-prime is defined as loans to borrowers typically having weakened credit histories that include payment delinquencies and potentially more severe problems such as court judgements and bankruptcies.
Through the cycle (TTC)	Reduces the volatility in the estimation of the probability of default by considering the average conditions over the economic cycle at the point of default, versus the point in time (PIT) approach, which considers economic conditions at the point of the economic cycle at which default occurs.
Tier 1 capital	Tier 1 capital comprises Common Equity Tier 1 capital plus Additional Tier 1 securities and related share premium accounts.
Tier 1 capital ratio	Tier 1 capital as a percentage of risk-weighted assets .
Tier 2 capital	Tier 2 capital comprises qualifying subordinated liabilities and related share premium accounts.
Total Loss Absorbing Capacity (TLAC)	An international standard for TLAC issued by the FSB, which requires G-SIBs to have sufficient loss-absorbing and recapitalisation capacity available in resolution, to minimise impacts on financial stability, maintain the continuity of critical functions and avoid exposing public funds to loss.
Total Return Swap	A derivative transaction that swaps the total return on a financial instrument, including cashflows and capital gains or losses, for an interest rate return.
Trading book	The trading book consists of all position in CRD financial instrument and commodities held either with trading intent or in order to hedge other elements of the trading book and which are either free of any restrictive covenants on their tradability or ability to be hedged.
Value at Risk (VaR)	VaR, in general, is a quantitative measure of market risk that applies recent historical market conditions to estimate the potential future loss in market value that will not be exceeded in a set time period at a set statistical confidence level.
Write downs	After an advance has been identified as impaired and is subject to an impairment allowance, the stage may be reached whereby it is concluded that there is no realistic prospect of further recovery. Write downs will occur when and to the extent that, the whole or part of a debt is considered irrecoverable.
Wrong way risk	Wrong way risk occurs when an exposure increase is coupled with a decrease in the credit quality of the obligor.

Summary of differences

Summary of differences between the Pillar 3 Disclosures and the Risk review and Capital review section of the Annual Report and Accounts

The Group's Pillar 3 Disclosures for 31 December 2016 provide details from a regulatory perspective on certain aspects of credit risk, market risk and operational risk. The quantitative disclosures in the Pillar 3 Disclosures will not, however, be directly comparable to those in the Risk review and Capital review section, of the 2016 Annual Report and

Accounts as they are largely based on internally modelled risk metrics such as PD, LGD and EAD under Basel rules, whereas the quantitative disclosures in the Risk review are based on IFRS. EAD differs from the IFRS exposure primarily due to the inclusion of undrawn credit lines and off-balance sheet commitments. In addition, a number of the credit risk disclosures within the Pillar 3 Disclosures are only provided for the internal ratings based portfolio, which represents 77 per cent of the Group's credit risk RWA.

Area	Annual Report and Accounts	Pillar 3 Disclosures
Basis of requirements	<ul style="list-style-type: none"> The Group's 2016 Annual Report and Accounts is prepared in accordance with the requirements of IFRS, the UK Companies Act 2006, and the UK, Hong Kong and India Listing rules. 	<ul style="list-style-type: none"> The Group's Pillar 3 Disclosures, provides details on risk from a regulatory perspective to fulfil Basel III / CRD IV rule requirements which have been implemented in UK by the Prudential Regulatory Authority (PRA) via EU legislation, Capital Requirements Regulation (CRR), Part Eight.
Basis of preparation	<ul style="list-style-type: none"> The quantitative credit risk disclosures in the Risk review are based on IFRS. Loans and advances are analysed between the four client segments of Corporate & Institutional, Commercial, Private Banking and Retail (split by industry classification codes). Market risk disclosures are presented using VaR methodology for the trading and non-trading books. 	<ul style="list-style-type: none"> Provides details from a regulatory perspective on certain aspects of credit risk, market risk and operational risk. For credit risk this is largely based on internally modeled risk metrics such as PD, LGD and EAD under Basel rules. Loans and advances are analysed between those that are internal ratings basis (IRB) and standardised, split by standard CRR categories. Market risk and operational risk disclosures are based on the capital required.
Coverage	<ul style="list-style-type: none"> All external assets which have an exposure to credit risk. Market risk exposure from the trading and non-trading books. Liquidity risk analysis of contractual maturities, liquid assets and encumbered assets. 	<ul style="list-style-type: none"> The credit risk disclosures are provided for approved portfolios as per the IRB approach and remaining portfolios are assessed as per Standardised rules as prescribed in the CRR. The PRA has granted the Group permission to use the Internal Model Approach (IMA) covering the majority of market risk in the trading book. Positions outside the IMA scope are assessed according to standard CRR rules. The Standardised Approach consistent with the CRR requirements is used to assess its regulatory operational risk capital requirement.
Credit rating and measurement	<ul style="list-style-type: none"> Overview of credit risk management credit grading and the use of IRB models is on page 142. Maximum exposure to credit risk set out on page 151. Internal credit grading analysis provided by business for loans neither past due nor impaired on page 154. External credit grading analysis for unimpaired debt securities and treasury bills is set out on page 168. 	<ul style="list-style-type: none"> Details of IRB and Standardised approach to credit risk is set out on pages 19 to 20. For the IRB portfolio, pages 38 to 48 provides an indicative mapping of the Group's credit grades in relation to Standard & Poor's credit ratings. Minimum regulatory capital requirements for credit risk on page 16. Credit grade analysis provided for the IRB portfolio only. Exposure weighted average PD% and weighted average LGD% by PD scale and exposure class on pages 20 to 26. Risk weights for Standardised portfolio is provided on page 49 and 50.

Area	Annual Report and Accounts	Pillar 3 Disclosures
Credit risk mitigation	<ul style="list-style-type: none"> Our approach to credit risk mitigation is set out on page 143. Overview of collateral held and other credit risk mitigants provided on page 162. Quantitative overview of other risk mitigants including: <ul style="list-style-type: none"> Securitisations – includes disclosures of both retail transferred and synthetic securitisation. Master netting, CSAs and cash collateral for derivatives. 	<ul style="list-style-type: none"> Provides details on CRM from a regulatory perspective by showing the unfunded credit protection held by the Group, consisting of credit derivatives and guarantees, and funded credit protection, including financial collateral. Also EAD before and after the effect of CRM, including credit substitution and collateral, with a further split into on balance sheet and off balance sheet exposures and excluding counterparty credit risk. Please refer to pages 34 and 36. Extensive disclosures on securitisation including notional and carrying amounts, details of securitisation programmes where the Group is an originator, the accounting and governance of securitisation activities and retained exposures and carrying value by risk-weight band and by geography. Please refer to pages 60 to 63. EAD for items subject to CCR risk pre-and-post credit mitigation is disclosed. The products that are covered under CCR include 'repo style' transactions and derivative transactions. Please refer to pages 51 to 59.
Loan portfolio	<ul style="list-style-type: none"> Group overview of the loan portfolio provided by business and maturity profile on page 165. A more detailed analysis by industry classification and Retail product is set out on page 166. 	<ul style="list-style-type: none"> EAD by geography, split between IRB and Standardised portfolios page 28 and by industry types on page 30. Maturity of EAD, split by IRB and Standardised on page 32.
Problem credit management and provisioning	<ul style="list-style-type: none"> The Group approach to provisions is set out on page 144 and definition of non-performing loans on page 152. Disclosures of non-performing loans, neither past due nor impaired, past due and impaired loans, individual impairment charge and portfolio impairment charge by client segment and geographic region can be found of pages 158 to 161 	<ul style="list-style-type: none"> Disclosures around the expected loss model used for regulatory purposes and a tabular disclosure showing the regulatory expected loss against the net individual impairment charge. Please refer to page 37.
Market risk	<ul style="list-style-type: none"> Details of the VaR methodology on page 146, and VAR (trading and non trading) is disclosed by risk type on page 171. 	<ul style="list-style-type: none"> Provides details of the internal model approvals, such as the IMA permission granted by the PRA. Market risk capital requirements for the trading book disclosed by risk type on page 67.