Financial review

Supporting the transition to a low-carbon economy

We acted as a mandated lead arranger in the refinancing of the £2.5bn Beatrice offshore wind farm off the north-east coast of Scotland, which is jointly owned by UK energy firm SSE, Danish fund manager Copenhagen Infrastructure Partners and Edinburgh-based energy firm Red Rock Power Limited, a subsidiary of Beijing-headquartered SDIC Power.

To encourage low-carbon electricity generation and ensure progress towards carbon neutrality by 2050, the UK government awarded Beatrice a 15-year contract for difference, a mechanism in which public funding underpins power revenues that could otherwise fluctuate with swings in electricity prices.

Beatrice is one of the largest wind farms globally with a capacity of 580MW, which is capable of powering approximately 450,000 homes.

Financial summary

Use of non-GAAP financial measures

Our reported results are prepared in accordance with IFRSs as detailed in the financial statements starting on page 229.

To measure our performance, we also use non-GAAP financial measures, including those derived from our reported results that eliminate factors that distort year-on-year comparisons. The 'adjusted performance' measure used throughout this report is described below, and where others are used they are described. All non-GAAP financial measures are reconciled to the closest reported financial measure.

The global business segmental results are presented on an adjusted basis in accordance with IFRS 8 'Operating Segments', as detailed in Note 10: Segmental analysis on page 263.

Adjusted performance

Adjusted performance is computed by adjusting reported results for the effects of foreign currency translation differences and significant items, which both distort year-on-year comparisons.

We consider adjusted performance provides useful information for investors by aligning internal and external reporting, identifying and quantifying items management believes to be significant, and providing insight into how management assesses year-on-year performance.

Significant items

'Significant items' refers collectively to the items that management and investors would ordinarily identify and consider separately to improve the understanding of the underlying trends in the business.

The tables on pages 56 to 59 and pages 63 to 68 detail the effects of significant items on each of our global business segments and geographical regions in 2019, 2018 and 2017.

Foreign currency translation differences

Foreign currency translation differences reflect the movements of the US dollar against most major currencies during 2019.

We exclude them to derive constant currency data, allowing us to assess balance sheet and income statement performance on a like-for-like basis and better understand the underlying trends in the business.

Foreign currency translation differences

Foreign currency translation differences for 2019 are computed by retranslating into US dollars for non-US dollar branches, subsidiaries, joint ventures and associates:

- the income statements for 2018 and 2017 at the average rates of exchange for 2019; and
- the balance sheets at 31 December 2018 and 31 December 2017 at the prevailing rates of exchange on 31 December 2019.

No adjustment has been made to the exchange rates used to translate foreign currency-denominated assets and liabilities into the functional currencies of any HSBC branches, subsidiaries, joint ventures or associates. The constant currency data of HSBC's Argentinian subsidiaries have not been adjusted further for the impacts of hyperinflation. When reference is made to foreign currency translation differences in tables or commentaries, comparative data reported in the functional currencies of HSBC's operations have been translated at the appropriate exchange rates applied in the current period on the basis described above.

Changes from 1 January 2019

IFRS 16 'Leases'

On 1 January 2019, HSBC adopted the requirements of IFRS 16 'Leases' retrospectively, with the cumulative effect of initially applying the standard recognised as an adjustment to the opening balance of retained earnings at that date. Comparatives were not restated. The adoption of the standard increased assets by $5bn and increased financial liabilities by the same amount with no effect on net assets or retained earnings.

Interest rate benchmark reform: Amendments to IFRS 9 and IAS 39 'Financial Instruments'

Amendments to IFRS 9 and IAS 39 issued in September 2019 modify specific hedge accounting requirements so that entities apply those hedge accounting requirements assuming that the interest rate benchmark on which the hedged cash flows and cash flows of the hedging instrument are based is not altered as a result of interest rate benchmark reform. These amendments apply from 1 January 2020 with early adoption permitted. HSBC has adopted the amendments that apply to IAS 39 from 1 January 2019 and has made the additional disclosures as required by the amendments.

Critical accounting estimates and judgements

The results of HSBC reflect the choice of accounting policies, assumptions and estimates that underlie the preparation of HSBC's consolidated financial statements. The significant accounting policies, including the policies which include critical accounting estimates and judgements, are described in Note 1.2 on the financial statements. The accounting policies listed below are highlighted as they involve a high degree of uncertainty and have a material impact on the financial statements:

- Impairment of amortised cost financial assets and financial assets measured at fair value through other comprehensive income ('FVOCI'): The most significant judgements relate to defining what is considered to be a significant increase in credit risk, determining the lifetime and point of initial recognition of revolving facilities, and making assumptions and estimates to incorporate relevant information about past events, current conditions and forecasts of economic conditions. A high degree of uncertainty is involved in making estimations using assumptions that are highly subjective and very sensitive to the risk factors. See Note 1.2(i) on page 246.
- Deferred tax assets: The most significant judgements relate to judgements made in respect of expected future profitability. See Note 1.2(l) on page 250.
- Valuation of financial instruments: In determining the fair value of financial instruments a variety of valuation techniques are used, some of which feature significant unobservable inputs and are subject to substantial uncertainty. See Note 1.2(c) on page 244.
- Impairment of interests in associates: Impairment testing involves significant judgement in determining the value in use, and in particular estimating the present values of cash flows expected to arise from continuing to hold the investment, based on a number of management assumptions. The most significant judgements relate to the impairment testing of our investment in Bank of Communications Co., Limited ('BoCom'). See Note 1.2(a) on page 242.
- Goodwill impairment: A high degree of uncertainty is involved in estimating the future cash flows of the cash-generating units ('CGUs') and the rates used to discount these cash flows. See Note 1.2(a) on page 242.
- Provisions: Significant judgement may be required due to the high degree of uncertainty associated with determining whether a present obligation exists, and estimating the

probability and amount of any outflows that may arise. See Note 1.2(m) on page 250.

- Post-employment benefit plans: The calculation of the defined benefit pension obligation involves the determination of key assumptions including discount rate, inflation rate, pension payments and deferred pensions, pay and mortality. See Note 1.2(k) on page 249.

Given the inherent uncertainties and the high level of subjectivity involved in the recognition or measurement of the items above, it is possible that the outcomes in the next financial year could differ from the expectations on which management's estimates are based, resulting in the recognition and measurement of materially different amounts from those estimated by management in these financial statements.

Consolidated income statement

Summary consolidated income statement

	Footnotes	2019 $m	2018 $m	2017 $m	2016 $m	2015 $m
Net interest income		**30,462**	30,489	28,176	29,813	32,531
Net fee income		**12,023**	12,620	12,811	12,777	14,705
Net income from financial instruments held for trading or managed on a fair value basis		**10,231**	9,531	8,426	7,521	8,717
Net income/(expense) from assets and liabilities of insurance businesses, including related derivatives, measured at fair value through profit or loss		**3,478**	(1,488)	2,836	1,262	565
Change in fair value of designated debt and related derivatives	1	**90**	(97)	155	(1,997)	973
Changes in fair value of other financial instruments mandatorily measured at fair value through profit or loss		**812**	695	N/A	N/A	N/A
Gains less losses from financial investments		**335**	218	1,150	1,385	2,068
Net insurance premium income		**10,636**	10,659	9,779	9,951	10,355
Other operating income/(expense)		**2,957**	960	443	(876)	1,178
Total operating income		**71,024**	63,587	63,776	59,836	71,092
Net insurance claims and benefits paid and movement in liabilities to policyholders		**(14,926)**	(9,807)	(12,331)	(11,870)	(11,292)
Net operating income before change in expected credit losses and other credit impairment charges/Loan impairment charges and other credit risk provisions	2	**56,098**	53,780	51,445	47,966	59,800
Change in expected credit losses and other credit impairment charges		**(2,756)**	(1,767)	N/A	N/A	N/A
Loan impairment charges and other credit risk provisions		**N/A**	N/A	(1,769)	(3,400)	(3,721)
Net operating income		**53,342**	52,013	49,676	44,566	56,079
Total operating expenses excluding goodwill impairment		**(35,000)**	(34,659)	(34,884)	(36,568)	(39,768)
Goodwill impairment		**(7,349)**	—	—	(3,240)	—
Operating profit		**10,993**	17,354	14,792	4,758	16,311
Share of profit in associates and joint ventures		**2,354**	2,536	2,375	2,354	2,556
Profit before tax		**13,347**	19,890	17,167	7,112	18,867
Tax expense		**(4,639)**	(4,865)	(5,288)	(3,666)	(3,771)
Profit for the year		**8,708**	15,025	11,879	3,446	15,096
Attributable to:						
– ordinary shareholders of the parent company		**5,969**	12,608	9,683	1,299	12,572
– preference shareholders of the parent company		**90**	90	90	90	90
– other equity holders		**1,324**	1,029	1,025	1,090	860
– non-controlling interests		**1,325**	1,298	1,081	967	1,574
Profit for the year		**8,708**	15,025	11,879	3,446	15,096

Five-year financial information

	Footnotes	2019 $	2018 $	2017 $	2016 $	2015 $
Basic earnings per share		**0.30**	0.63	0.48	0.07	0.65
Diluted earnings per share		**0.30**	0.63	0.48	0.07	0.64
Dividends per ordinary share	3	**0.51**	0.51	0.51	0.51	0.50
		%	%	%	%	%
Dividend payout ratio	4	**172.2**	81.0	106.3	728.6	76.5
Post-tax return on average total assets		**0.3**	0.6	0.5	0.1	0.6
Return on average ordinary shareholders' equity		**3.6**	7.7	5.9	0.8	7.2
Return on average tangible equity		**8.4**	8.6	6.8	2.6	8.1
Effective tax rate		**34.8**	24.5	30.8	51.5	19.99

For footnotes, see page 55.
Unless stated otherwise, all tables in the Annual Report and Accounts 2019 *are presented on a reported basis.*

For a summary of our financial performance in 2019, see page 27.

For further financial performance data for each global business and geographical region, see pages 56 to 59 and 61 to 69, respectively. The global business segmental results are presented on an adjusted basis in accordance with IFRS 8 'Operating Segments', in Note 10: Segmental analysis on page 263.

Income statement commentary

The following commentary compares Group financial performance for the years ended 2019 with 2018.

Net interest income

	Footnotes	2019 $m	2018 $m	2017 $m
Interest income		**54,695**	49,609	40,995
Interest expense		**(24,233)**	(19,120)	(12,819)
Net interest income		**30,462**	30,489	28,176
Average interest-earning assets		**1,922,822**	1,839,346	1,726,120
		%	%	%
Gross interest yield	5	**2.84**	2.70	2.37
Less: cost of funds	5	**(1.48)**	(1.21)	(0.88)
Net interest spread	6	**1.36**	1.49	1.49
Net interest margin	7	**1.58**	1.66	1.63

For footnotes, see page 55.

Summary of interest income by type of asset

	2019			2018			2017		
	Average balance	**Interest income**	**Yield**	Average balance	Interest income	Yield	Average balance	Interest income	Yield
	$m	**$m**	**%**	$m	$m	%	$m	$m	%
Short-term funds and loans and advances to banks	**212,920**	**2,411**	**1.13**	233,637	2,475	1.06	236,126	2,030	0.86
Loans and advances to customers	**1,021,554**	**35,578**	**3.48**	972,963	33,285	3.42	902,214	28,751	3.19
Reverse repurchase agreements – non-trading	**224,942**	**4,690**	**2.08**	205,427	3,739	1.82	173,760	2,191	1.26
Financial investments	**417,939**	**10,705**	**2.56**	386,230	9,166	2.37	389,807	7,440	1.91
Other interest-earning assets	**45,467**	**1,311**	**2.88**	41,089	944	2.30	24,213	583	2.41
Total interest-earning assets	**1,922,822**	**54,695**	**2.84**	1,839,346	49,609	2.70	1,726,120	40,995	2.37

Summary of interest expense by type of liability and equity

	Footnotes	**2019**			2018			2017		
		Average balance	**Interest expense**	**Cost**	Average balance	Interest expense	Cost	Average balance	Interest expense	Cost
		$m	**$m**	**%**	$m	$m	%	$m	$m	%
Deposits by banks	8	**52,515**	**702**	**1.34**	44,530	506	1.14	47,337	451	0.95
Customer accounts	9	**1,149,483**	**11,238**	**0.98**	1,138,620	8,287	0.73	1,094,920	5,405	0.49
Repurchase agreements – non-trading		**160,850**	**4,023**	**2.50**	161,204	3,409	2.11	136,561	1,665	1.22
Debt securities in issue – non-trading	10	**211,229**	**6,522**	**3.09**	183,434	5,675	3.09	169,243	4,391	2.59
Other interest-bearing liabilities		**59,980**	**1,748**	**2.91**	53,731	1,243	2.31	7,009	907	12.94
Total interest-bearing liabilities		**1,634,057**	**24,233**	**1.48**	1,581,519	19,120	1.21	1,455,070	12,819	0.88

For footnotes, see page 55.

Net interest income ('NII') of $30.5bn was broadly unchanged compared with 2018. Interest income associated with the increase in average interest-earning assets ('AIEA') of 5% was offset by higher funding costs, reflecting higher average interest rates compared with the previous year.

Excluding the adverse effects of significant items and foreign currency translation differences, NII increased by $1.0bn.

Net interest margin ('NIM') of 1.58% was 8 basis points ('bps') lower than in 2018 as the higher yield on AIEA of 14bps was offset by the rise in funding costs of average interest-bearing liabilities of 27bps.

The decrease in NIM in 2019 included the adverse effects of foreign currency translation differences and significant items. Excluding these, NIM fell by 6bps.

Interest income increased by $5.1bn or 10% compared with 2018, benefiting from growth in AIEA of 5% and higher average interest rates compared with the previous year, with the yield on AIEA increasing by 14bps.

Interest income on loans and advances to customers increased by $2.3bn. This was mainly driven by higher average interest rates compared with the previous year, with yields increasing by 6bps and 5% volume growth in AIEA, notably in term lending in Asia, and growth in mortgages in Asia and Europe.

Interest income on short-term funds and financial investments increased by $1.5bn, reflecting higher average interest rates compared with the previous year.

The increase in interest income included $1.6bn in relation to the adverse effects of significant items and foreign currency translation. Excluding these, interest income increased by $6.7bn.

Interest expense increased by $5.1bn or 27% compared with 2018. This reflects growth in average interest-bearing liabilities of 3% and an increase in funding cost of 27bps, predominantly in customer accounts.

Interest expense on interest-bearing customer accounts was $3.0bn higher, mainly in Asia, reflecting higher average interest rates compared with the previous year together with an increase in customer accounts, primarily towards term deposits.

Interest expense on debt securities in issue was $0.8bn higher. This was mainly as a result of debt issuances by HSBC Holdings to meet regulatory requirements, which contributed $0.5bn towards the increase.

The increase in interest expense included the favourable effects of significant items and foreign currency translation differences of $0.6bn. Excluding these impacts, interest expense was $5.7bn higher.

Net fee income of $12.0bn was $0.6bn lower compared with 2018, including adverse foreign currency translation differences of $0.3bn. The remaining reduction primarily reflected lower net fee income in RBWM and GB&M.

In RBWM, the reduction reflected lower fees from broking and unit trusts in Hong Kong due to lower volumes as investor confidence was weaker compared with a strong 2018. In addition, funds under management fees also reduced, reflecting a change in mix of clients' investments to lower risk and lower margin products.

In GB&M, net fee income was lower, mainly in the UK and the US. This was primarily due to lower corporate finance fees, which reflected reduced client activity. This was partly offset by higher underwriting fees, notably in Asia, France and the US, from higher volumes.

Net income from financial instruments held for trading or managed on a fair value basis increased by $0.7bn and included a favourable fair value movement on non-qualifying hedges of $0.3bn, offset by adverse movements in foreign currency translation differences of $0.5bn.

The increase was mainly in Asia, notably in Hong Kong, reflecting favourable market conditions and increased client activity in our Rates, Credit and Equities businesses, and from gains in Balance Sheet Management ('BSM') on funding swaps due to favourable movements on yield curves. In Latin America, income in BSM increased, primarily from gains on debt securities in Argentina and a favourable impact of hyperinflation, as well as increased client activity in GB&M in Mexico. Income increased in the US from increased client activity on US Treasuries and emerging markets interest rate swaps, partly offset by lower revenue from precious metals trading.

In the UK, income fell as subdued market conditions resulted in lower Global Markets revenue, notably in Rates, Credit and Equities.

Net income from assets and liabilities of insurance businesses, including related derivatives, measured at fair value through profit or loss was $3.5bn, compared with a net expense of $1.5bn in 2018. This increase primarily reflected more favourable equity market performance in Hong Kong and France, resulting in revaluation gains on the equity and unit trust assets supporting insurance and investment contracts.

This positive movement resulted in a corresponding movement in liabilities to policyholders and the present value of in-force long-term insurance business (see 'Other operating income' below), reflecting the extent to which the policyholders and shareholders respectively participate in the investment performance of the associated assets.

Change in fair value of designated debt and related derivatives were $0.1bn favourable in 2019, compared with adverse movements of $0.1bn in 2018. These movements were driven by changes in interest rates between the periods, notably in US dollars and pounds sterling.

The majority of our financial liabilities designated at fair value are fixed-rate, long-term debt issuances, and are managed in conjunction with interest rate swaps as part of our interest rate management strategy. These liabilities are discussed further on page 53.

Gains less losses from financial investments of $0.3bn increased by $0.1bn compared with 2018, reflecting higher gains from the disposal of debt securities.

Net insurance premium income was broadly unchanged compared with 2018, and included adverse effects of foreign currency translation differences. Excluding these, the increase of $0.2bn reflected higher new business volumes, particularly in Hong Kong, Singapore and UK, partly offset by higher reinsurance ceded in Hong Kong.

Other operating income of $2.9bn in 2019 increased by $2.0bn compared with 2018. This was primarily due to a higher favourable change in the present value of in-force long-term insurance business ('PVIF') in 2019 (up $1.1bn), and a $0.8bn dilution gain in 2019 following the merger of The Saudi British Bank with Alawwal bank in Saudi Arabia.

This increase in PVIF reflected a favourable movement in 'assumption changes and experience variances' of $1.1bn. This was primarily in Hong Kong due to the effect of interest rate changes on the valuation of the liabilities under insurance contracts, which has a corresponding increase in 'net insurance claims and benefits paid and movement in liabilities to policyholders'. For further details, see Note 21 on the financial statements.

In 2019, we recognised a gain in Argentina following the sale of a stake in the payment processing company Prisma Medios de Pago S.A., and a gain in Mexico associated with the launch of a merchant acquiring services joint venture with Global Payments Inc. By contrast, 2018 included a loss of $0.1bn on the early redemption of subordinated debt linked to the US run-off portfolio.

Net insurance claims and benefits paid and movement in liabilities to policyholders were $5.1bn higher, primarily due to higher returns on financial assets supporting contracts where the policyholder is subject to part or all of the investment risk, and the impact of higher new business volumes, particularly in Hong Kong and Singapore. These were partly offset by the impact of higher reinsurance ceded in Hong Kong.

Changes in expected credit losses and other credit impairment charges ('ECL') of $2.8bn were $1.0bn higher compared with 2018. This was mainly driven by higher charges in CMB, RBWM and GB&M. ECL in 2019 included a charge to reflect the economic outlook in Hong Kong, as well as a partial release of allowances related to UK economic uncertainty. See page 95 for more information on the impact of alternative/additional scenarios. The effects of foreign currency translation differences between the periods were minimal.

- In CMB, ECL charges of $1.2bn were $0.5bn higher reflecting increases in Europe and Hong Kong, while the previous year benefited from net releases in North America that did not recur. The movements were partly offset by a reduction in ECL charges in MENA.
- In RBWM, ECL charges of $1.4bn were $0.3bn higher, driven by increased ECL related to unsecured lending, notably in the US, Mexico, and Hong Kong. In addition, ECL in 2019 included charges in Argentina related to government bond exposures in our insurance business.
- In GB&M, net ECL charges of $0.2bn compared with a net release of $31m in 2018. Releases in the previous period more than offset ECL charges and primarily related to a small number of clients within the oil and gas sector in the US.
- In Corporate Centre, net ECL charges of $7m compared with a net release of $119m in 2018. The ECL in 2019 included charges related to BSM's exposure to government bonds in Argentina. There were also lower net releases recorded in 2019 related to our legacy portfolios in the UK, compared with 2018.

On a constant currency basis, ECL as a percentage of average gross loans and advances to customers was 0.27%, compared with 0.17% in 2018.

Operating expenses – currency translation and significant items

	2019 $m	2018 $m
Significant items	**9,554**	1,644
– costs of structural reform	**158**	361
– customer redress programmes	**1,281**	146
– disposals, acquisitions and investment in new businesses	**—**	52
– goodwill impairment	**7,349**	—
– past service costs of guaranteed minimum pension benefits equalisation	**—**	228
– restructuring and other related costs	**827**	66
– settlements and provisions in connection with legal and regulatory matters	**(61)**	816
– currency translation on significant items		(25)
Currency translation		1,109
Year ended 31 Dec	**9,554**	2,753

Staff numbers (full-time equivalents)

	2019	2018	2017
Global businesses			
Retail Banking and Wealth Management	**134,296**	133,644	129,402
Commercial Banking	**44,503**	44,805	44,871
Global Banking and Markets	**48,459**	48,500	45,725
Global Private Banking	**6,767**	6,819	7,250
Corporate Centre	**1,326**	1,449	1,439
At 31 Dec	**235,351**	235,217	228,687

Operating expenses of $42.3bn were $7.7bn or 22% higher than in 2018 and included favourable foreign currency translation differences of $1.1bn, which were more than offset by net adverse movements in significant items of $7.9bn.

Significant items included:

- a $7.3bn impairment of goodwill, which included $4.0bn related to our global GB&M business, resulting from an update in long-term assumptions and the planned reshaping of the business, and $2.5bn in our CMB business in Europe, $0.4bn in GPB in North America, and $0.4bn in CMB in Latin America and MENA reflecting lower long-term economic growth rate assumptions. For further details, see Note 21 on the financial statements;
- customer redress programme costs of $1.3bn in 2019, $1.2bn of which related to the mis-selling of payment protection insurance ('PPI') mainly driven by a higher than expected increase in the volume of complaints prior to the deadline in August 2019. This compared with $0.1bn in 2018. For further details, see Note 10 on the financial statements; and
- restructuring and other related costs of $0.8bn in 2019, which included $753m of severance costs arising from cost efficiency measures across our global businesses and functions. We expect annualised cost savings from these measures to be approximately equal to 2019 severance costs.

These were partly offset by:

- the non-recurrence of settlements and provisions in connection with legal and regulatory matters of $0.8bn in 2018;
- lower costs of structural reform of $0.2bn, which included costs associated with the UK's withdrawal from the European Union; and
- the non-recurrence of a provision in relation to past service costs of guaranteed minimum pension obligations in 2018 of $0.2bn.

Excluding significant items and foreign currency translation differences, operating expenses of $32.8bn were $0.9bn or 2.8% higher than in 2018. The increase primarily reflected investments to grow the business (up $0.4bn), notably in RBWM and CMB, as well as continued investment in digital capabilities across all of our global businesses.

Volume-related growth increased operating expenses by $0.2bn, and the UK bank levy of $988m was $24m higher than in 2018.

The impact of our cost-saving efficiencies broadly offset inflation.

The number of employees expressed in full-time equivalent staff ('FTEs') at 31 December 2019 was 235,351, an increase of 134 from 31 December 2018. This largely reflected an increase in FTEs associated with our investment initiatives, which was broadly offset by reductions following our restructuring programmes. The number of contractors at 31 December 2019 was 7,411, a decrease of 3,443 from 31 December 2018.

The 2020 business update sets a target of reducing adjusted operating expenses to $31bn or lower by 2022. To achieve this reduction, we expect to incur restructuring costs of $6bn during the period to 2022.

Share of profit in associates and joint ventures was $2.4bn, a decrease of $0.2bn or 7% compared with 2018, and included the adverse effects of foreign currency translation differences of $90m.

Excluding the effects of foreign currency translation differences, our share of profit in associates and joint ventures decreased by $92m compared with 2018. This reflected lower income from The Saudi British Bank due to higher ECL charges and other expenses relating to the merger with Alawwal bank, partly offset by higher income from BoCom.

At 31 December 2019, we performed an impairment review of our investment in BoCom and concluded that it was not impaired, based on our value-in-use ('VIU') calculation. For more information on the key assumptions in our VIU calculation, including the sensitivity of the VIU to each key assumption, see Note 18 on the financial statements.

Tax expense of $4.6bn was $0.2bn lower than in 2018.

The effective tax rate for 2019 of 34.8% was higher than the 24.5% for 2018 due to the impairment of goodwill in 2019, which is not deductible for tax purposes.

This impairment charge increased the 2019 effective tax rate by 12.3%.

Further details are provided in Note 7 on the financial statements.

Consolidated balance sheet

Five-year summary consolidated balance sheet

	Footnotes	2019 $m	2018 $m	2017 $m	2016 $m	2015 $m
Assets						
Cash and balances at central banks		**154,099**	162,843	180,624	128,009	98,934
Trading assets		**254,271**	238,130	287,995	235,125	224,837
Financial assets designated and otherwise mandatorily measured at fair value through profit or loss		**43,627**	41,111	N/A	N/A	N/A
Financial assets designated at fair value		**N/A**	N/A	29,464	24,756	23,852
Derivatives		**242,995**	207,825	219,818	290,872	288,476
Loans and advances to banks		**69,203**	72,167	90,393	88,126	90,401
Loans and advances to customers	11	**1,036,743**	981,696	962,964	861,504	924,454
Reverse repurchase agreements – non-trading		**240,862**	242,804	201,553	160,974	146,255
Financial investments		**443,312**	407,433	389,076	436,797	428,955
Other assets		**230,040**	204,115	159,884	148,823	183,492
Total assets at 31 Dec		**2,715,152**	2,558,124	2,521,771	2,374,986	2,409,656
Liabilities and equity						
Liabilities						
Deposits by banks		**59,022**	56,331	69,922	59,939	54,371
Customer accounts		**1,439,115**	1,362,643	1,364,462	1,272,386	1,289,586
Repurchase agreements – non-trading		**140,344**	165,884	130,002	88,958	80,400
Trading liabilities		**83,170**	84,431	184,361	153,691	141,614
Financial liabilities designated at fair value		**164,466**	148,505	94,429	86,832	66,408
Derivatives		**239,497**	205,835	216,821	279,819	281,071
Debt securities in issue		**104,555**	85,342	64,546	65,915	88,949
Liabilities under insurance contracts		**97,439**	87,330	85,667	75,273	69,938
Other liabilities		**194,876**	167,574	113,690	109,595	139,801
Total liabilities at 31 Dec		**2,522,484**	2,363,875	2,323,900	2,192,408	2,212,138
Equity						
Total shareholders' equity		**183,955**	186,253	190,250	175,386	188,460
Non-controlling interests		**8,713**	7,996	7,621	7,192	9,058
Total equity at 31 Dec		**192,668**	194,249	197,871	182,578	197,518
Total liabilities and equity at 31 Dec		**2,715,152**	2,558,124	2,521,771	2,374,986	2,409,656

For footnotes, see page 55.

A more detailed consolidated balance sheet is contained in the financial statements on page 231.

Five-year selected financial information

	Footnotes	2019 $m	2018 $m	2017 $m	2016 $m	2015 $m
Called up share capital		**10,319**	10,180	10,160	10,096	9,842
Capital resources	12	**172,150**	173,238	182,383	172,358	189,833
Undated subordinated loan capital		**1,968**	1,969	1,969	1,967	2,368
Preferred securities and dated subordinated loan capital	13	**33,063**	35,014	42,147	42,600	42,844
Risk-weighted assets		**843,395**	865,318	871,337	857,181	1,102,995
Total shareholders' equity		**183,955**	186,253	190,250	175,386	188,460
Less: preference shares and other equity instruments		**(22,276)**	(23,772)	(23,655)	(18,515)	(16,517)
Total ordinary shareholders' equity		**161,679**	162,481	166,595	156,871	171,943
Less: goodwill and intangible assets (net of tax)		**(17,535)**	(22,425)	(21,680)	(19,649)	(24,626)
Tangible ordinary shareholders' equity		**144,144**	140,056	144,915	137,222	147,317
Financial statistics						
Loans and advances to customers as a percentage of customer accounts		**72.0%**	72.0%	70.6%	67.7%	71.7%
Average total shareholders' equity to average total assets		**6.97%**	7.16%	7.33%	7.37%	7.31%
Net asset value per ordinary share at year-end ($)	14	**8.00**	8.13	8.35	7.91	8.77
Tangible net asset value per ordinary share at year-end ($)		**7.13**	7.01	7.26	6.92	7.51
Tangible net asset value per fully diluted share at year-end ($)		**7.11**	6.98	7.22	6.88	7.46
Number of $0.50 ordinary shares in issue (millions)		**20,639**	20,361	20,321	20,192	19,685
Basic number of $0.50 ordinary shares outstanding (millions)		**20,206**	19,981	19,960	19,838	19,604
Basic number of $0.50 ordinary shares outstanding and dilutive potential ordinary shares (millions)		**20,280**	20,059	20,065	19,933	19,744
Closing foreign exchange translation rates to $:						
$1: £		**0.756**	0.783	0.740	0.811	0.675
$1: €		**0.890**	0.873	0.834	0.949	0.919

For footnotes, see page 55.

Balance sheet commentary compared with 31 December 2018

At 31 December 2019, our total assets were $2.7tn, an increase of $157bn or 6% on a reported basis and $126bn or 5% on a constant currency basis.

Our ratio of customer advances to customer accounts of 72.0% was unchanged from 31 December 2018.

Assets

Loans and advances to customers of $1.0tn increased by $55bn or 6% on a reported basis. This included a favourable effect of foreign currency translation differences of $13bn, resulting in growth of $42bn or 4% on a constant currency basis, which was mainly due to continued growth in Asia and Europe, notably in Hong Kong and the UK.

Customer lending in Asia increased by $25bn, with growth in all global businesses. The increase in RBWM (up $13bn) reflected growth in Hong Kong (up $8bn) and Australia (up $3bn), primarily due to increased mortgage lending. In GPB (up $6bn), the increase was mainly in Hong Kong, driven by growth in marketable securities-backed lending transactions, and in Singapore from increased term lending. Lending growth in GB&M (up $4bn) and CMB (up $3bn) reflected higher corporate term lending from our continued strategic focus on loan growth in the region, as well as from an increase in customer demand.

In Europe, customer lending increased by $12bn, notably in HSBC UK (up $11bn). This primarily reflected growth in mortgage balances in RBWM (up $9bn) due to our continued focus on broker-originated mortgages, and in CMB (up $2bn) where term lending increased.

Cash and balances at central banks decreased by $9bn or 5% and included a favourable effect of foreign currency translation differences of $1bn. Excluding this, cash and balances at central banks decreased by $10bn, mainly in the US, reflecting the redeployment of our commercial surplus.

Trading assets increased by $16bn or 7%, which included a favourable effect of foreign currency translation differences of $3bn. Excluding this, trading assets increased by $13bn due to an increase in equity security holdings, notably in Hong Kong, the US and the UK, in part due an increase in client activity compared with 2018. This was partly offset by a decrease in debt securities held in the US.

Derivative assets increased by $35bn or 17% and included a favourable effect of foreign currency translation differences of $5bn. Excluding this, derivative assets increased by $31bn, primarily from mark-to-market gains in the UK. The increase in derivative assets was consistent with the increase in derivative liabilities as the underlying risk is broadly matched.

Financial investments increased by $36bn or 9%, which included a favourable effect of foreign currency translation differences of $3bn. Excluding this, financial investments increased by $33bn, mainly due to an increase in debt securities, notably in the UK, and to a lesser extent in Singapore and the US. This was partly offset by a decrease in investments in government bonds in Hong Kong.

Liabilities

Customer accounts of $1.4tn increased by $76bn or 6% on a reported basis, including the favourable effect of foreign currency translation differences of $17bn. On a constant currency basis, current accounts increased by $59bn or 4%, with growth across all regions, mainly in Asia, Europe and North America.

In Asia, we grew customer accounts by $30bn or 4%, notably in RBWM (up $20bn) and CMB (up $5bn), primarily from an increase in time deposits, reflecting higher customer inflows due to competitive rates. Growth in GB&M (up $5bn) was mainly in Singapore as we continued to target this market for growth.

Customer accounts increased in Europe by $13bn. This was driven by growth in RBWM (up $11bn), mainly due to higher savings balances, notably in the UK, and in CMB (up $10bn), reflecting growth in Global Liquidity and Cash Management ('GLCM'). These increases were partly offset by a decrease in GB&M balances (down $9bn) mainly in the UK in GLCM.

In North America, customer accounts increased by $11bn, notably in RBWM (up $7bn) reflecting growth in savings and deposits from recent promotions. Growth in CMB (up $7bn), was notably in the US from an increase in demand deposits.

Repurchase agreements – non-trading decreased by $26bn or 15%, primarily in the US from a decreased use of repurchase agreements for funding in our Global Markets business.

Financial liabilities designated at fair value were $16bn or 11% higher. This was mainly due to increased issuances of senior debt during the year by HSBC Holdings and increased issuances of structured notes in the UK and France.

Derivative liabilities increased by $34bn or 16%, including a favourable effect of foreign currency translation differences of $5bn. Excluding this, derivative liabilities increased by $29bn, which is consistent with the increase in derivative assets, since the underlying risk is broadly matched.

Debt securities in issue rose by $19bn or 23%, reflecting an increase in certificates of deposits, primarily in Europe, Asia and North America. This was partly offset by a decrease in commercial paper, notably in the UK, and a decrease in medium term notes in North America.

Equity

Total shareholders' equity of $184bn decreased by $2bn or 1%. The reduction was mainly due to dividends paid to shareholders of $12bn and adverse movements of $2bn related to fair value attributable to changes in own credit risk. These reductions were partly offset by profits generated in the period of $7bn, shares issued in lieu of dividends of $3bn and a $1bn decrease in accumulated foreign exchange losses.

Risk-weighted assets

Risk-weighted assets ('RWAs') totalled $843.4bn at 31 December 2019, a $21.9bn decrease. Excluding foreign currency translation differences, RWAs decreased by $26.9bn in 2019.

A $32.2bn decrease in RWAs as a result of methodology and policy changes was mostly due to management initiatives in CMB and GB&M, including risk parameter refinements, a change to our best estimate of expected loss on corporate exposures, and securitisation transactions. A $7.7bn decrease due to model updates included global corporate model changes in CMB and GB&M, and changes to Private Banking credit risk models in Asia and North America. A $9.0bn increase in RWAs due to asset size movements predominantly reflected RWA increases due to lending growth of $26.2bn, which were partly offset by reductions due to active portfolio management of $17.2bn. Changes in asset quality caused a $3.7bn rise in RWAs.

Customer accounts by country/territory

	2019	2018
	$m	$m
Europe	**528,718**	503,154
– UK	**419,642**	399,487
– France	**47,699**	45,169
– Germany	**19,361**	16,713
– Switzerland	**6,558**	6,315
– other	**35,458**	35,470
Asia	**697,358**	664,824
– Hong Kong	**499,955**	484,897
– Singapore	**48,569**	42,323
– mainland China	**48,323**	45,712
– Australia	**23,191**	20,649
– India	**14,935**	14,210
– Malaysia	**14,624**	13,904
– Taiwan	**14,668**	13,602
– Indonesia	**4,732**	3,810
– other	**28,361**	25,717
Middle East and North Africa (excluding Saudi Arabia)	**38,126**	35,408
– United Arab Emirates	**17,949**	16,583
– Turkey	**3,870**	4,169
– Egypt	**5,186**	4,493
– other	**11,121**	10,163
North America	**146,676**	133,291
– US	**90,834**	82,523
– Canada	**48,425**	43,898
– other	**7,417**	6,870
Latin America	**28,237**	25,966
– Mexico	**23,051**	19,936
– other	**5,186**	6,030
At 31 Dec	**1,439,115**	1,362,643

Loans and advances, deposits by currency

				At 31 Dec 2019			
$m	**USD**	**GBP**	**HKD**	**EUR**	**CNY**	**Others**[15]	**Total**
Loans and advances to banks	**19,386**	**3,245**	**6,242**	**4,266**	**5,772**	**30,292**	**69,203**
Loans and advances to customers	**177,696**	**264,029**	**234,945**	**84,919**	**34,338**	**240,816**	**1,036,743**
Total loans and advances	**197,082**	**267,274**	**241,187**	**89,185**	**40,110**	**271,108**	**1,105,946**
Deposits by banks	**23,508**	**7,537**	**1,865**	**11,154**	**4,265**	**10,693**	**59,022**
Customer accounts	**360,462**	**358,764**	**299,049**	**122,988**	**52,216**	**245,636**	**1,439,115**
Total deposits	**383,970**	**366,301**	**300,914**	**134,142**	**56,481**	**256,329**	**1,498,137**

				At 31 Dec 2018			
$m	USD	GBP	HKD	EUR	CNY	Others[15]	Total
Loans and advances to banks	23,469	4,351	3,241	3,462	7,418	30,226	72,167
Loans and advances to customers	176,907	243,541	220,458	86,583	29,973	224,234	981,696
Total loans and advances	200,376	247,892	223,699	90,045	37,391	254,460	1,053,863
Deposits by banks	17,802	5,777	3,748	15,923	4,065	9,016	56,331
Customer accounts	348,741	340,244	290,748	116,095	49,596	217,219	1,362,643
Total deposits	366,543	346,021	294,496	132,018	53,661	226,235	1,418,974

Footnotes to financial summary

1 *The debt instruments, issued for funding purposes, are designated under the fair value option to reduce an accounting mismatch.*

2 *Net operating income before change in expected credit losses and other credit impairment charges/Loan impairment charges and other credit risk provisions, also referred to as revenue.*

3 *Dividends recorded in the financial statements are dividends per ordinary share declared in a year and are not dividends in respect of, or for, that year.*

4 *Dividends per ordinary share expressed as a percentage of basic earnings per share.*

5 *Gross interest yield is the average annualised interest rate earned on average interest-earning assets ('AIEA'). Cost of funds is the average annualised interest cost as a percentage on average interest-bearing liabilities.*

6 *Net interest spread is the difference between the average annualised interest rate earned on AIEA, net of amortised premiums and loan fees, and the average annualised interest rate payable on average interest-bearing funds.*

7 *Net interest margin is net interest income expressed as an annualised percentage of AIEA.*

8 *Including interest-bearing bank deposits only.*

9 *Including interest-bearing customer accounts only.*

10 *'Financial liabilities designated at fair value – own debt issued' and 'Debt securities' lines have been merged into one new line: 'Debt securities in issue – non-trading'. Interest expense on financial liabilities designated at fair value is reported as 'Net income/(expense) from financial instruments held for trading or managed on a fair value basis' in the consolidated income statement, other than interest on own debt, which is reported in 'Interest expense'.*

11 *Net of impairment allowances.*

12 *Capital resources are regulatory capital, the calculation of which is set out on page 152.*

13 *Including perpetual preferred securities, details of which can be found in Note 28 on the financial statements.*

14 *The definition of net asset value per ordinary share is total shareholders' equity, less non-cumulative preference shares and capital securities, divided by the number of ordinary shares in issue, excluding own shares held by the company, including those purchased and held in treasury.*

15 *'Others' includes items with no currency information available ($9,334m for loans to banks, $62,037m for loans to customers, $15m for deposits by banks and $33m for customer accounts).*

Global businesses and geographical regions

Summary

The Group Chief Executive and the rest of the Group Management Board ('GMB') review operating activity on a number of bases, including by global business and geographical region. Global businesses are our reportable segments under IFRS 8 'Operating Segments' and are presented in Note 10: Segmental analysis on page 263.

Geographical information is classified by the location of the principal operations of the subsidiary or, for The Hongkong and Shanghai Banking Corporation Limited, HSBC Bank plc, HSBC UK Bank plc, HSBC Bank Middle East Limited and HSBC Bank USA, by the location of the branch responsible for reporting the results or providing funding.

The expense of the UK bank levy is included in the Europe geographical region as HSBC regards the levy as a cost of being headquartered in the UK. For the purposes of the presentation by global business, the cost of the levy is included in the Corporate Centre.

The results of geographical regions are presented on a reported basis.

Reconciliation of reported and adjusted items – global businesses

Supplementary unaudited analysis of significant items by global business is presented below.

		2019					
		Retail Banking and Wealth Management	Commercial Banking	Global Banking and Markets	Global Private Banking	Corporate Centre	Total
	Footnotes	$m	$m	$m	$m	$m	$m
Revenue	*1*						
Reported		23,192	15,285	14,840	1,848	933	56,098
Significant items		208	7	76	–	(980)	(689)
– customer redress programmes		156	7	–	–	–	163
– disposals, acquisitions and investment in new businesses		52	–	–	–	(820)	(768)
– fair value movements on financial instruments	*2*	–	–	76	–	(160)	(84)
Adjusted		23,400	15,292	14,916	1,848	(47)	55,409
ECL							
Reported		(1,390)	(1,184)	(153)	(22)	(7)	(2,756)
Adjusted		(1,390)	(1,184)	(153)	(22)	(7)	(2,756)
Operating expenses							
Reported		(15,429)	(9,829)	(13,640)	(1,817)	(1,634)	(42,349)
Significant items		1,412	3,028	4,223	393	498	9,554
– costs of structural reform	*3*	–	4	42	–	112	158
– customer redress programmes		1,264	17	–	–	–	1,281
– goodwill impairment		–	2,956	3,962	431	–	7,349
– restructuring and other related costs		148	51	217	32	379	827
– settlements and provisions in connection with legal and regulatory matters		–	–	2	(70)	7	(61)
Adjusted		(14,017)	(6,801)	(9,417)	(1,424)	(1,136)	(32,795)
Share of profit in associates and joint ventures							
Reported		55	–	–	–	2,299	2,354
Adjusted		55	–	–	–	2,299	2,354
Profit before tax							
Reported		6,428	4,272	1,047	9	1,591	13,347
Significant items		1,620	3,035	4,299	393	(482)	8,865
– revenue		208	7	76	–	(980)	(689)
– operating expenses		1,412	3,028	4,223	393	498	9,554
Adjusted		8,048	7,307	5,346	402	1,109	22,212
Loans and advances to customers (net)							
Reported		395,393	346,060	246,266	47,593	1,431	1,036,743
Adjusted		395,393	346,060	246,266	47,593	1,431	1,036,743
Customer accounts							
Reported		689,283	386,522	292,284	62,943	8,083	1,439,115
Adjusted		689,283	386,522	292,284	62,943	8,083	1,439,115

For footnotes, see page 71.

Reconciliation of reported and adjusted items (continued)

	Footnotes	2018					
		Retail Banking and Wealth Management	Commercial Banking	Global Banking and Markets	Global Private Banking	Corporate Centre	Total
		$m	$m	$m	$m	$m	$m
Revenue	1						
Reported		21,928	14,938	15,634	1,790	(510)	53,780
Currency translation		(562)	(423)	(489)	(28)	(115)	(1,617)
Significant items		8	(50)	(120)	(5)	335	168
– customer redress programmes		—	(53)	—	—	—	(53)
– disposals, acquisitions and investment in new businesses		7	—	—	(5)	111	113
– fair value movements on financial instruments	2	—	—	(122)	—	222	100
– currency translation on significant items		1	3	2	—	2	8
Adjusted		21,374	14,465	15,025	1,757	(290)	52,331
ECL							
Reported		(1,177)	(739)	26	8	115	(1,767)
Currency translation		43	27	5	(1)	4	78
Adjusted		(1,134)	(712)	31	7	119	(1,689)
Operating expenses							
Reported		(13,902)	(6,480)	(9,348)	(1,550)	(3,379)	(34,659)
Currency translation		467	203	287	28	124	1,109
Significant items		180	2	(109)	97	1,474	1,644
– costs of structural reform	3	2	8	41	—	310	361
– customer redress programmes		173	(5)	(22)	—	—	146
– disposals, acquisitions and investment in new businesses		—	—	—	52	—	52
– past service costs of guaranteed minimum pension benefits equalisation		—	—	—	—	228	228
– restructuring and other related costs		—	—	—	7	59	66
– settlements and provisions in connection with legal and regulatory matters		16	—	(131)	42	889	816
– currency translation on significant items		(11)	(1)	3	(4)	(12)	(25)
Adjusted		(13,255)	(6,275)	(9,170)	(1,425)	(1,781)	(31,906)
Share of profit in associates and joint ventures							
Reported		33	—	—	—	2,503	2,536
Currency translation		—	—	—	—	(90)	(90)
Adjusted		33	—	—	—	2,413	2,446
Profit/(loss) before tax							
Reported		6,882	7,719	6,312	248	(1,271)	19,890
Currency translation		(52)	(193)	(197)	(1)	(77)	(520)
Significant items		188	(48)	(229)	92	1,809	1,812
– revenue		8	(50)	(120)	(5)	335	168
– operating expenses		180	2	(109)	97	1,474	1,644
Adjusted		7,018	7,478	5,886	339	461	21,182
Loans and advances to customers (net)							
Reported		361,872	333,162	244,978	39,217	2,467	981,696
Currency translation		6,045	3,937	2,147	385	66	12,580
Adjusted		367,917	337,099	247,125	39,602	2,533	994,276
Customer accounts							
Reported		640,924	357,596	290,914	64,658	8,551	1,362,643
Currency translation		8,248	4,678	3,670	395	104	17,095
Adjusted		649,172	362,274	294,584	65,053	8,655	1,379,738

For footnotes, see page 71.

Reconciliation of reported and adjusted items (continued)

		2017					
		Retail Banking and Wealth Management	Commercial Banking	Global Banking and Markets	Global Private Banking	Corporate Centre	Total
	Footnotes	$m	$m	$m	$m	$m	$m
Revenue	1						
Reported		20,519	13,120	14,617	1,723	1,466	51,445
Currency translation		(578)	(336)	(264)	(5)	(161)	(1,344)
Significant items		(233)	99	470	(20)	(244)	72
– customer redress programmes		3	103	2	—	—	108
– disposals, acquisitions and investment in new businesses		(235)	—	99	(20)	(118)	(274)
– fair value movements on financial instruments	2	—	—	373	—	(128)	245
– currency translation on significant items		(1)	(4)	(4)	—	2	(7)
Adjusted		19,708	12,883	14,823	1,698	1,061	50,173
LICs							
Reported		(980)	(496)	(459)	(16)	182	(1,769)
Currency translation		39	28	20	(1)	(3)	83
Adjusted		(941)	(468)	(439)	(17)	179	(1,686)
Operating expenses							
Reported		(13,734)	(6,001)	(8,723)	(1,586)	(4,840)	(34,884)
Currency translation		471	178	133	9	124	915
Significant items		877	53	(119)	193	2,706	3,710
– costs of structural reform	3	6	3	8	—	403	420
– costs to achieve		270	44	240	3	2,445	3,002
– customer redress programmes		637	16	2	—	—	655
– disposals, acquisitions and investment in new businesses		—	—	—	31	22	53
– gain on partial settlement of pension obligation		(26)	(9)	(9)	(3)	(141)	(188)
– settlements and provisions in connection with legal and regulatory matters		—	—	(376)	164	14	(198)
– currency translation on significant items		(10)	(1)	16	(2)	(37)	(34)
Adjusted		(12,386)	(5,770)	(8,709)	(1,384)	(2,010)	(30,259)
Share of profit in associates and joint ventures							
Reported		18	—	—	—	2,357	2,375
Currency translation		(6)	—	—	—	(41)	(47)
Adjusted		12	—	—	—	2,316	2,328
Profit/(loss) before tax							
Reported		5,823	6,623	5,435	121	(835)	17,167
Currency translation		(74)	(130)	(111)	3	(81)	(393)
Significant items		644	152	351	173	2,462	3,782
– revenue		(233)	99	470	(20)	(244)	72
– operating expenses		877	53	(119)	193	2,706	3,710
Adjusted		6,393	6,645	5,675	297	1,546	20,556
Loans and advances to customers (net)							
Reported		346,148	316,533	252,474	40,326	7,483	962,964
Currency translation		(8,380)	(7,663)	(5,584)	(313)	(101)	(22,041)
Adjusted		337,768	308,870	246,890	40,013	7,382	940,923
Customer accounts							
Reported		639,592	362,908	283,943	66,512	11,507	1,364,462
Currency translation		(10,150)	(6,420)	(7,309)	(1,021)	(490)	(25,390)
Adjusted		629,442	356,488	276,634	65,491	11,017	1,339,072

For footnotes, see page 71.

Reconciliation of reported and adjusted risk-weighted assets

	Footnotes	At 31 Dec 2019					
		Retail Banking and Wealth Management	Commercial Banking	Global Banking and Markets	Global Private Banking	Corporate Centre	Total
		$bn	$bn	$bn	$bn	$bn	$bn
Risk-weighted assets							
Reported		**134.0**	**316.7**	**258.2**	**14.0**	**120.5**	**843.4**
Adjusted	4	**134.0**	**316.7**	**258.2**	**14.0**	**120.5**	**843.4**
		At 31 Dec 2018					
Risk-weighted assets							
Reported		126.9	321.2	281.0	16.8	119.4	865.3
Currency translation		0.7	3.4	1.1	0.1	0.4	5.7
Disposals		—	—	—	—	(0.8)	(0.8)
– operations in Brazil		—	—	—	—	(0.8)	(0.8)
Adjusted	4	127.6	324.6	282.1	16.9	119.0	870.2
		At 31 Dec 2017					
Risk-weighted assets							
Reported		121.5	301.0	299.3	16.0	133.5	871.3
Currency translation		(2.5)	(8.0)	(4.6)	(0.1)	(1.4)	(16.6)
Disposals		—	—	—	—	(2.6)	(2.6)
– operations in Brazil		—	—	—	—	(2.6)	(2.6)
Adjusted	4	119.0	293.0	294.7	15.9	129.5	852.1

For footnotes, see page 71.

Supplementary global business disclosures

RBWM: Insurance manufacturing adjusted results

The following table shows the results of our insurance manufacturing operations by income statement line item. It shows the results of insurance manufacturing operations for RBWM and for all global business segments in aggregate, and separately the insurance distribution income earned by HSBC bank channels.

Adjusted results of insurance manufacturing operations and insurance distribution income earned by HSBC bank channels[5]

	Footnotes	2019		2018		2017	
		RBWM	**All global businesses**	RBWM	All global businesses	RBWM	All global businesses
		$m	**$m**	$m	$m	$m	$m
Net interest income		**2,131**	**2,306**	2,026	2,196	1,977	2,174
Net fee income		**(690)**	**(739)**	(569)	(558)	(489)	(496)
– fee income		**104**	**129**	181	274	232	330
– fee expense		**(794)**	**(868)**	(750)	(832)	(721)	(826)
Net income from financial instruments held for trading or managed on a fair value basis		**(44)**	**(29)**	(521)	167	(51)	1
Net income/(expense) from assets and liabilities of insurance businesses, including related derivatives, measured at fair value through profit or loss		**3,568**	**3,554**	(897)	(1,559)	2,830	2,771
Gains less losses from financial investments		**5**	**5**	58	57	23	31
Net insurance premium income		**10,054**	**10,718**	10,054	10,541	9,312	9,938
Other operating income		**1,765**	**1,787**	709	767	62	96
of which: PVIF		***1,696***	***1,749***	*637*	*679*	*12*	*22*
Total operating income		**16,789**	**17,602**	10,860	11,611	13,664	14,515
Net insurance claims and benefits paid and movement in liabilities to policyholders		**(14,192)**	**(14,891)**	(9,079)	(9,596)	(11,732)	(12,323)
Net operating income before change in expected credit losses and other credit impairment charges	1	**2,597**	**2,711**	1,781	2,015	1,932	2,192
ECL		**(104)**	**(115)**	(2)	(1)	—	—
Net operating income		**2,493**	**2,596**	1,779	2,014	1,932	2,192
Total operating expenses		**(520)**	**(505)**	(455)	(478)	(388)	(422)
Operating profit		**1,973**	**2,091**	1,324	1,536	1,544	1,770
Share of profit in associates and joint ventures		**44**	**44**	31	32	10	10
Profit before tax of insurance manufacturing operations	6	**2,017**	**2,135**	1,355	1,568	1,554	1,780
Annualised new business premiums of insurance manufacturing operations		**3,296**	**3,382**	3,153	3,231	2,647	2,706
Insurance distribution income earned by HSBC bank channels		**913**	**1,039**	923	1,039	889	1,012

For footnotes, see page 71.

Insurance manufacturing

The following commentary, unless otherwise specified, relates to the 'All global businesses' results.

HSBC recognises the present value of long-term in-force insurance contracts and investment contracts with discretionary participation features ('PVIF') as an asset on the balance sheet. The overall balance sheet equity, including PVIF, is therefore a measure of the embedded value in the insurance manufacturing entities, and the movement in this embedded value in the period drives the overall income statement result.

Adjusted profit before tax of $2.1bn increased by $0.6bn or 36%. This was mainly due to favourable market impacts of $0.1bn in 2019, primarily driven by strong equity market performance in Hong Kong, compared with adverse market impacts of $(0.3)bn in 2018. It also reflected a $0.1bn increase in the value of new business written.

Net operating income before change in expected credit losses and other credit impairment charges was $0.7bn or 35% higher than 2018. This reflected the following:

- 'Net income from assets and liabilities of insurance businesses, including related derivatives, measured at fair value through profit or loss' of $3.6bn compared with a net expense of $1.6bn in 2018, due to favourable equity market performance in Hong Kong and France in 2019 compared with 2018, resulting in revaluation gains on equity and unit trust assets supporting insurance and investment contracts. This positive movement resulted in a corresponding movement in liabilities to policyholders and PVIF (see 'Other operating income' below), reflecting the extent to which the policyholders and shareholders respectively participate in the investment performance of the associated assets portfolio.
- 'Net insurance premium income' of $10.7bn was $0.2bn higher. This was driven by higher new business volumes across all entities, and particularly in Hong Kong, Singapore and UK, partly offset by higher reinsurance ceded in Hong Kong.
- 'Other operating income' of $1.8bn increased by $1.0bn. This increase in PVIF reflected a favourable movement in 'assumption changes and experience variances' of $1.1bn, primarily in Hong Kong due to the effect of interest rate changes on the valuation of the liabilities under insurance contracts. In addition, the value of new business written increased by $0.1bn to $1.2bn. For further details, see Note 21 on the financial statements.
- 'Net insurance claims and benefits paid and movement in liabilities to policyholders' of $14.9bn were $5.3bn higher than 2018. This increase was primarily due to higher returns on financial assets supporting contracts where the policyholder is subject to part or all of the investment risk and the impact of higher new business volumes, particularly in Hong Kong and Singapore. This was partly offset by the impact of higher reinsurance ceded in Hong Kong.

Adjusted ECL of $0.1bn in 2019 primarily related to government bond exposures in Argentina.

Adjusted operating expenses of $0.5bn increased by $27m or 6% compared with 2018, reflecting investment in core insurance functions and capabilities, including preparation for the implementation of IFRS 17 'Insurance Contracts'.

Annualised new business premiums ('ANP') is used to assess new insurance premium generation by the business. It is calculated as 100% of annualised first year regular premiums and 10% of single premiums, before reinsurance ceded. Growth in ANP during the period reflected new business growth in most entities, with the main contribution coming from Hong Kong, mainland China and the UK.

Insurance distribution income from HSBC channels included $665m (2018: $651m) on HSBC manufactured products, for which a corresponding fee expense is recognised within insurance manufacturing, and $375m (2018: $389m) on products manufactured by third-party providers. The RBWM component of this distribution income was $589m (2018: $581m) from HSBC manufactured products and $325m (2018: $343m) from third-party products.

Asset Management: Funds under management

The following table shows the funds under management of our Asset Management business.

Asset Management – reported funds under management[7]

	2019 $bn	2018 $bn	2017 $bn
Opening balance	**444**	462	410
Net new money	**30**	8	8
Value change	**30**	(14)	24
Exchange and other	**2**	(12)	20
Closing balance	**506**	444	462

Asset Management – reported funds under management by geography

	2019 $bn	2018 $bn	2017 $bn
Europe	**287**	235	249
Asia	**161**	164	168
MENA	**6**	2	1
North America	**44**	36	37
Latin America	**8**	7	7
Closing balance	**506**	444	462

For footnotes, see page 71.

Funds under management represents assets managed, either actively or passively, on behalf of our customers. At 31 December 2019, Asset Management funds under management amounted to $506bn, an increase of $62bn or 14%. The increase reflected positive market performance and foreign exchange, together with strong net new money, primarily from money market solutions and discretionary products, notably in the UK.

GB&M: Securities Services

Assets held in custody[7]

Custody is the safekeeping and servicing of securities and other financial assets on behalf of clients. At 31 December 2019, we held $8.5tn of assets as custodian, 16% higher than at 31 December 2018. This increase was driven by the onboarding of assets for new clients globally, and the incremental net asset inflows for existing clients together with favourable market movements mainly in Asia.

Assets under administration

Our assets under administration business, which includes the provision of bond and loan administration services, transfer agency services and the valuation of portfolios of securities and other financial assets on behalf of clients, complements the custody business. At 31 December 2019, the value of assets held under administration by the Group amounted to $4.0tn, which was 20% higher than at 31 December 2018. This increase was mainly driven by the onboarding of significant new client assets in Europe, together with incremental net assets inflows for existing clients in both Europe and Asia.

GPB client assets

The following table shows the client assets of our GPB business.

GPB – reported client assets

	2019 $bn	2018 $bn	2017 $bn
At 1 Jan	**309**	330	298
Net new money	**23**	10	—
Value change	**23**	(17)	21
Disposals	**—**	—	—
Exchange and other	**6**	(14)	11
At 31 Dec	**361**	309	330

GPB – reported client assets by geography

	Footnotes	2019 $bn	2018 $bn	2017 $bn
Europe		**171**	149	161
Asia		**151**	124	130
North America		**39**	36	39
Latin America		**—**	—	—
Middle East	8	**—**	—	—
At 31 Dec		**361**	309	330

For footnotes, see page 71.

Analysis of reported results by geographical regions

HSBC reported profit/(loss) before tax and balance sheet data

		2019						
	Footnotes	Europe $m	Asia $m	MENA $m	North America $m	Latin America $m	Intra-HSBC/ Global impairment $m	Total $m
Net interest income		**5,601**	**16,607**	**1,781**	**3,241**	**2,061**	**1,171**	**30,462**
Net fee income		**3,668**	**5,325**	**685**	**1,804**	**540**	**1**	**12,023**
Net income from financial instruments held for trading or managed on a fair value basis		**3,785**	**4,735**	**327**	**873**	**883**	**(372)**	**10,231**
Net income from assets and liabilities of insurance businesses, including related derivatives, measured at fair value through profit and loss		**1,656**	**1,803**	**—**	**—**	**14**	**5**	**3,478**
Changes in fair value of other financial instruments mandatorily measured at fair value through profit or loss		**1,516**	**28**	**1**	**31**	**41**	**(805)**	**812**
Other income/(expense)	9	**1,830**	**1,921**	**916**	**638**	**(23)**	**(6,190)**	**(908)**
Net operating income before change in expected credit losses and other credit impairment charges	1	**18,056**	**30,419**	**3,710**	**6,587**	**3,516**	**(6,190)**	**56,098**
Change in expected credit losses and other credit impairment charges		**(938)**	**(724)**	**(117)**	**(237)**	**(740)**	**—**	**(2,756)**
Net operating income		**17,118**	**29,695**	**3,593**	**6,350**	**2,776**	**(6,190)**	**53,342**
Total operating expenses excluding goodwill		**(19,237)**	**(13,297)**	**(1,452)**	**(5,152)**	**(2,052)**	**6,190**	**(35,000)**
Goodwill impairment		**(2,522)**	**—**	**(97)**	**(431)**	**(337)**	**(3,962)**	**(7,349)**
Operating profit/(loss)		**(4,641)**	**16,398**	**2,044**	**767**	**387**	**(3,962)**	**10,993**
Share of profit/(loss) in associates and joint ventures		**(12)**	**2,070**	**283**	**—**	**13**	**—**	**2,354**
Profit/(loss) before tax		**(4,653)**	**18,468**	**2,327**	**767**	**400**	**(3,962)**	**13,347**
		%	**%**	**%**	**%**	**%**		**%**
Share of HSBC's profit before tax		**(34.9)**	**138.4**	**17.4**	**5.7**	**3.0**		**100.0**
Cost efficiency ratio		**120.5**	**43.7**	**41.8**	**84.8**	**67.9**		**75.5**
Balance sheet data		**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**
Loans and advances to customers (net)		**393,850**	**477,727**	**28,556**	**113,474**	**23,136**	**—**	**1,036,743**
Total assets		**1,248,205**	**1,102,805**	**65,369**	**377,095**	**52,879**	**(131,201)**	**2,715,152**
Customer accounts		**528,718**	**697,358**	**38,126**	**146,676**	**28,237**	**—**	**1,439,115**
Risk-weighted assets	10	**280,983**	**366,375**	**57,492**	**121,953**	**38,460**	**—**	**843,395**

HSBC reported profit/(loss) before tax and balance sheet data (continued)

		2018						
		Europe	Asia	MENA	North America	Latin America	Intra-HSBC items	Total
	Footnotes	$m	$m	$m	$m	$m	$m	$m
Net interest income		6,841	16,108	1,763	3,521	2,020	236	30,489
Net fee income		3,996	5,676	607	1,854	498	(11)	12,620
Net income from financial instruments held for trading or managed on a fair value basis		3,942	4,134	285	728	736	(294)	9,531
Net income from assets and liabilities of insurance businesses, including related derivatives, measured at fair value through profit and loss		(789)	(717)	—	—	18	—	(1,488)
Changes in fair value of other financial instruments mandatorily measured at fair value through profit or loss		601	(26)	(1)	36	27	58	695
Other income/(expense)	9	3,113	3,609	33	586	(237)	(5,171)	1,933
Net operating income before change in expected credit losses and other credit impairment charges/recoveries	1	17,704	28,784	2,687	6,725	3,062	(5,182)	53,780
Change in expected credit losses and other credit impairment (charges)/recoveries		(609)	(602)	(209)	223	(570)	—	(1,767)
Net operating income		17,095	28,182	2,478	6,948	2,492	(5,182)	52,013
Total operating expenses		(17,934)	(12,466)	(1,357)	(6,149)	(1,935)	5,182	(34,659)
Operating profit/(loss)		(839)	15,716	1,121	799	557	—	17,354
Share of profit in associates and joint ventures		24	2,074	436	—	2	—	2,536
Profit/(loss) before tax		(815)	17,790	1,557	799	559	—	19,890
		%	%	%	%	%		%
Share of HSBC's profit before tax		(4.1)	89.5	7.8	4.0	2.8		100.0
Cost efficiency ratio		101.3	43.3	50.5	91.4	63.2		64.4
Balance sheet data		$m	$m	$m	$m	$m	$m	$m
Loans and advances to customers (net)		373,073	450,545	28,824	108,146	21,108	—	981,696
Total assets		1,150,235	1,047,636	57,455	390,410	51,923	(139,535)	2,558,124
Customer accounts		503,154	664,824	35,408	133,291	25,966	—	1,362,643
Risk-weighted assets	10	298,056	363,894	56,689	131,582	38,341	—	865,318

		2017						
Net interest income		6,970	14,153	1,752	3,441	2,098	(238)	28,176
Net fee income		4,161	5,631	619	1,880	520	—	12,811
Net income from financial instruments held for trading or managed on a fair value basis	11,12	4,066	2,929	180	527	486	238	8,426
Net income from assets and liabilities of insurance businesses, including related derivatives, measured at fair value through profit and loss		769	2,003	—	—	64	—	2,836
Changes in fair value of other financial instruments mandatorily measured at fair value through profit or loss		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other income	9,12	1,454	1,090	109	865	57	(4,379)	(804)
Net operating income before loan impairment charges/recoveries and other credit risk provisions	1	17,420	25,806	2,660	6,713	3,225	(4,379)	51,445
Loan impairment (charges)/recoveries and other credit risk provisions		(658)	(570)	(207)	189	(523)	—	(1,769)
Net operating income		16,762	25,236	2,453	6,902	2,702	(4,379)	49,676
Total operating expenses		(18,665)	(11,790)	(1,394)	(5,305)	(2,109)	4,379	(34,884)
Operating profit/(loss)		(1,903)	13,446	1,059	1,597	593	—	14,792
Share of profit/(loss) in associates and joint ventures		39	1,883	442	4	7	—	2,375
Profit/(loss) before tax		(1,864)	15,329	1,501	1,601	600	—	17,167
		%	%	%	%	%		%
Share of HSBC's profit before tax		(10.8)	89.3	8.7	9.3	3.5		100.0
Cost efficiency ratio		107.1	45.7	52.4	79.0	65.4		67.8
Balance sheet data		$m	$m	$m	$m	$m	$m	$m
Loans and advances to customers (net)		381,547	425,971	28,050	107,607	19,789	—	962,964
Total assets		1,169,515	1,008,498	57,469	391,292	48,413	(153,416)	2,521,771
Customer accounts		505,182	657,395	34,658	143,432	23,795	—	1,364,462
Risk-weighted assets	10	311,612	357,808	59,196	131,276	36,372	—	871,337

For footnotes, see page 71.

Reconciliation of reported and adjusted items – geographical regions

Reconciliation of reported and adjusted items

	Footnotes	2019 Europe $m	Asia $m	MENA $m	North America $m	Latin America $m	Total $m
Revenue	1						
Reported	11	18,056	30,419	3,710	6,587	3,516	56,098
Significant items		26	35	(828)	68	10	(689)
– customer redress programmes		163	–	–	–	–	163
– disposals, acquisitions and investment in new businesses		–	–	(828)	59	1	(768)
– fair value movements on financial instruments	2	(137)	35	–	9	9	(84)
Adjusted	11	18,082	30,454	2,882	6,655	3,526	55,409
ECL							
Reported		(938)	(724)	(117)	(237)	(740)	(2,756)
Adjusted		(938)	(724)	(117)	(237)	(740)	(2,756)
Operating expenses							
Reported	11, 14	(21,759)	(13,297)	(1,549)	(5,583)	(2,389)	(42,349)
Significant items	14	4,435	126	112	544	375	9,554
– costs of structural reform	3	154	4	–	–	–	158
– customer redress programmes		1,281	–	–	–	–	1,281
– goodwill impairment	14	2,522	–	97	431	337	7,349
– restructuring and other related costs		538	123	15	113	38	827
– settlements and provisions in connection with legal and regulatory matters		(60)	(1)	–	–	–	(61)
Adjusted	14	(17,324)	(13,171)	(1,437)	(5,039)	(2,014)	(32,795)
Share of profit/(loss) in associates and joint ventures							
Reported		(12)	2,070	283	–	13	2,354
Adjusted		(12)	2,070	283	–	13	2,354
Profit/(loss) before tax							
Reported	14	(4,653)	18,468	2,327	767	400	13,347
Significant items	14	4,461	161	(716)	612	385	8,865
– revenue		26	35	(828)	68	10	(689)
– operating expenses	14	4,435	126	112	544	375	9,554
Adjusted		(192)	18,629	1,611	1,379	785	22,212
Loans and advances to customers (net)							
Reported		393,850	477,727	28,556	113,474	23,136	1,036,743
Adjusted		393,850	477,727	28,556	113,474	23,136	1,036,743
Customer accounts							
Reported		528,718	697,358	38,126	146,676	28,237	1,439,115
Adjusted		528,718	697,358	38,126	146,676	28,237	1,439,115

For footnotes, see page 71.

Reconciliation of reported and adjusted items (continued)

	Footnotes	UK $m (2019)	Hong Kong $m (2019)	Mainland China $m (2019)	US $m (2019)	Mexico $m (2019)
Revenue	1					
Reported		13,538	19,412	3,101	4,638	2,555
Significant items		23	26	1	66	8
– customer redress programmes		162	—	—	—	—
– disposals, acquisitions and investment in new businesses		—	—	—	59	—
– fair value movements on financial instruments	2	(139)	26	1	7	8
Adjusted		13,561	19,438	3,102	4,704	2,563
ECL						
Reported		(714)	(459)	(129)	(170)	(491)
Adjusted		(714)	(459)	(129)	(170)	(491)
Operating expenses						
Reported		(16,157)	(6,935)	(2,111)	(4,033)	(1,390)
Significant items		1,795	64	6	93	20
– costs of structural reform	3	101	4	—	—	—
– customer redress programmes		1,281	—	—	—	—
– restructuring and other related costs		405	61	6	93	20
– settlements and provisions in connection with legal and regulatory matters		8	(1)	—	—	—
Adjusted		(14,362)	(6,871)	(2,105)	(3,940)	(1,370)
Share of profit/(loss) in associates and joint ventures						
Reported		(12)	31	2,016	—	13
Adjusted		(12)	31	2,016	—	13
Profit/(loss) before tax						
Reported		(3,345)	12,049	2,877	435	687
Significant items		1,818	90	7	159	28
– revenue		23	26	1	66	8
– operating expenses		1,795	64	6	93	20
Adjusted		(1,527)	12,139	2,884	594	715
Loans and advances to customers (net)						
Reported		303,041	306,964	42,380	63,588	20,426
Adjusted		303,041	306,964	42,380	63,588	20,426
Customer accounts						
Reported		419,642	499,955	48,323	90,834	23,051
Adjusted		419,642	499,955	48,323	90,834	23,051

For footnotes, see page 71.

Reconciliation of reported and adjusted items (continued)

		2018					
		Europe	Asia	MENA	North America	Latin America	Total
	Footnotes	$m	$m	$m	$m	$m	$m
Revenue	1						
Reported	11	17,704	28,784	2,687	6,725	3,062	53,780
Currency translation	11	(914)	(316)	(18)	(40)	(389)	(1,617)
Significant items		103	(36)	(1)	97	5	168
– customer redress programmes		(53)	—	—	—	—	(53)
– disposals, acquisitions and investment in new businesses		(5)	—	—	103	15	113
– fair value movements on financial instruments	2	156	(38)	(1)	(8)	(9)	100
– currency translation on significant items		5	2	—	2	(1)	8
Adjusted	11	16,893	28,432	2,668	6,782	2,678	52,331
Change in expected credit losses and other credit impairment charges							
Reported		(609)	(602)	(209)	223	(570)	(1,767)
Currency translation		12	5	9	(1)	53	78
Adjusted		(597)	(597)	(200)	222	(517)	(1,689)
Operating expenses							
Reported	11	(17,934)	(12,466)	(1,357)	(6,149)	(1,935)	(34,659)
Currency translation	11	664	175	23	23	284	1,109
Significant items		652	16	—	976	—	1,644
– costs of structural reform	3	352	9	—	—	—	361
– customer redress programmes		146	—	—	—	—	146
– disposals, acquisitions and investment in new businesses		52	—	—	—	—	52
– past service costs of guaranteed minimum pension benefits equalisation		228	—	—	—	—	228
– restructuring and other related costs		46	7	—	13	—	66
– settlements and provisions in connection with legal and regulatory matters		(147)		—	963	—	816
– currency translation on significant items		(25)	—	—	—	—	(25)
Adjusted	11	(16,618)	(12,275)	(1,334)	(5,150)	(1,651)	(31,906)
Share of profit in associates and joint ventures							
Reported		24	2,074	436	—	2	2,536
Currency translation		—	(89)	—	—	(1)	(90)
Adjusted		24	1,985	436	—	1	2,446
Profit/(loss) before tax							
Reported		(815)	17,790	1,557	799	559	19,890
Currency translation		(238)	(225)	14	(18)	(53)	(520)
Significant items		755	(20)	(1)	1,073	5	1,812
– revenue		103	(36)	(1)	97	5	168
– operating expenses		652	16	—	976	—	1,644
Adjusted		(298)	17,545	1,570	1,854	511	21,182
Loans and advances to customers (net)							
Reported		373,073	450,545	28,824	108,146	21,108	981,696
Currency translation		8,887	1,875	(84)	2,067	(165)	12,580
Adjusted		381,960	452,420	28,740	110,213	20,943	994,276
Customer accounts							
Reported		503,154	664,824	35,408	133,291	25,966	1,362,643
Currency translation		12,796	3,016	58	2,163	(938)	17,095
Adjusted		515,950	667,840	35,466	135,454	25,028	1,379,738

For footnotes, see page 71.

Reconciliation of reported and adjusted items (continued)

		2018				
		UK	Hong Kong	Mainland China	US	Mexico
	Footnotes	$m	$m	$m	$m	$m
Revenue	1					
Reported		13,597	18,231	2,888	4,741	2,294
Currency translation		(713)	6	(125)	—	(1)
Significant items		114	5	(1)	97	(8)
– customer redress programmes		(53)	—	—	—	—
– disposals, acquisitions and investment in new businesses		—	—	—	103	—
– fair value movements on financial instruments	2	162	5	(1)	(6)	(7)
– currency translation on significant items		5	—	—	—	(1)
Adjusted		12,998	18,242	2,762	4,838	2,285
Change in expected credit losses and other credit impairment charges						
Reported		(516)	(214)	(143)	199	(463)
Currency translation		9	(1)	4	—	—
Adjusted		(507)	(215)	(139)	199	(463)
Operating expenses						
Reported		(14,502)	(6,539)	(1,920)	(4,987)	(1,303)
Currency translation		494	(2)	81	—	—
Significant items		511	15	—	920	—
– costs of structural reform	3	294	9	—	—	—
– customer redress programmes		146	—	—	—	—
– disposals, acquisitions and investment in new businesses		—	—	—	—	—
– past service costs of guaranteed minimum pension benefits equalisation		228	—	—	—	—
– restructuring and other related costs		39	7	—	11	—
– settlements and provisions in connection with legal and regulatory matters		(176)	—	—	908	—
– currency translation on significant items		(20)	(1)	—	1	—
Adjusted		(13,497)	(6,526)	(1,839)	(4,067)	(1,303)
Share of profit in associates and joint ventures						
Reported		25	36	2,033	—	—
Currency translation		(1)	—	(90)	—	—
Adjusted		24	36	1,943	—	—
Profit/(loss) before tax						
Reported		(1,396)	11,514	2,858	(47)	528
Currency translation		(211)	3	(130)	—	(1)
Significant items		625	20	(1)	1,017	(8)
– revenue		114	5	(1)	97	(8)
– operating expenses		511	15	—	920	—
Adjusted		(982)	11,537	2,727	970	519
Loans and advances to customers (net)						
Reported		287,144	290,547	38,979	64,011	17,895
Currency translation		10,190	1,609	(477)	—	763
Adjusted		297,334	292,156	38,502	64,011	18,658
Customer accounts						
Reported		399,487	484,897	45,712	82,523	19,936
Currency translation		14,173	2,686	(559)	—	856
Adjusted		413,660	487,583	45,153	82,523	20,792

For footnotes, see page 71.

Reconciliation of reported and adjusted items (continued)

		2017					
		Europe	Asia	MENA	North America	Latin America	Total
	Footnotes	$m	$m	$m	$m	$m	$m
Revenue	1						
Reported	11	17,420	25,806	2,660	6,713	3,225	51,445
Currency translation	11	(165)	(418)	(93)	(36)	(661)	(1,344)
Significant items		61	118	1	(94)	(14)	72
– customer redress programmes		108	—	—	—	—	108
– disposals, acquisitions and investment in new businesses		(98)	(27)	—	(130)	(19)	(274)
– fair value movements on financial investments	2	54	148	1	37	5	245
– currency translation on significant items		(3)	(3)	—	(1)	—	(7)
Adjusted	11	17,316	25,506	2,568	6,583	2,550	50,173
LICs							
Reported		(658)	(570)	(207)	189	(523)	(1,769)
Currency translation		26	9	5	—	43	83
Adjusted		(632)	(561)	(202)	189	(480)	(1,686)
Operating expenses		—	—	—	—	—	—
Reported	11	(18,665)	(11,790)	(1,394)	(5,305)	(2,109)	(34,884)
Currency translation	11	135	229	87	21	472	915
Significant items		2,810	622	25	199	54	3,710
– costs of structural reform	3	420	—	—	—	—	420
– costs to achieve		1,908	623	34	371	66	3,002
– customer redress programmes		655	—	—	—	—	655
– disposals, acquisitions and investment in new businesses		36	—	—	17	—	53
– gain on partial settlement of pension obligations		—	—	—	(188)	—	(188)
– settlements and provisions in connection with legal and regulatory matters		(215)	17	—	—	—	(198)
– currency translation on significant items		6	(18)	(9)	(1)	(12)	(34)
Adjusted	11	(15,720)	(10,939)	(1,282)	(5,085)	(1,583)	(30,259)
Share of profit in associates and joint ventures							
Reported		39	1,883	442	4	7	2,375
Currency translation		(2)	(40)	—	—	(5)	(47)
Adjusted		37	1,843	442	4	2	2,328
Profit/(loss) before tax							
Reported		(1,864)	15,329	1,501	1,601	600	17,167
Currency translation		(6)	(220)	(1)	(15)	(151)	(393)
Significant items		2,871	740	26	105	40	3,782
– revenue		61	118	1	(94)	(14)	72
– operating expenses		2,810	622	25	199	54	3,710
Adjusted		1,001	15,849	1,526	1,691	489	20,556
Loans and advances to customers (net)							
Reported		381,547	425,971	28,050	107,607	19,789	962,964
Currency translation		(11,204)	(6,374)	(1,328)	(1,373)	(1,762)	(22,041)
Adjusted		370,343	419,597	26,722	106,234	18,027	940,923
Customer accounts							
Reported		505,182	657,395	34,658	143,432	23,795	1,364,462
Currency translation		(14,581)	(5,882)	(963)	(1,555)	(2,409)	(25,390)
Adjusted		490,601	651,513	33,695	141,877	21,386	1,339,072

For footnotes, see page 71.

Reconciliation of reported and adjusted items (continued)

	Footnotes	UK	Hong Kong	Mainland China	US	Mexico
		2017				
		$m	$m	$m	$m	$m
Revenue	1					
Reported		12,922	16,117	2,379	4,876	2,160
Currency translation		(129)	(87)	(52)	—	(47)
Significant items		50	(52)	100	(99)	5
– customer redress programmes		108	—	—	—	—
– disposals, acquisitions and investment in new businesses		(78)	(126)	99	(130)	—
– fair value movements on financial instruments	2	24	75	2	31	5
– currency translation on significant items		(4)	(1)	(1)	—	—
Adjusted		12,843	15,978	2,427	4,777	2,118
LICs						
Reported		(492)	(396)	(67)	108	(473)
Currency translation		21	4	1	—	11
Adjusted		(471)	(392)	(66)	108	(462)
Operating expenses						
Reported		(15,086)	(6,131)	(1,687)	(4,267)	(1,297)
Currency translation		100	31	39	—	25
Significant items		2,476	306	68	119	46
– costs of structural reform	3	410	—	—	—	—
– costs to achieve		1,766	291	69	290	46
– customer redress programmes		655	—	—	—	—
– disposals, acquisitions and investment in new businesses		—	—	—	17	—
– gain on partial settlement of pension obligations		—	—	—	(188)	—
– settlements and provisions in connection with legal and regulatory matters		(362)	17	—	—	—
– currency translation on significant items		7	(2)	(1)	—	—
Adjusted		(12,510)	(5,794)	(1,580)	(4,148)	(1,226)
Share of profit in associates and joint ventures						
Reported		38	8	1,863	—	—
Currency translation		(1)	—	(40)	—	—
Adjusted		37	8	1,823	—	—
Profit/(loss) before tax						
Reported		(2,618)	9,598	2,488	717	390
Currency translation		(9)	(52)	(52)	—	(11)
Significant items		2,526	254	168	20	51
– revenue		50	(52)	100	(99)	5
– operating expenses		2,476	306	68	119	46
Adjusted		(101)	9,800	2,604	737	430
Loans and advances to customers (net)						
Reported		295,538	268,966	40,686	65,168	15,172
Currency translation		(6,336)	904	(2,666)	1	679
Adjusted		289,202	269,870	38,020	65,169	15,851
Customer accounts						
Reported		401,733	477,104	45,991	89,887	17,809
Currency translation		(8,593)	1,605	(3,013)	—	798
Adjusted		393,140	478,709	42,978	89,887	18,607

For footnotes, see page 71.

Analysis by country

Profit/(loss) before tax by country/territory within global businesses

	Footnotes	Retail Banking and Wealth Management	Commercial Banking	Global Banking and Markets	Global Private Banking	Corporate Centre	Total
		$m	$m	$m	$m	$m	$m
Europe		(760)	(889)	(474)	72	(2,602)	(4,653)
– UK	12	(815)	1,365	(650)	(44)	(3,201)	(3,345)
– *of which: HSBC UK Bank plc (RFB)*		*(399)*	*1,497*	*70*	*16*	*123*	*1,307*
– *HSBC Bank plc (NRFB)*		*202*	*271*	*(223)*	*39*	*(419)*	*(130)*
– *Holdings and other*		*(618)*	*(403)*	*(497)*	*(99)*	*(2,905)*	*(4,522)*
– France		45	119	(66)	9	(71)	36
– Germany		6	37	74	7	37	161
– Switzerland		(1)	7	(3)	90	(2)	91
– other	13	5	(2,417)	171	10	635	(1,596)
Asia		6,935	4,266	3,793	381	3,093	18,468
– Hong Kong		6,550	3,107	1,663	366	363	12,049
– Australia		121	108	168	(1)	48	444
– India		48	181	466	—	311	1,006
– Indonesia		12	49	123	—	32	216
– mainland China		(74)	296	498	(5)	2,162	2,877
– Malaysia		85	66	184	—	7	342
– Singapore		114	80	219	22	43	478
– Taiwan		41	23	91	—	6	161
– other		38	356	381	(1)	121	895
Middle East and North Africa		190	174	722	1	1,240	2,327
– Egypt		44	65	222	—	79	410
– UAE		127	91	241	1	(35)	425
– Saudi Arabia		(3)	—	13	—	1,145	1,155
– other	13	22	18	246	—	51	337
North America		(219)	807	608	(445)	16	767
– US		(323)	365	452	(14)	(45)	435
– Canada		44	406	120	—	48	618
– other	13	60	36	36	(431)	13	(286)
Latin America		282	(86)	360	—	(156)	400
– Mexico		279	166	217	—	25	687
– other	13	3	(252)	143	—	(181)	(287)
GB&M goodwill impairment	13	—	—	(3,962)	—	—	(3,962)
Year ended 31 Dec 2019		6,428	4,272	1,047	9	1,591	13,347

For footnotes, see page 71.

Profit/(loss) before tax by country/territory within global businesses (continued)

	Footnotes	Retail Banking and Wealth Management	Commercial Banking	Global Banking and Markets	Global Private Banking	Corporate Centre	Total
		$m	$m	$m	$m	$m	$m
Europe		440	2,289	690	(122)	(4,112)	(815)
– UK	12	476	1,901	409	23	(4,205)	(1,396)
– *of which: HSBC UK Bank plc (RFB)*		*539*	*934*	*4*	*38*	*(133)*	*1,382*
– *HSBC Bank plc (NRFB)*		*548*	*1,394*	*795*	*60*	*(719)*	*2,078*
– *Holdings and other*		*(611)*	*(427)*	*(390)*	*(75)*	*(3,353)*	*(4,856)*
– France		(56)	170	8	16	(101)	37
– Germany		14	85	99	8	(5)	201
– Switzerland		(1)	5	(1)	(100)	20	(77)
– other		7	128	175	(69)	179	420
Asia		6,190	4,176	3,773	353	3,298	17,790
– Hong Kong		5,951	3,114	1,670	333	446	11,514
– Australia		115	120	185	(1)	44	463
– India		20	143	387	—	275	825
– Indonesia		(1)	13	91	—	1	104
– mainland China		(200)	262	566	(4)	2,234	2,858
– Malaysia		130	82	132	—	30	374
– Singapore		75	98	230	25	63	491
– Taiwan		55	23	117	—	30	225
– other		45	321	395	—	175	936
Middle East and North Africa		182	108	733	7	527	1,557
– Egypt		34	54	202	—	43	333
– UAE		112	58	296	7	—	473
– Saudi Arabia		—	—	—	—	436	436
– other		36	(4)	235	—	48	315
North America		(96)	968	738	11	(822)	799
– US		(205)	473	624	23	(962)	(47)
– Canada		55	455	139	—	116	765
– other		54	40	(25)	(12)	24	81
Latin America		166	178	378	(1)	(162)	559
– Mexico		194	114	197	—	23	528
– other		(28)	64	181	(1)	(185)	31
Year ended 31 Dec 2018		6,882	7,719	6,312	248	(1,271)	19,890
Europe		(159)	1,899	777	(231)	(4,150)	(1,864)
– UK	12	(177)	1,539	192	(23)	(4,149)	(2,618)
– *of which: HSBC UK Bank plc (RFB)*		*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
– *HSBC Bank plc (NRFB)*		*413*	*1,911*	*889*	*63*	*(1,224)*	*2,052*
– *Holdings and other*		*(590)*	*(372)*	*(697)*	*(86)*	*(2,925)*	*(4,670)*
– France		(12)	204	228	5	(156)	269
– Germany		21	61	141	9	39	271
– Switzerland		(2)	7	1	(192)	2	(184)
– other		11	88	215	(30)	114	398
Asia		5,372	3,394	3,135	285	3,143	15,329
– Hong Kong		5,039	2,460	1,357	257	485	9,598
– Australia		122	101	108	(1)	35	365
– India		21	159	362	—	374	916
– Indonesia		(24)	76	98	—	30	180
– mainland China		(44)	161	387	(4)	1,988	2,488
– Malaysia		85	50	162	—	28	325
– Singapore		69	94	202	34	64	463
– Taiwan		43	10	107	(1)	40	199
– other		61	283	352	—	99	795
Middle East and North Africa		144	199	593	—	565	1,501
– Egypt		26	69	164	—	46	305
– UAE		110	53	268	—	48	479
– Saudi Arabia		—	—	—	—	441	441
– other		8	77	161	—	30	276
North America		305	932	671	67	(374)	1,601
– US		166	435	494	66	(444)	717
– Canada		61	453	132	—	43	689
– other		78	44	45	1	27	195
Latin America		161	199	259	—	(19)	600
– Mexico		139	105	158	—	(12)	390
– other		22	94	101	—	(7)	210
Year ended 31 Dec 2017		5,823	6,623	5,435	121	(835)	17,167

For footnotes, see page 71.

Footnotes to global businesses and geographical regions

1 *Net operating income before change in expected credit losses and other credit impairment charges/Loan impairment charges and other credit risk provisions, also referred to as revenue.*
2 *Fair value movements on financial instruments include non-qualifying hedges and debt valuation adjustments on derivatives.*
3 *Comprises costs associated with preparations for the UK's exit from the European Union, costs to establish the UK ring-fenced bank (including the UK ServCo group) and costs associated with establishing an intermediate holding company in Hong Kong.*
4 *Adjusted risk-weighted assets are calculated using reported risk-weighted assets adjusted for the effects of currency translation differences and significant items.*
5 *The results presented for insurance manufacturing operations are shown before elimination of intercompany transactions with HSBC non-insurance operations.*
6 *The effect on the Insurance manufacturing operations of applying hyperinflation accounting in Argentina resulted in a reduction in adjusted revenue in 2019 of $3m (2018: $29m) and a reduction in PBT in 2019 of $3m (2018: $27m). These effects are recorded in 'all global businesses' within Corporate Centre.*
7 *Funds under management and assets held in custody are not reported on the Group's balance sheet, except where it is deemed that we are acting as principal rather than agent in our role as investment manager.*
8 *Client assets related to our Middle East clients are booked across various other regions, primarily in Europe.*
9 *'Other income' in this context comprises where applicable net income/expense from other financial instruments designated at fair value, gains less losses from financial investments, dividend income, net insurance premium income and other operating income less net insurance claims and benefits paid and movement in liabilities to policyholders.*
10 *Risk-weighted assets are non-additive across geographical regions due to market risk diversification effects within the Group.*
11 *Amounts are non-additive across geographical regions due to intercompany transactions within the Group.*
12 *UK includes results from the ultimate holding company, HSBC Holdings plc, and the separately incorporated group of service companies ('ServCo Group').*
13 *Includes the impact of goodwill impairment. As per Group accounting policy, HSBC's cash-generating units are based on geographical regions subdivided by global business, except for Global Banking and Markets, for which goodwill is monitored on a global basis.*
14 *Amounts are non-additive across geographical regions due to goodwill impairment recognised on the Global Banking and Markets cash-generating unit, which is monitored on a global basis.*

Other information

Taxes paid by region and country/territory

The following table reflects a geographical view of HSBC's operations.

Taxes paid by HSBC relate to HSBC's own tax liabilities including tax on profits earned, employer taxes, the bank levy and other duties/levies such as stamp duty. Numbers are reported on a cash flow basis.

Taxes paid by country/territory

	2019	2018	2017
	$m	$m	$m
Europe	**3,077**	3,398	3,340
– UK	**2,468**	2,693	2,654
– *of which: HSBC Holdings*	***889***	*832*	*1,078*
– France	**476**	536	530
– Germany	**116**	111	140
– Switzerland	**(7)**	13	(67)
– other	**24**	45	83
Asia	**1,487**	2,742	2,277
– Hong Kong	**248**	1,398	1,043
– Australia	**180**	140	142
– mainland China	**76**	235	227
– India	**398**	384	297
– Indonesia	**50**	44	84
– Malaysia	**119**	94	81
– Singapore	**104**	88	64
– Taiwan	**68**	53	42
– other	**244**	306	297
Middle East and North Africa	**313**	234	419
– Saudi Arabia	**—**	—	170
– UAE	**66**	67	101
– Egypt	**136**	104	58
– Turkey	**42**	—	—
– other	**69**	63	90
North America	**314**	399	317
– US	**152**	162	134
– Canada	**162**	240	182
– other	**—**	(3)	1
Latin America	**400**	281	443
– Mexico	**179**	90	129
– Argentina	**188**	163	278
– other	**33**	191	314
– *of which: Brazil*	***21***	*28*	*36*
Year ended 31 Dec	**5,591**	7,054	6,796

The tax we paid during 2019 was lower than in 2018 due to differences in the timing of payments, particularly in Hong Kong.

Further details on our approach to tax are provided on page 25.

Carbon dioxide emissions

We report our carbon emissions following the Greenhouse Gas Protocol, which incorporates the scope 2 market-based emission methodology. We report carbon dioxide emissions resulting from energy use in our buildings and employees' business travel.

In 2019, we collected data on energy use and business travel for our operations in 28 countries and territories, which accounted for approximately 94% of our FTEs. To estimate the emissions of our operations in countries and territories where we have operational control and a small presence, we scale up the emissions data from 94% to 100%.

We then apply emission uplift rates to reflect uncertainty concerning the quality and coverage of emission measurement and estimation. The rates are 4% for electricity, 10% for other energy and 6% for business travel. This is consistent both with the Intergovernmental Panel on Climate Change's *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* and our internal analysis of data coverage and quality.

Further details on our methodology can be found in our 'CO2 Emissions Reporting Guidance 2019' on our website at www.hsbc.com/our-approach/esg-information/esg-reporting-and-policies as relevant environmental key facts.

Carbon dioxide emissions in tonnes

	2019	2018
Total	**530,000**	559,000
From energy[1]	**414,000**	437,000
Included energy UK	**10,400**	9,700
From travel[1]	**116,000**	122,000

1 *Our carbon dioxide reporting year runs from October to September. PwC provided limited assurance over our carbon dioxide emissions in accordance with International Standard on Assurance Engagement 3000 (Revised) 'Assurance Engagements other than Audits and Reviews of Historical Financial Information'. This can be found on our website at www.hsbc.com/our-approach/esg-information/esg-reporting-and-policies.*

Carbon dioxide emissions in tonnes per FTE

	2019	2018
Total	**2.26**	2.39
From energy	**1.76**	1.87
From travel	**0.5**	0.52

The reduction in our carbon emissions continues to be driven by energy efficiency initiatives, as well as our procurement of electricity from renewable sources under power purchase agreements.

Energy consumption in GWh

	2019	2018
Total Group	**1,050**	1,092
UK only	**281**	279

As energy takes 78% of our carbon emissions, we continue to focus on energy reduction and efficiency projects. During 2019, we implemented over 810 energy conservation measures that amount to an estimated energy avoidance in excess of 22M kWh.

Risk

Our approach to risk

Our risk appetite

We have maintained a consistent risk profile throughout our history. This is central to our business and strategy. We recognise the importance of a strong culture, which refers to our shared attitudes, values and standards that shape behaviours related to risk awareness, risk taking and risk management. All our people are responsible for the management of risk, with the ultimate accountability residing with the Board.

We seek to build our business for the long term by balancing social, environmental and economic considerations in the decisions we make. Our strategic priorities are underpinned by our endeavour to operate in a sustainable way. This helps us to carry out our social responsibility and manage the risk profile of the business. We are committed to managing and mitigating climate-related risks, both physical and transition, and continue to incorporate consideration of these into how we manage and oversee risks internally and with our customers.

The following principles guide the Group's overarching appetite for risk and determine how our businesses and risks are managed.

Financial position

- We aim to maintain a strong capital position, defined by regulatory and internal capital ratios.
- We carry out liquidity and funding management for each operating entity, on a stand-alone basis.

Operating model

- We seek to generate returns in line with a conservative risk appetite and strong risk management capability.
- We aim to deliver sustainable earnings and consistent returns for shareholders.

Business practice

- We have zero tolerance for any of our people knowingly engaging in any business, activity or association where foreseeable reputational risk or damage has not been considered and/or mitigated.
- We have no appetite for deliberately or knowingly causing detriment to consumers, or incurring a breach of the letter or spirit of regulatory requirements.
- We have no appetite for inappropriate market conduct by any member of staff or by any Group business.

Enterprise-wide application

Our risk appetite encapsulates the consideration of financial and non-financial risks. We define financial risk as the risk of a financial loss as a result of business activities. We actively take these types of risks to maximise shareholder value and profits. Non-financial risk is defined as the risk to achieving our strategy or objectives as a result of inadequate or failed internal processes, people and systems, or from external events.

Our risk appetite is expressed in both quantitative and qualitative terms and applied at the global business level, at the regional level and to material operating entities. Every three years, the Global Risk function commissions an external independent firm to review the Group's approach to risk appetite and to help ensure that it remains in line with market best practice and regulatory expectations. The exercise carried out in 2019 confirmed the Group's risk appetite statement ('RAS') remains aligned to best practices, regulatory expectations and strategic goals. The review highlighted strengths across our governance and risk appetite reporting, and noted that our risk appetite continues to evolve and expand its scope as part of our regular review process.

The Board reviews and approves the Group's risk appetite twice a year to make sure it remains fit for purpose. The Group's risk appetite is considered, developed and enhanced through:

- an alignment with our strategy, purpose, values and customer needs;
- trends highlighted in other Group risk reports, such as the 'Risk map' and 'Top and emerging risks';
- communication with risk stewards on the developing risk landscape;
- strength of our capital, liquidity and balance sheet;
- compliance with applicable laws and regulations;
- effectiveness of the applicable control environment to mitigate risk, informed by risk ratings from risk control assessments;
- functionality, capacity and resilience of available systems to manage risk; and
- the level of available staff with the required competencies to manage risks.

We formally articulate our risk appetite through our RAS, which is approved by the Board on the recommendation of the Group Risk Committee ('GRC'). Setting out our risk appetite ensures that planned business activities provide an appropriate balance of return for the risk we are taking, and that we agree a suitable level of risk for our strategy. In this way, risk appetite informs our financial planning process and helps senior management to allocate capital to business activities, services and products.

The RAS consists of qualitative statements and quantitative metrics, covering financial and non-financial risks. It is fundamental to the development of business line strategies, strategic and business planning and senior management balanced scorecards. At a Group level, performance against the RAS is reported to the Risk Management Meeting of the Group Management Board ('RMM') on a monthly basis so that any actual performance that falls outside the approved risk appetite is discussed and appropriate mitigating actions are determined. This reporting allows risks to be promptly identified and mitigated, and informs risk-adjusted remuneration to drive a strong risk culture.

Each global business, region and strategically important country and territory is required to have its own RAS, which is monitored to help ensure it remains aligned with the Group's. Each RAS and business activity is guided and underpinned by qualitative principles and/or quantitative metrics.

Risk management

We recognise that the primary role of risk management is to protect our customers, business, colleagues, shareholders and the communities that we serve, while ensuring we are able to support our strategy and provide sustainable growth. This is supported through our three lines of defence model described on page 75. As we move into a revised business focus and carry out a major change programme, it will be critical for us to ensure we use active risk management to manage the execution risks.

We will also perform periodic risk assessments, including against strategies, to help ensure retention of key personnel for our continued safe operation.

We use a comprehensive risk management framework across the organisation and across all risk types, underpinned by the Group's culture and values. This outlines the key principles, policies and practices that we employ in managing material risks, both financial and non-financial.

The framework fosters continual monitoring, promotes risk awareness and encourages sound operational and strategic decision making. It also ensures a consistent approach to identifying, assessing, managing and reporting the risks we accept and incur in our activities.

Our risk management framework

The following diagram and descriptions summarise key aspects of the risk management framework, including governance and structure, our risk management tools and our culture, which together help align employee behaviour with our risk appetite.

Key components of our risk management framework

HSBC Values and risk culture		
Risk governance	Non-executive risk governance	The Board approves the Group's risk appetite, plans and performance targets. It sets the 'tone from the top' and is advised by the Group Risk Committee (see page 166).
	Executive risk governance	Our executive risk governance structure is responsible for the enterprise-wide management of all risks, including key policies and frameworks for the management of risk within the Group (see pages 75 and 83).
Roles and responsibilities	Three lines of defence model	Our 'three lines of defence' model defines roles and responsibilities for risk management. An independent Global Risk function helps ensure the necessary balance in risk/return decisions (see page 75).
Processes and tools	Risk appetite Enterprise-wide risk management tools Active risk management: identification/assessment, monitoring, management and reporting	The Group has processes in place to identify/assess, monitor, manage and report risks to help ensure we remain within our risk appetite.
Internal controls	Policies and procedures	Policies and procedures define the minimum requirements for the controls required to manage our risks.
	Control activities	Operational risk management defines minimum standards and processes for managing operational risks and internal controls.
	Systems and infrastructure	The Group has systems and/or processes that support the identification, capture and exchange of information to support risk management activities.

Risk governance

The Board has ultimate responsibility for the effective management of risk and approves our risk appetite. In 2019, it was advised on risk-related matters by the GRC and the Financial System Vulnerabilities Committee ('FSVC'). The final meeting of the FSVC was held on 15 January 2020, with responsibility for oversight of financial crime risk transferred to the GRC, which will continue to advise the Board on risk-related matters.

The Group Chief Risk Officer, supported by the RMM, holds executive accountability for the ongoing monitoring, assessment and management of the risk environment and the effectiveness of the risk management framework.

The Group Chief Risk Officer is also responsible for oversight of reputational risk, with the support of the Group Reputational Risk Committee. The Group Reputational Risk Committee considers matters arising from customers, transactions and third parties that either present a serious potential reputational risk to the Group or merit a Group-led decision to ensure a consistent risk management approach across the regions, global businesses and global functions. Our reputational risk policy sets out our risk appetite and the principles for managing reputational risk. Further details can be found under the 'Reputational risk' section of www.hsbc.com/our-approach/risk-and-responsibility.

The management of financial crime risk resides with the Group Chief Compliance Officer. He is supported by the Financial Crime Risk Management Meeting, as described under 'Financial crime risk management' on page 145.

Day-to-day responsibility for risk management is delegated to senior managers with individual accountability for decision making. All our people have a role to play in risk management. These roles are defined using the three lines of defence model, which takes into account our business and functional structures as described in the following commentary, 'Our responsibilities'.

We use a defined executive risk governance structure to help ensure there is appropriate oversight and accountability of risk, which facilitates reporting and escalation to the RMM. This structure is summarised in the following table.

Governance structure for the management of risk

Authority	Membership	Responsibilities include:
Risk Management Meeting of the Group Management Board	Group Chief Risk Officer Chief Legal Officer Group Chief Executive Group Chief Financial Officer All other Group Managing Directors	• Supporting the Group Chief Risk Officer in exercising Board-delegated risk management authority • Overseeing the implementation of risk appetite and the enterprise risk management framework • Forward-looking assessment of the risk environment, analysing possible risk impacts and taking appropriate action • Monitoring all categories of risk and determining appropriate mitigating action • Promoting a supportive Group culture in relation to risk management and conduct
Global Risk Management Board	Group Chief Risk Officer Chief risk officers of HSBC's global businesses and regions Heads of Global Risk sub-functions	• Supporting the Group Chief Risk Officer in providing strategic direction for the Global Risk function, setting priorities and providing oversight • Overseeing a consistent approach to accountability for, and mitigation of, risk across the Global Risk function
Global business/regional risk management meetings	Global business/regional chief risk officer Global business/regional chief executive officer Global business/regional chief financial officer Global business/regional heads of global functions	• Supporting the Chief Risk Officer in exercising Board-delegated risk management authority • Forward-looking assessment of the risk environment, analysing the possible risk impact and taking appropriate action • Implementation of risk appetite and the enterprise risk management framework • Monitoring all categories of risk and determining appropriate mitigating actions • Embedding a supportive culture in relation to risk management and controls

The Board committees with responsibility for oversight of risk-related matters are set out on page 171.

Our responsibilities

All our people are responsible for identifying and managing risk within the scope of their roles as part of the three lines of defence model.

Three lines of defence

To create a robust control environment to manage risks, we use an activity-based three lines of defence model. This model delineates management accountabilities and responsibilities for risk management and the control environment.

The model underpins our approach to risk management by clarifying responsibility and encouraging collaboration, as well as enabling efficient coordination of risk and control activities. The three lines of defence are summarised below:

- The first line of defence owns the risks and is responsible for identifying, recording, reporting and managing them in line with risk appetite, and ensuring that the right controls and assessments are in place to mitigate them.
- The second line of defence challenges the first line of defence on effective risk management, and provides advice and guidance in relation to the risk.
- The third line of defence is our Global Internal Audit function, which provides independent assurance that our risk management approach and processes are designed and operating effectively.

Global Risk function

Our Global Risk function, headed by the Group Chief Risk Officer, is responsible for the Group's risk management framework. This responsibility includes establishing global policy, monitoring risk profiles, and forward-looking risk identification and management. Global Risk is made up of sub-functions covering all risks to our business. Global Risk forms part of the second line of defence. It is independent from the global businesses, including sales and trading functions, to provide challenge, appropriate oversight and balance in risk/return decisions.

Responsibility for minimising both financial and non-financial risk lies with our people. They are required to manage the risks of the business and operational activities for which they are responsible. We maintain adequate oversight of our risks through our various specialist risk stewards and the collective accountability held by our chief risk officers.

Non-financial risk includes some of the most material risks we face, such as cyber-attacks, the loss of data and poor conduct outcomes. Actively managing non-financial risk is crucial to serving our customers effectively and having a positive impact on society. During 2019, we continued to strengthen the control environment and our approach to the management of non-financial risk, as set out in our operational risk management framework. The approach outlines non-financial risk governance and risk appetite, and provides a single view of the non-financial risks that matter the most, and associated controls. It incorporates a risk management system designed to enable the active management of non-financial risk. Our ongoing focus is on simplifying our approach to non-financial risk management, while driving more effective oversight and better end-to-end identification and management of non-financial risks. This is overseen by the Operational Risk function, headed by the Group Head of Operational Risk.

Stress testing and recovery planning

We operate a wide-ranging stress testing programme that is a key part of our risk management and capital planning. Stress testing provides management with key insights into the impact of severely adverse events on the Group, and provides confidence to regulators on the Group's financial stability.

Our stress testing programme assesses our capital strength through a rigorous examination of our resilience to external shocks. As well as undertaking regulatory-driven stress tests, we conduct our own internal stress tests in order to understand the nature and level of all material risks, quantify the impact of such risks and develop plausible business-as-usual mitigating actions.

Many of our regulators – including the Bank of England ('BoE'), the US Federal Reserve Board ('FRB') and the Hong Kong Monetary Authority ('HKMA') – use stress testing as a prudential regulatory tool, and the Group has focused significant governance and resources to meet their requirements.

Regulatory stress test: 2019 Bank of England stress test results

In 2019, the Group participated in the concurrent annual cyclical scenario and the biennial exploratory scenario stress tests, run by the BoE.

The annual cyclical scenario, as published by the BoE, featured a synchronised economic downturn that impacted a number of key regions including Hong Kong. The Group's stress results showed that our capital ratios, after taking account of CRD IV restrictions and strategic management actions, exceeded the BoE's requirements on both an IFRS 9 transitional and non-transitional basis. This outcome reflected our strong capital position, conservative risk appetite and diversified geographical and business mix.

From a common equity tier 1 ('CET1') position of 14.0% at 31 December 2018, the Group stress CET1 ratio reached a low point of 8.9% (after management actions), which was above the hurdle rates of 7.7%. The tier 1 leverage ratio remained above the minimum requirement throughout the stress testing period.

The 2019 biennial exploratory stress scenario is underway and explores the implications of a severe and broad-based liquidity shock affecting major UK banks simultaneously over a 12-month horizon.

Internal stress tests

Our internal capital assessment uses a range of stress scenarios that explore risks identified by management. They include potential adverse macroeconomic, geopolitical and operational risk events, as well as other potential events that are specific to HSBC.

The selection of stress scenarios is based upon the output of our identified top and emerging risks and our risk appetite. Stress testing analysis helps management understand the nature and extent of vulnerabilities to which the Group is exposed. Using this information, management decides whether risks can or should be mitigated through management actions or, if they were to crystallise, be absorbed through capital. This in turn informs decisions about preferred capital levels and allocations.

In addition to the Group-wide stress testing scenarios, each major subsidiary conducts regular macroeconomic and event-driven scenario analyses specific to its region. They also participate, as required, in the regulatory stress testing programmes of the jurisdictions in which they operate, such as the Comprehensive Capital Analysis and Review and Dodd-Frank Act Stress Testing programmes in the US, and the stress tests of the HKMA. Global functions and businesses also perform bespoke stress testing to inform their assessment of risks to potential scenarios.

The Group stress testing programme is overseen by the GRC and results are reported, where appropriate, to the RMM and GRC.

We also conduct reverse stress tests each year at Group level and, where required, at subsidiary entity level to understand potential extreme conditions that would make our business model non-viable. Reverse stress testing identifies potential stresses and vulnerabilities we might face, and helps inform early warning triggers, management actions and contingency plans designed to mitigate risks.

Recovery and resolution plans

Recovery and resolution plans form part of the integral framework safeguarding the Group's financial stability. The Group recovery plan together with stress testing help us understand the likely outcomes of adverse business or economic conditions and in the identification of appropriate risk mitigating actions. The Group is committed to further developing its recovery and resolution capabilities in line with the BoE resolvability assessment framework requirements.

Key developments in 2019

In 2019, it was announced that Marc Moses was stepping down from his role of Group Chief Risk Officer on 31 December 2019. Pam Kaur, who was Head of Wholesale Market and Credit Risk, was appointed as Group Chief Risk Officer with effect from 1 January 2020. Marc assisted with a handover of his executive responsibilities as Group Chief Risk Officer and will continue to provide support in advising the Group Chief Executive in a non-executive capacity until he formally retires from the Group on 9 December 2020.

During the year, we also undertook a number of initiatives to enhance our approach to the management of risk. We continued efforts to simplify and enhance how we manage risk. We simplified the Group risk taxonomy by consolidating certain existing risks into broader categories. These changes streamlined risk reporting and promoted common language in our risk management approach. These changes included:

- We formed a Resilience Risk sub-function to reflect the growing regulatory importance of being able to ensure our operations continue to function when an operational disturbance occurs. Resilience Risk was formed to simplify the way we interact with our stakeholders and to deliver clear, consistent and credible responses globally. The leadership of the Resilience Risk function is the responsibility of the Global Head of Resilience Risk. For further details on resilience risk, see page 143.
- We created a combined Reputational and Sustainability Risk team to further improve the way we manage these risks. For further information on sustainability risk, see 'Our approach to sustainability risk management' on page 40 of our *ESG Update*.
- The approach to capital risk management is evolving with the creation of a dedicated second line of defence function, which will provide independent oversight of capital management activities. This will operate across the Group focusing on both adequacy of capital and sufficiency of returns.
- We have placed greater focus on our model risk activities. To reflect this, we created the role of Chief Model Risk Officer. This has been filled on an interim basis while we seek a permanent role holder.

Further simplification is expected to continue during 2020, including the combining of our two key risk management frameworks.

Top and emerging risks

We use a top and emerging risks process to provide a forward-looking view of issues with the potential to threaten the execution of our strategy or operations over the medium to long term.

We proactively assess the internal and external risk environment, as well as review the themes identified across our regions and global businesses, for any risks that may require global escalation, updating our top and emerging risks as necessary.

We define a 'top risk' as a thematic issue that may form and crystallise within one year, and which has the potential to materially affect the Group's financial results, reputation or business model. It may arise across any combination of risk types, regions or global businesses. The impact may be well understood by senior management and some mitigating actions may already be in place. Stress tests of varying granularity may also have been carried out to assess the impact.

An 'emerging risk' is a thematic issue with large unknown components that may form and crystallise beyond a one-year time horizon. If it were to materialise, it could have a material effect on our long-term strategy, profitability and/or reputation. Existing mitigation plans are likely to be minimal, reflecting the uncertain nature of these risks at this stage. Some high-level analysis and/or stress testing may have been carried out to assess the potential impact.

Our current top and emerging risks are as follows.

Externally driven

Economic outlook and capital flows

Global manufacturing was in recession in 2019 as the Chinese economy slowed, trade and geopolitical tensions continued, and key sectors like automotive and information technology suffered from idiosyncratic issues. This had an impact on trade-reliant regions including the European Union ('EU'), while the US benefited from a resilient consumer. Early in 2019, global central banks abandoned their previous intentions to tighten monetary policy gradually in order to underpin economic activity.

These and other factors contributed to an increase in market optimism towards the end of 2019 that global economic activity may be bottoming out.

However, a significant degree of caution is warranted. US-China relations are likely to remain tense as negotiations move to a second phase, covering aspects like intellectual property. Changing global consumption patterns and the introduction of stricter environmental standards may continue to hamper the automotive and other traditional industries. The net impact on trade flows could be negative, and may damage HSBC's traditional lines of business.

The coronavirus outbreak is a new emerging risk. In a baseline scenario, the outbreak should be contained but may lead to a slowdown in China's economic activity during the first quarter of 2020, followed by a rebound in the remainder of the year, helped by an increased policy stimulus in response to the outbreak. However, there is a risk that containment proves more challenging, and the resulting socio-economic disruption is more extensive and prolonged, extending beyond China. Since the beginning of January, the coronavirus outbreak has caused disruption to our staff, suppliers and customers, particularly in mainland China and Hong Kong. Should the coronavirus continue to cause disruption to economic activity in Hong Kong and mainland China through 2020, there could be adverse impacts on income due to lower lending and transaction volumes, and insurance manufacturing revenue, which may impact our RWAs and capital position. We have invoked our business continuity plans to help ensure the safety and well-being of our staff, as well as our capability to support our customers and maintain our business operations.

Elsewhere, there could also be other downside idiosyncratic risks in emerging markets, which could include a disorderly sovereign debt restructuring in Argentina.

It is anticipated that oil prices are likely to remain range-bound in 2020, with occasional spikes in volatility.

The run-up to the US Presidential Election in November may be a key factor in causing market volatility. Persistent social tensions in Hong Kong may disrupt local economy and business sentiment further. In Europe, political uncertainty around the ultimate shape of UK-EU relations may lead to occasional periods of market volatility and economic uncertainty. We believe our businesses are well placed to weather risks, but would nevertheless be affected by severe shocks.

Mitigating actions

- We actively assess the impact of economic developments in key markets on specific customer segments and portfolios and take appropriate mitigating actions. These actions include revising risk appetite and/or limits, as circumstances evolve.
- We use internal stress testing and scenario analysis, as well as regulatory stress test programmes, to evaluate the potential impact of macroeconomic shocks on our businesses and portfolios. Our approach to stress testing is described on page 75.
- We have carried out detailed reviews and stress tests of our wholesale credit, retail credit and trading portfolios to determine those sectors and customers most vulnerable to the UK's exit from the EU, in order to manage and mitigate this risk proactively.
- In Hong Kong we are actively monitoring our credit and trading portfolios. We have also performed internal stress tests and scenario analysis. We continue to support our customers and manage risk and exposures as appropriate.

Geopolitical risk

Our operations and portfolios are exposed to risks associated with political instability, civil unrest and military conflict, which could lead to disruption of our operations, physical risk to our staff and/or physical damage to our assets.

Global tensions over trade, technology and ideology can manifest themselves in divergent regulatory, standards and compliance regimes, presenting long-term strategic challenges for multinational businesses.

In 2019, societies in nearly all the markets in which we operate were affected by a series of common issues, which are likely to continue in 2020. Migration, income inequality, corruption, climate change and terrorism are examples of those issues, which have led to discontent in the markets in which we operate. This discontent is reflected in increased protest activity and challenging traditional political structures. This level of geopolitical risk is expected to remain heightened throughout 2020.

The UK formally left the EU on 31 January 2020 and entered a transition period until 31 December 2020. The top risk is that the UK fails to agree a trade deal with the EU and commits to its pledge to not extend the 11-month transition period. This scenario would likely renew economic and financial uncertainty.

In 2019, Hong Kong experienced heightened levels of domestic social unrest and, if prolonged, there could be broader economic ramifications, affecting several of the Group's portfolios.

In the US, there will be political uncertainty and increased partisanship, as the US Presidential election campaign was preceded by a presidential impeachment trial.

More broadly, intensified US-China competition and occasional confrontation are expected to feature prominently in 2020, despite the 'phase one' trade deal, as negotiations move to phase two, which covers aspects such as intellectual property.

The impact of US-China competition may also be felt in our other markets, particularly in Europe. New regulations from both the US and China will likely increase scrutiny of companies involved in cross-border data transfers and limit the use of foreign technology in private and national infrastructure. Combined, these regulations could drive the bifurcation of US and Chinese technology sectors, standards and supply chain ecosystems, which may limit innovation and drive up production and compliance costs for firms operating in both markets.

In the Middle East, Iran is expected to remain central to regional security in 2020. The risk of escalation remains high, and any mismanaged incidents would have significant regional security and global market repercussions. Continued geopolitical risks have negative implications for economic growth. Central banks in key markets are likely to see little need to raise their policy interest rates above current levels and may even resort to lowering rates to accommodate the risks to growth.

Mitigating actions

- We continually monitor the geopolitical outlook, in particular in countries where we have material exposures and/or a physical presence. We have also established dedicated forums to monitor geopolitical developments.
- We use internal stress tests and scenario analysis as well as regulatory stress test programmes to adjust limits and exposures to reflect our risk appetite and mitigate risks as appropriate. Our internal credit risk ratings of sovereign counterparties take into account geopolitical developments that could potentially disrupt our portfolios and businesses.
- We continue to carry out contingency planning following the UK's exit from the EU and we are assessing the potential impact on our portfolios, operations and staff. This includes the increased possibility of an exit without a comprehensive trade agreement.
- We have taken steps to enhance physical security in those geographical areas deemed to be at high risk from terrorism and military conflicts.
- In Hong Kong, we are actively monitoring our credit portfolio. We have performed internal stress tests and scenario analysis. We continue to support our customers and manage risk and exposures as appropriate.

The credit cycle

Dovish global monetary policies remained accommodative through much of 2019, and share indices hit record highs. The US FRB, European Central Bank ('ECB') and the Bank of Japan ('BoJ') are expected to keep global liquidity abundant in 2020. However, there are signs of stress in parts of the credit market, as shown by the FRB's interventions in the repo market. There has been a surge in borrowing by entities in the lowest investment grade segment, which now makes up 55% of the total universe of rated corporate bonds. Profit margins at US non-financial corporations are falling, as are job openings, both of which could foreshadow a turn in the credit cycle. Corporate credit quality in Europe is also deteriorating, leading to some analysts to predict a credit bear market largely centred on industrial sectors. However, sterling borrowers may suffer less than their euro counterparts, given UK policymakers' somewhat greater room for policy stimulus, and also the UK economy's lesser concentration in manufacturing, as opposed to services.

Chinese authorities are more concerned than in the past about increasing debt, but they are still expected to step up stimulus measures, particularly as a result of the coronavirus outbreak. Chinese economic stimulus could act to limit broader macroeconomic downside risks to a degree. Debt is high in some emerging markets, with specific events like an Argentine debt restructuring possibly having wider implications.

Mitigating actions

- We closely monitor economic developments in key markets and sectors and undertake scenario analysis. This helps enable us to take portfolio actions where necessary, including enhanced monitoring, amending our risk appetite and/or reducing limits and exposures.
- We stress test portfolios of particular concern to identify sensitivity to loss under a range of scenarios, with management actions being taken to rebalance exposures and manage risk appetite where necessary.
- We undertake regular reviews of key portfolios to help ensure that individual customer or portfolio risks are understood and our ability to manage the level of facilities offered through any downturn is appropriate.

Cyber threat and unauthorised access to systems

We and other organisations continue to operate in a challenging cyber threat environment, which requires ongoing investment in business and technical controls to defend against these threats.

Key threats include unauthorised access to online customer accounts, advanced malware attacks and distributed denial of service attacks.

Mitigating actions

- We continually evaluate threat levels for the most prevalent attack types and their potential outcomes. To further protect our business and our customers, we strengthened our controls to reduce the likelihood and impact of advanced malware, data leakage, infiltration of payment systems and denial of service attacks. We continued to enhance our cybersecurity capabilities, including threat detection and access control as well as back-up and recovery. An important part of our defence strategy is ensuring our people remain aware of cybersecurity issues and know how to report incidents.
- Cyber risk is a priority area for the Board. We report and review cyber risk and control effectiveness quarterly at executive and non-executive Board level. We also report it across the global businesses, functions and regions to help ensure appropriate visibility and governance of the risk and mitigating actions.
- We participate globally in several industry bodies and working groups to share information about tactics employed by cyber-crime groups and to collaborate in fighting, detecting and preventing cyber-attacks on financial organisations.

Regulatory developments including conduct, with adverse impact on business model and profitability

Financial service providers continue to face demanding regulatory and supervisory requirements, particularly in the areas of capital and liquidity management, conduct of business, financial crime, internal control frameworks, the use of models, digital, cyber, sustainability and the integrity of financial services delivery. HSBC is particularly affected by regulatory change, given the geographic scope of the Group's operations.

The competitive landscape in which the Group operates may be significantly altered by future regulatory changes and government intervention. Regulatory changes, including any resulting from the UK's exit from the EU, may affect the activities of the Group as a whole, or of some or all of its principal subsidiaries. This could include the loss of passporting rights and free movement of services, depending on the final terms of the future relationship between the UK and the EU. Changes to business models and structures will be necessary to accommodate any such restrictions.

As described in Note 34 on the financial statements, we continue to be subject to a number of material legal proceedings, regulatory actions and investigations, including our January 2018 deferred prosecution agreement with the US Department of Justice ('DoJ') arising from its investigation into HSBC's historical foreign exchange activities (the 'FX DPA').

Mitigating actions

- We continue to enhance our horizon scanning capabilities to identify new developments and regulatory publications. We are investing in – and rolling out – a new system that collects regulatory change information from multiple sources, to drive clear accountability and responsibility for the implementation and oversight of regulatory development.
- Relevant governance forums within the Group oversee change programmes. Significant regulatory programmes are overseen by the Group Change Committee.
- We are fully engaged, wherever appropriate, with governments and regulators in the countries in which we operate, to help ensure that new proposals achieve their policy objectives and can be implemented effectively. We hold regular meetings with all relevant authorities to discuss strategic contingency plans across the range of regulatory priorities.
- We have invested in significant resources and have taken, and will continue to take, a number of steps to improve our compliance systems and controls relating to our activities in global markets. These include enhancements to pricing and disclosure, order management and trade execution; trade, voice and audio surveillance; front office supervision; and improvements to our enforcement and discipline framework for employee misconduct. For further details, see 'Regulatory compliance risk management' on page 144.

Financial crime risk environment

Financial institutions remain under considerable regulatory scrutiny regarding their ability to prevent and detect financial crime. There is an increased regulatory focus on fraud and anti-bribery and corruption controls, with expectations that banks should do more to protect customers from fraud and identify and manage bribery and corruption risks within our businesses. Financial crime threats continue to evolve, often in tandem with geopolitical developments. The highly speculative, volatile and opaque nature of virtual currencies, including the pace of development in this area, create challenges in effectively managing financial crime risks. The evolving regulatory environment continues to present execution challenges. We continue to see increasing challenges presented by national data privacy requirements in a global organisation, which may affect our ability to effectively manage financial crime risks.

In December 2012, among other agreements, HSBC Holdings plc ('HSBC Holdings') agreed to an undertaking with the UK Financial Services Authority, which was replaced by a Direction issued by the UK Financial Conduct Authority ('FCA') in 2013, and consented to a cease-and-desist order with the US Federal Reserve Board ('FRB'), both of which contained certain forward-looking anti-money laundering ('AML') and sanctions-related obligations. HSBC also agreed to retain an independent compliance monitor (who is, for FCA purposes, a 'Skilled Person' under section 166 of the Financial Services and Markets Act and, for FRB purposes, an 'Independent Consultant') to produce periodic assessments of the Group's AML and sanctions compliance programme (the 'Skilled Person/Independent Consultant'). In December 2012, HSBC Holdings also entered into an agreement with the Office of Foreign Assets Control ('OFAC') regarding historical transactions involving parties subject to OFAC sanctions.

Reflective of HSBC's significant progress in strengthening its financial crime risk management capabilities, HSBC's engagement with the current Skilled Person will be terminated and a new Skilled Person with a narrower mandate will be appointed to assess the remaining areas that require further work in order for HSBC to transition fully to business-as-usual financial crime risk management. The Independent Consultant will continue to carry out an annual OFAC compliance review at the FRB's discretion. The role of the Skilled Person/Independent Consultant is discussed on page 145.

Mitigating actions

- We continue to enhance our financial crime risk management capabilities. We are investing in next generation capabilities to fight financial crime through the application of advanced analytics and artificial intelligence.
- We are strengthening and investing in our fraud controls, to introduce next generation anti-fraud capabilities to protect both customers and the Group.
- We continue to embed our improved anti-bribery and corruption policies and controls, focusing on conduct.
- We continue to educate our staff on emerging digital landscapes and associated risks.
- We have developed procedures and controls to help manage the risks associated with direct and indirect exposure to virtual currencies, and we continue to monitor external developments.
- We continue to work with jurisdictions and relevant international bodies to address data privacy challenges through international standards, guidance, and legislation to help enable effective management of financial crime risk.
- We continue to take steps designed to ensure that the reforms we have put in place are both effective and sustainable over the long term.

Ibor transition

Interbank offered rates ('Ibors') are used to set interest rates on hundreds of trillions of US dollars of different types of financial transactions and are used extensively for valuation purposes, risk measurement and performance benchmarking.

Following the announcement by the UK's FCA in July 2017 that it will no longer persuade or require banks to submit rates for the London interbank offered rate ('Libor') after 2021, the national working groups for the affected currencies were tasked with facilitating an orderly transition of the relevant Libors to their chosen replacement rates. The euro national working group is also responsible for facilitating an orderly transition of the Euro Overnight Index Average ('Eonia') to the euro short-term rate ('€STER') as a result of Eonia not being made compliant with the EU Benchmark Regulation.

The process of developing products that reference the replacement rates and transitioning legacy Ibor contracts exposes HSBC to material execution, conduct, contractual and financial risks.

Mitigating actions

- We have a global programme to facilitate an orderly transition from Libor and Eonia for our business and our clients. The execution of this programme is overseen by the Group Chief Risk Officer.
- Our programme is focused on developing alternative rate products that reference the proposed replacement rates and making them available to customers. It is also focused on the supporting processes and systems to developing these products. At the same time, we are developing the capability to transition, through repapering, outstanding Libor and Eonia contracts.
- We have identified a number of execution, conduct, litigation and financial risks and are in the process of addressing these. We continue to analyse these risks and their evolution over the course of the transition.
- We will continue to engage with industry participants and the official sector to support an orderly transition.

Climate-related risks

Climate change can have an impact across HSBC's risk taxonomy through both transition and physical channels. Transition risk can arise from the move to a low-carbon economy, such as through policy, regulatory and technological changes. Physical risk can arise through increasing severity and/or frequency of severe weather or other climatic events, such as rising sea levels and flooding.

These have the potential to cause both idiosyncratic and systemic risks, resulting in potential financial impacts for HSBC. Impacts could materialise through higher risk-weighted assets over the longer term, greater transactional losses and/or increased capital requirements.

The awareness of climate risk, regulatory expectations and reputational risk have all heightened through 2019. The exposure we have to the risk and materialisation of the risk have not materially heightened.

Mitigating actions

- We have an established governance framework to help ensure that risks associated with climate change are escalated to and discussed at the Board, as appropriate, in a timely manner. At each meeting, the Board is presented with a risk profile report, which includes key issues and common themes identified across the enterprise risk reports. In 2019, the Group Chief Risk Officer raised concerns directly by providing verbal or written updates on a regular basis to the Board and Group Management Board.
- We are in the process of incorporating climate-related risk, both physical and transition, into how we manage and oversee risks. We have a Board-approved risk appetite statement that contains a qualitative statement on our approach to climate risk, which we intend to further enhance in 2020.
- We continue to enhance our approach to climate-related risks, and develop and embed how we measure, monitor and manage it. An internal climate risk working group provides oversight by seeking to develop policy and limit frameworks to achieve desired portfolios over time, and protect the Group from climate-related risks that are outside of risk appetite.
- We have assigned responsibility to relevant senior management function holders, in line with the Prudential Regulation Authority ('PRA') and regulatory requirements. Climate risk has been brought under Reputational and Sustainability Risk to promote alignment. Risk stewards are expected to consider physical and transition risks from climate change relevant to their specific risk function.
- We are considering transition risk from three perspectives: understanding our exposure to transition risk; understanding how our clients are managing transition risk; and measuring our client's progress in reducing carbon emissions. We are carrying out sector-specific scenario analysis and continue to source data. For wholesale credit portfolios, we are using questionnaires to assess transition risk across six sectors and 11 countries (for further information, see our TCFD disclosure on page 22). For our retail credit portfolio, we review mortgage exposures on a geographical basis in respect of natural hazard risk and mitigants. For operational risk, we are working with our property insurers to understand geographical exposure of the property portfolio and assess effectiveness of controls for design resilience, operations and business continuity.
- We have public and internal policies for certain sectors that pose sustainability risk to our business. These include policies on energy, agricultural commodities, chemicals, forestry, mining and metals, and UNESCO World Heritage Sites and Ramsar-designated wetlands. We are working with the PRA, FCA and the wider industry through the Climate Financial Risk Forum to help ensure we remain aware of and drive emerging best practice.
- We continue to proactively engage our customers, investors and regulators in compiling and disclosing the data and

information needed to manage the risks in transition to a low-carbon economy. This will be a key area of focus during 2020.

Internally driven

IT systems infrastructure and resilience

We are committed to investing in the reliability and resilience of our IT systems and critical services. We do so to protect our customers and ensure they do not receive disruption to services, which could result in reputational and regulatory damage.

Mitigating actions

- We continue to invest in transforming how software solutions are developed, delivered and maintained, with a particular focus on providing high-quality, stable and secure services. We are materially improving system resilience and service continuity testing. We have enhanced the security features of our software development life cycle and improved our testing processes and tools.
- We have upgraded many of our IT systems, simplified our service provision and replaced older IT infrastructure and applications. These enhancements led to continued global improvements in service availability during 2019 for both our customers and employees.

Risks associated with workforce capability, capacity and environmental factors with potential impact on growth

Our success in delivering our strategic priorities and proactively managing the regulatory environment depends on the development and retention of our leadership and high-performing employees. The ability to continue to attract, develop and retain competent individuals in alignment with our strategy in an employment market where expertise is often mobile and in short supply is critical, particularly as our business lines execute their strategic business outlooks. This may be affected by external, internal and environmental factors, such as the UK's exit from the EU, changes to immigration policies and regulations, organisational restructuring and tax reforms in key markets that require active responses.

Mitigating actions

- HSBC University is focused on developing opportunities and tools for current and future skills, personal skills and leaders to create an environment for success.
- We continue to develop succession plans for key management roles, with actions agreed and reviewed on a regular basis by the Group Management Board.
- We actively respond to immigration changes through the global immigration programme. Other political and regulatory challenges are closely monitored to minimise the impact on the attraction and retention of talent and key performers.
- We promote a diverse and inclusive workforce and provide active support across a wide range of health and well-being activities.
- We have robust plans in place, driven by senior management, to mitigate the effect of external factors that may impact our employment practices. We will also be monitoring the impact on people linked to organisational changes announced in 2020.

Risks arising from the receipt of services from third parties

We use third parties for the provision of a range of services, in common with other financial service providers. Risks arising from the use of third-party service providers may be less transparent and therefore more challenging to manage or influence. It is critical that we ensure we have appropriate risk management policies, processes and practices. These should include adequate control over the selection, governance and oversight of third parties, particularly for key processes and controls that could affect operational resilience. Any deficiency in our management of risks arising from the use of third parties could affect our ability to meet strategic, regulatory or customer expectations.

Mitigating actions

- We continued to embed our delivery model in the first line of defence through a dedicated team. We have deployed processes, controls and technology to assess third-party service providers against key criteria and associated control monitoring, testing and assurance.
- A dedicated oversight forum in the second line of defence monitors the embedding of policy requirements and performance against risk appetite.

Enhanced model risk management expectations

Model risk arises whenever business decision making includes reliance on models. We use models in both financial and non-financial contexts and in a range of business applications such as customer selection, product pricing, financial crime transaction monitoring, creditworthiness evaluation and financial reporting.

Mitigating actions

We strengthened the Model Risk Management sub-function, including:

- We created a new Chief Model Risk Officer role, reporting directly to the Group Chief Risk Officer, which was filled on an interim basis.
- We appointed regional heads of Model Risk Management in all of our key geographies, and a Global Head of Model Risk Governance.
- We refined the model risk policy to enable a more risk-based approach to model risk management.
- We conducted a full review and enhancement of model governance arrangements overseeing model risk across the Group, resulting in a range of enhancements to the underlying structure to improve effectiveness and increase business engagement.
- We designed a new target operating model for Model Risk Management, informed by internal and industry best practice.
- We are refreshing the existing model risk controls to enable a better understanding of control objectives and to provide the modelling areas with implementation guidance to enhance effectiveness.

Data management

We use a large number of systems and applications to support key business processes and operations. As a result, we often need to reconcile multiple data sources, including customer data sources, to reduce the risk of error. Along with other organisations, we also need to meet external/regulatory obligations such as the General Data Protection Regulation ('GDPR'), the Basel Committee for Banking Supervision (BCBS 239) principles and Basel III.

Mitigating actions

- We are improving data quality across a large number of systems globally. Our data management, aggregation and oversight continue to strengthen and enhance the effectiveness of internal systems and processes. We are implementing data controls for critical processes in the front office systems to improve our data capture at the point of entry. We achieved a 'largely compliant' rating in support of the Basel Committee for Banking Supervision (BCBS 239) principles and have embedded them across the key markets and regions.
- We are expanding and enhancing our data governance processes to monitor proactively the quality of critical customer, product, reference and transaction data and resolving associated data issues in a timely manner. We have implemented data controls to improve the reliability of data used by our customers and staff.
- We are modernising our data and analytics infrastructure through investments in advanced capabilities in Cloud, visualisation, machine learning and artificial intelligence platforms.

- We have implemented a global data privacy framework that establishes data privacy practices, design principles and guidelines that demonstrate compliance with data privacy laws and regulations in the jurisdictions in which we operate, such as the GDPR in the UK and the EU, and the California Consumer Protection Act in the US state of California.
- We continue to hold annual data symposiums and data privacy awareness training to help our employees keep abreast of data management and data privacy laws and regulations. These highlight our commitment to protect personal data for our customers, employees and stakeholders.

Areas of special interest

During 2019, a number of areas were identified and considered as part of our top and emerging risks because of the effect they may have on the Group. While considered under the themes captured under top and emerging risks, in this section we have placed a particular focus on the UK withdrawal from the EU, Ibor transition and the risks to our operations and portfolios in Asia-Pacific.

UK withdrawal from the European Union

The UK left the EU on 31 January 2020 and entered a transition period until 31 December 2020, during which negotiations will take place on the future relationship between the UK and the EU. At this stage it remains unclear what that relationship will look like, potentially leaving firms with little time to adapt to changes, which may enter into force on 1 January 2021. Our programme to manage the impact of the UK leaving the EU has now been largely completed. It is based on the assumption of a scenario whereby the UK exits the transition period without the existing passporting or regulatory equivalence framework that supports cross-border business. Our focus has been on four main components: legal entity restructuring; product offering; customer migrations; and employees.

Legal entity restructuring

Our branches in seven European Economic Area ('EEA') countries (Belgium, the Netherlands, Luxembourg, Spain, Italy, Ireland and Czech Republic) relied on passporting out of the UK. We had worked on the assumption that passporting will no longer be possible following the UK's departure from the EU and therefore transferred our branch business to newly established branches of HSBC France, our primary banking entity authorised in the EU. This was completed in the first quarter of 2019.

Product offering

To accommodate for customer migrations and new business after the UK's departure from the EU, we expanded and enhanced our existing product offering in France, the Netherlands and Ireland. We also opened a new branch in Stockholm to service our customers in the Nordic region.

Customer migrations

The UK's departure from the EU is likely to have an impact on our clients' operating models, including their working capital requirements, investment decisions and financial markets infrastructure access. Our priority is to provide continuity of service, and while our intention is to minimise the level of change for our customers, we are required to migrate some EEA-incorporated clients from the UK to HSBC France, or another EEA entity. We have now migrated most clients who we expect can no longer be serviced out of the UK. We are working in close collaboration with any remaining clients to make the transition as smooth as possible.

Employees

The migration of EEA-incorporated clients will require us to strengthen our local teams in the EU, and France in particular.

Given the scale and capabilities of our existing business in France, we are well prepared to take on additional roles and activities. Looking beyond the transfer of roles to the EU, we are also providing support to our employees who are UK citizens resident in EEA countries, and employees who are citizens of an EU member state resident in the UK (e.g. on settlement applications).

At December 2019, HSBC employed approximately 40,000 people in the UK.

Across the programme, we have made good progress in terms of ensuring we are prepared for the UK leaving the EU under the terms described above. However, there remain execution risks, many of them linked to the uncertain outcome of negotiations.

We have carried out detailed reviews of our credit portfolios to determine those sectors and customers most vulnerable to the UK's exit from the EU. For further details, see 'Impact of alternative/additional scenarios' on page 95.

Ibor transition

The Financial Stability Board has observed that the decline in interbank short-term unsecured funding poses structural risks for interest rate benchmarks that reference these markets. In response, regulators and central banks in various jurisdictions have convened national working groups to identify replacement rates (risk-free rates or RFRs) for these Ibors and, where appropriate, to facilitate an orderly transition to these rates.

Following the announcement by the UK's FCA in July 2017 that it will no longer persuade or require banks to submit rates for Libor after 2021, the national working groups for the affected currencies were tasked with facilitating an orderly transition of the relevant Libors to their chosen replacement rates. The euro working group is also responsible for facilitating an orderly transition of the Euro Overnight Index Average ('Eonia') to the euro short-term rate ('€STER') as a result of Eonia not being made compliant with the EU Benchmark Regulation.

Although national working groups in other jurisdictions have identified replacements for their respective Ibors, there is no intention for these benchmark rates to be discontinued.

Given the current lack of alternatives, HSBC has an increasing portfolio of contracts referencing Libor and Eonia with maturities beyond 2021. HSBC established the Ibor transition programme with the objective of facilitating an orderly transition from Libor and Eonia for HSBC and its clients. This global programme oversees the transition effected by each of the global businesses and is led by the Group Chief Risk Officer.

The programme's strategic objectives can be broadly grouped into two streams of work: develop RFR product capabilities; and transition legacy contracts.

Develop RFR product capabilities

Our global businesses are currently developing their capabilities to offer RFR-based products and the supporting processes and systems. We already have several capabilities live – including SOFR bonds and Sonia bonds, SOFR futures and Sonia swaps – and we are planning further launches in 2020, with the initial focus being on the UK, the US, Hong Kong and France.

The sale of Libor and Eonia contracts with maturities beyond 2021 is likely to continue until RFR-based products become widely available and accepted by customers.

Transition legacy contracts

In addition to enabling the offering of new RFR-based products, the new RFR product capabilities will also help enable the transition of outstanding Libor and Eonia products onto the RFR equivalents. To help enable the repapering of a significant number of Libor and Eonia contracts, the programme is also developing the capability to transition outstanding Libor and Eonia contracts at scale. Critical to the successful transition of Libor-linked contracts is the active engagement of other market participants and HSBC's clients.

Although we have notional amounts of around $5tn of Libor and Eonia derivative contracts outstanding that mature beyond 2021, we expect that ISDA's efforts in guiding the transition of derivative contracts to reduce the risk of a non-orderly transition of the derivative market with an estimated notional size in excess of $200tn. The process of implementing ISDA's proposed protocol and transitioning outstanding contracts is nonetheless a material undertaking for the industry as a whole and may expose HSBC to the risk of financial losses.

The Group intends to engage actively in the process to achieve an orderly transition of HSBC's Libor and Eonia bond issuance, HSBC's holdings of Libor and Eonia bonds, and of those bonds where HSBC is the payment agent. We continue to formulate detailed plans to enable us to transition these exposures, although the execution of these transition plans will, to a certain extent, also depend on the participation and engagement of third-party market participants in the transition process.

Although we have plans to transition approximately $100bn drawn amounts of post-2021 contractually Ibor-referenced commercial loans onto replacement rates, our ability to transition this portfolio by the end of 2021 is materially dependent on the availability of products that reference the replacement rates and on our customers being ready and able to adapt their own processes and systems to accommodate the replacement products. This gives rise to an elevated level of conduct-related risk. HSBC is engaging with impacted clients to help ensure that customers are aware of the risks associated with the ongoing purchase of Libor- and Eonia-referencing contracts as well as the need to transition legacy contracts prior to the end of 2021.

In addition to the conduct and execution risk previously highlighted, the process of adopting new reference rates may expose the Group to an increased level of operational and financial risks, such as potential earnings volatility resulting from contract modifications and a large volume of product and associated process changes. Furthermore, the transition to alternative reference rates could have a range of adverse impacts on our business, including legal proceedings or other actions regarding the interpretation and enforceability of provisions in Ibor-based contracts and regulatory investigations or reviews in respect of our preparation and readiness for the replacement of Ibor with alternative reference rates. We continue to engage with industry participants, the official sector and our clients to support an orderly transition and the mitigation of the risks resulting from the transition. The FCA's and PRA's recent letter to senior managers of institutions, including HSBC, that fall within their remit, should increase the level and depth of engagement as well as accelerating transition in the sterling Libor markets.

Risks to our operations and portfolios in Asia-Pacific

In 2019, the Chinese economy grew at the slowest pace in nearly three decades in the context of rising domestic leverage. The authorities are expected to enact modest stimulus measures to boost growth. Along with the 'phase one' US-China trade deal and plentiful global liquidity, these measures should help emerging-market growth to make a partial recovery. Nevertheless, downside idiosyncratic risks will abound.

Intensified US-China competition and occasional confrontation continued to feature prominently in 2019. The two countries now compete across multiple dimensions: economic power; diplomatic influence; innovation and advanced technology leadership; and military dominance in Asia. In 2019, we saw heightened levels of risk in Hong Kong.

The downside risk is further increased given the coronavirus outbreak, which could further impact the local economy and dampen investor and business sentiment in many sectors where the Group has a material presence. The increasing headwinds will be challenging and we will continue to monitor our portfolios to thoughtfully manage our risk exposures. We have reviewed and enhanced our business continuity plans to help ensure minimal disruption to our clients and continued safe operation of our branches and employees. The new coronavirus outbreak is being actively monitored. It will have an immediate impact on the economic scenarios used for ECL, as key inputs for calculating ECL such as GDP for Hong Kong and mainland China are weakening, and the probability of a particularly adverse economic scenario for the short term is higher. The economic scenarios for Hong Kong used for ECL at 31 December 2019 are set out on pages 95 to 97. In addition, should the virus continue to cause disruption to economic activity in Hong Kong and mainland China through 2020, there could be adverse impacts on income due to lower lending and transaction volumes, and insurance manufacturing revenue. Further expected credit losses could arise from other parts of our business impacted by the disruption to supply chains. In Hong Kong, we have initiated a number of measures to support customers during the coronavirus outbreak. The uptake of these measures to date was immaterial.

We have invoked our business continuity plans to help ensure the safety and well-being of our staff while enhancing our ability to support our customers and maintain our business operations.

We regularly conduct stress tests to assess the resilience of our balance sheet and our capital adequacy. We conduct this across the Group and in key sites such as Hong Kong. The stress tests are used to consider our risk appetite and to provide insights into our financial stability. In the case of Hong Kong, our balance sheet and capital adequacy remain resilient based on regulatory and internal stress test outcomes.

Our central scenario for Hong Kong, used as a key input for calculating expected credit losses in Hong Kong, has kept pace with expectations of economic growth. The economy entered a technical recession in the second half of 2019 and is expected to record negative annual GDP growth for the first time since 2009. This is a result of both tensions over trade and tariffs between the US and China and domestic social unrest. The economy is expected to gradually recover in 2020. We have also developed a number of additional scenarios to capture more extreme downside risks, and have used these in impairment testing and measuring and to assess our capital resilience. While our economic scenarios used to calculate credit loss capture a range of outcomes, the potential economic impact of the coronavirus was not explicitly considered at the year end due to the limited information and emergent nature of the outbreak in December 2019.

For further details of all scenarios used in impairment measurements, see 'Measurement uncertainty and sensitivity analysis of ECL estimates' on page 92.

Our material banking risks

The material risk types associated with our banking and insurance manufacturing operations are described in the following tables:

Description of risks – banking operations

Risks	Arising from	Measurement, monitoring and management of risk
Credit risk (see page 84)		
Credit risk is the risk of financial loss if a customer or counterparty fails to meet an obligation under a contract.	Credit risk arises principally from direct lending, trade finance and leasing business, but also from other products such as guarantees and derivatives.	Credit risk is: • measured as the amount that could be lost if a customer or counterparty fails to make repayments; • monitored using various internal risk management measures and within limits approved by individuals within a framework of delegated authorities; and • managed through a robust risk control framework, which outlines clear and consistent policies, principles and guidance for risk managers.
Capital and liquidity risk (see page 130)		
Capital and liquidity risk is the risk of having insufficient capital, liquidity or funding resources to meet financial obligations and satisfy regulatory requirements, including pension risk.	Capital and liquidity risk arises from changes to the respective resources and risk profiles driven by customer behaviour, management decisions or the external environment.	Capital and liquidity risk is: • measured through appetites set as target and minimum ratios; • monitored and projected against appetites and by using stress and scenario testing; and • managed through control of capital and liquidity resources in conjunction with risk profiles and cash flows.
Market risk (see page 135)		
Market risk is the risk that movements in market factors, such as foreign exchange rates, interest rates, credit spreads, equity prices and commodity prices, will reduce our income or the value of our portfolios.	Exposure to market risk is separated into two portfolios: trading portfolios and non-trading portfolios. Market risk exposures arising from our insurance operations are discussed on page 149.	Market risk is: • measured using sensitivities, value at risk and stress testing, giving a detailed picture of potential gains and losses for a range of market movements and scenarios, as well as tail risks over specified time horizons; • monitored using value at risk, stress testing and other measures, including the sensitivity of net interest income and the sensitivity of structural foreign exchange; and • managed using risk limits approved by the RMM and the risk management meeting in various global businesses.
Resilience risk (see page 143)		
Resilience risk is the risk that we are unable to provide critical services to our customers, affiliates and counterparties as a result of sustained and significant operational disruption.	Resilience risk arises from failures or inadequacies in processes, people, systems or external events.	Resilience risk is: • measured using a range of metrics with defined maximum acceptable impact tolerances, and against our agreed risk appetite; • monitored through oversight of enterprise processes, risks, controls and strategic change programmes; and • managed by continual monitoring and thematic reviews.
Regulatory compliance risk (see page 144)		
Regulatory compliance risk is the risk that we fail to observe the letter and spirit of all relevant laws, codes, rules, regulations and standards of good market practice, which as a consequence incur fines and penalties and suffer damage to our business.	Regulatory compliance risk arises from the risks associated with breaching our duty to our customers and other counterparties, inappropriate market conduct and breaching other regulatory requirements.	Regulatory compliance risk is: • measured by reference to identified metrics, incident assessments, regulatory feedback and the judgement and assessment of our regulatory compliance teams; • monitored against the first line of defence risk and control assessments, the results of the monitoring and control assurance activities of the second line of defence functions, and the results of internal and external audits and regulatory inspections; and • managed by establishing and communicating appropriate policies and procedures, training employees in them and monitoring activity to help ensure their observance. Proactive risk control and/or remediation work is undertaken where required.
Financial crime and fraud risk (see page 145)		
Financial crime and fraud risk is the risk that we knowingly or unknowingly help parties to commit or to further potentially illegal activity, including both internal and external fraud.	Financial crime and fraud risk arises from day-to-day banking operations.	Financial crime and fraud risk is: • measured by reference to identified metrics, incident assessments, regulatory feedback and the judgement and assessment of our financial crime risk teams; • monitored against our financial crime risk appetite statements and metrics, the results of the monitoring and control activities of the second line of defence functions, and the results of internal and external audits and regulatory inspections; and • managed by establishing and communicating appropriate policies and procedures, training employees in them and monitoring activity to help ensure their observance. Proactive risk control and/or remediation work is undertaken where required.
Model risk (see page 146)		
Model risk is the potential for adverse consequences from business decisions informed by models, which can be exacerbated by errors in methodology, design or the way they are used.	Model risk arises in both financial and non-financial contexts whenever business decision making includes reliance on models.	Model risk is: • measured by reference to model performance tracking and the output of detailed technical reviews, with key metrics including model review statuses and findings; • monitored against model risk appetite statements, insight from the independent review function, feedback from internal and external audits, and regulatory reviews; and • managed by creating and communicating appropriate policies, procedures and guidance, training colleagues in their application, and supervising their adoption to ensure operational effectiveness.

Our insurance manufacturing subsidiaries are regulated separately from our banking operations. Risks in our insurance entities are managed using methodologies and processes that are subject to Group oversight. Our insurance operations are also subject to some of the same risks as our banking operations, which are covered by the Group's risk management processes.

Description of risks – insurance manufacturing operations

Risks	Arising from	Measurement, monitoring and management of risk
Financial risk (see page 149) Our ability to effectively match liabilities arising under insurance contracts with the asset portfolios that back them is contingent on the management of financial risks and the extent to which these are borne by policyholders.	Exposure to financial risk arises from: • market risk affecting the fair values of financial assets or their future cash flows; • credit risk; and • liquidity risk of entities being unable to make payments to policyholders as they fall due.	Financial risk is: • measured (i) for credit risk, in terms of economic capital and the amount that could be lost if a counterparty fails to make repayments; (ii) for market risk, in terms of economic capital, internal metrics and fluctuations in key financial variables; and (iii) for liquidity risk, in terms of internal metrics including stressed operational cash flow projections; • monitored through a framework of approved limits and delegated authorities; and • managed through a robust risk control framework, which outlines clear and consistent policies, principles and guidance. This includes using product design, asset liability matching and bonus rates.
Insurance risk (see page 151) Insurance risk is the risk that, over time, the cost of insurance policies written, including claims and benefits, may exceed the total amount of premiums and investment income received.	The cost of claims and benefits can be influenced by many factors, including mortality and morbidity experience, as well as lapse and surrender rates.	Insurance risk is: • measured in terms of life insurance liabilities and economic capital allocated to insurance underwriting risk; • monitored through a framework of approved limits and delegated authorities; and • managed through a robust risk control framework, which outlines clear and consistent policies, principles and guidance. This includes using product design, underwriting, reinsurance and claims-handling procedures.

Credit risk

Overview

Credit risk is the risk of financial loss if a customer or counterparty fails to meet an obligation under a contract. Credit risk arises principally from direct lending, trade finance and leasing business, but also from other products such as guarantees and credit derivatives.

Credit risk management

Key developments in 2019

There were no material changes to the policies and practices for the management of credit risk in 2019. We continued to apply the requirements of IFRS 9 'Financial Instruments' within Credit Risk.

Governance and structure

We have established Group-wide credit risk management and related IFRS 9 processes. We continue to assess actively the impact of economic developments in key markets on specific customers, customer segments or portfolios. As credit conditions change, we take mitigating action, including the revision of risk appetites or limits and tenors, as appropriate. In addition, we continue to evaluate the terms under which we provide credit facilities within the context of individual customer requirements, the quality of the relationship, local regulatory requirements, market practices and our local market position.

Credit risk sub-function

(Audited)

Credit approval authorities are delegated by the Board to the Group Chief Executive together with the authority to sub-delegate them. The Credit Risk sub-function in Global Risk is responsible for the key policies and processes for managing credit risk, which include formulating Group credit policies and risk rating frameworks, guiding the Group's appetite for credit risk exposures, undertaking independent reviews and objective assessment of credit risk, and monitoring performance and management of portfolios.

The principal objectives of our credit risk management are:

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

Key risk management processes

IFRS 9 'Financial Instruments' process

The IFRS 9 process comprises three main areas: modelling and data; implementation; and governance.

Modelling and data

We have established IFRS 9 modelling and data processes in various geographies, which are subject to internal model risk governance including independent review of significant model developments.

Implementation

A centralised impairment engine performs the expected credit loss ('ECL') calculation using data, which is subject to a number of validation checks and enhancements, from a variety of client, finance and risk systems. Where possible, these checks and processes are performed in a globally consistent and centralised manner.

Governance

Regional management review forums are established in key sites and regions in order to review and approve the impairment results. Regional management review forums have representatives from Credit Risk and Finance. The key site and regional approvals are reported up to the global business impairment committee for final approval of the Group's ECL for the period. Required members of the committee are the global heads of Wholesale Credit, Market Risk, and Retail Banking and Wealth Management Risk, as well as the global business chief financial officers and the Group Chief Accounting Officer.

Concentration of exposure

(Audited)

Concentrations of credit risk arise when a number of counterparties or exposures have comparable economic characteristics, or such counterparties are engaged in similar activities or operate in the same geographical areas or industry sectors so that their collective ability to meet contractual obligations is uniformly affected by changes in economic, political or other conditions. We use a number of controls and measures to minimise undue concentration of exposure in our portfolios across industries, countries and global businesses. These include portfolio and counterparty limits, approval and review controls, and stress testing.

Credit quality of financial instruments

(Audited)

Our risk rating system facilitates the internal ratings-based approach under the Basel framework adopted by the Group to support the calculation of our minimum credit regulatory capital requirement. The five credit quality classifications each encompass a range of granular internal credit rating grades assigned to wholesale and retail lending businesses, and the external ratings attributed by external agencies to debt securities.

For debt securities and certain other financial instruments, external ratings have been aligned to the five quality classifications based upon the mapping of related customer risk rating ('CRR') to external credit rating.

Wholesale lending

The CRR 10-grade scale summarises a more granular underlying 23-grade scale of obligor probability of default ('PD'). All corporate customers are rated using the 10- or 23-grade scale, depending on the degree of sophistication of the Basel approach adopted for the exposure.

Each CRR band is associated with an external rating grade by reference to long-run default rates for that grade, represented by the average of issuer-weighted historical default rates. This mapping between internal and external ratings is indicative and may vary over time.

Retail lending

Retail lending credit quality is based on a 12-month point-in-time probability-weighted PD.

Credit quality classification

		Sovereign debt securities and bills	Other debt securities and bills	Wholesale lending and derivatives		Retail lending	
	Footnotes	External credit rating	External credit rating	Internal credit rating	12-month Basel probability of default %	Internal credit rating	12 month probability-weighted PD %
Quality classification	1, 2						
Strong		BBB and above	A- and above	CRR 1 to CRR 2	0 – 0.169	Band 1 and 2	0.000 – 0.500
Good		BBB- to BB	BBB+ to BBB-	CRR 3	0.170 – 0.740	Band 3	0.501 – 1.500
Satisfactory		BB- to B and unrated	BB+ to B and unrated	CRR 4 to CRR 5	0.741 – 4.914	Band 4 and 5	1.501 – 20.000
Sub-standard		B- to C	B- to C	CRR 6 to CRR 8	4.915 – 99.999	Band 6	20.001 – 99.999
Credit impaired		Default	Default	CRR 9 to CRR 10	100	Band 7	100

1 *Customer risk rating ('CRR').*
2 *12-month point-in-time probability-weighted probability of default ('PD').*

Quality classification definitions

- 'Strong' exposures demonstrate a strong capacity to meet financial commitments, with negligible or low probability of default and/or low levels of expected loss.
- 'Good' exposures require closer monitoring and demonstrate a good capacity to meet financial commitments, with low default risk.
- 'Satisfactory' exposures require closer monitoring and demonstrate an average-to-fair capacity to meet financial commitments, with moderate default risk.
- 'Sub-standard' exposures require varying degrees of special attention and default risk is of greater concern.
- 'Credit-impaired' exposures have been assessed as described on Note 1.2(i) on the financial statements.

Renegotiated loans and forbearance

(Audited)

'Forbearance' describes concessions made on the contractual terms of a loan in response to an obligor's financial difficulties.

A loan is classed as 'renegotiated' when we modify the contractual payment terms on concessionary terms because we have significant concerns about the borrowers' ability to meet contractual payments when due. Non-payment-related concessions (e.g. covenant waivers), while potential indicators of impairment, do not trigger identification as renegotiated loans.

Loans that have been identified as renegotiated retain this designation until maturity or derecognition.

For details of our policy on derecognised renegotiated loans, see Note 1.2(i) on the financial statements.

Credit quality of renegotiated loans

On execution of a renegotiation, the loan will also be classified as credit impaired if it is not already so classified. In wholesale lending, all facilities with a customer, including loans that have not been modified, are considered credit impaired following the identification of a renegotiated loan.

Wholesale renegotiated loans are classified as credit impaired until there is sufficient evidence to demonstrate a significant reduction in the risk of non-payment of future cash flows, observed over a minimum one-year period, and there are no other indicators of impairment. Personal renegotiated loans generally remain credit impaired until repayment, write-off or derecognition.

Renegotiated loans and recognition of expected credit losses

(Audited)

For retail lending, unsecured renegotiated loans are generally segmented from other parts of the loan portfolio. Renegotiated expected credit loss assessments reflect the higher rates of losses typically encountered with renegotiated loans. For wholesale lending, renegotiated loans are typically assessed individually. Credit risk ratings are intrinsic to the impairment assessments. The individual impairment assessment takes into account the higher risk of the future non-payment inherent in renegotiated loans.

Impairment assessment

(Audited)

For details of our impairment policies on loans and advances and financial investments, see Note 1.2(i) on the financial statements.

Write-off of loans and advances

(Audited)

For details of our policy on the write-off of loans and advances, see Note 1.2(i) on the financial statements.

Unsecured personal facilities, including credit cards, are generally written off at between 150 and 210 days past due. The standard period runs until the end of the month in which the account becomes 180 days contractually delinquent. Write-off periods may be extended, generally to no more than 360 days past due. However, in exceptional circumstances, they may be extended further.

For secured facilities, write-off should occur upon repossession of collateral, receipt of proceeds via settlement, or determination that recovery of the collateral will not be pursued.

Any secured assets maintained on the balance sheet beyond 60 months of consecutive delinquency-driven default require additional monitoring and review to assess the prospect of recovery.

There are exceptions in a few countries and territories where local regulation or legislation constrains earlier write-off, or where the realisation of collateral for secured real estate lending takes more time. In the event of bankruptcy or analogous proceedings, write-off may occur earlier than the maximum periods stated above. Collection procedures may continue after write-off.

Credit risk in 2019

Gross loans and advances to customers of $1,045bn at 31 December 2019 increased from $990bn at 31 December 2018. This increase included favourable foreign exchange movements of $13bn. Loans and advances to banks of $69bn at 31 December 2019 decreased from $72bn at 31 December 2018. This included adverse foreign exchange movements of $0.1bn. Wholesale and personal lending movements are disclosed on pages 104 to 124. The change in expected credit losses and other credit impairment charges, as it appears in the income statement, for the period was $2.8bn compared with $1.8bn in 2018.

Income statement movements are analysed further on page 49.

Our maximum exposure to credit risk is presented on page 91 and credit quality on page 100. While credit risk arises across most of our balance sheet, ECL have typically been recognised on loans and advances to customers and banks and securitisation exposures and other structured products. As a result, our disclosures focus primarily on these two areas.

Re-presentation of UK gross carrying/nominal amounts staging

The wholesale lending gross carrying/nominal amounts in stages 1 and 2, which were disclosed at 31 December 2018, have been re-presented to reflect the UK economic uncertainty adjustment, which was not previously reflected in the stage allocation. The 31 December 2018 amounts reflected the probability-weighted view of stage allocation for the consensus scenarios only. In comparison, the allowance for ECL did reflect the UK economic uncertainty adjustment. As a result of the re-presentation, there has been an increase in stage 2 amounts, with a corresponding decrease in stage 1. The financial instruments and disclosures impacted are as follows:

- Loans and advances to customers: A change of $6,795m comprised $6,562m for corporate and commercial and $233m for non-bank financial institutions, which can be seen on pages 89, 99, 103, 106, 108, 110 and 128.
- Loans and other credit-related commitments: A change of $2,018m was attributable to $1,891m for corporate and commercial and $127m for non-bank financial institutions, which can be seen on pages 89, 99, 103, 106, 108, 110 and 128.
- Financial guarantees: A change of $50m comprised $48m for corporate and commercial and $2m for non-bank financial institutions, which can be seen on pages 89, 99, 103, 106, 108, 110 and 128.
- Commercial real estate lending: There was a change of $819m, which can be seen on page 111.
- Wholesale lending – commercial real estate loans and advances including loan commitments by level of collateral: There was a change of $1,236m, which can be seen on page 114.
- Wholesale lending – other corporate, commercial and financial (non-bank) loans and advances including loan commitments by level of collateral: There was a change of $7,641m, which can be seen on page 118.

The 'Reconciliation of changes in gross carrying/nominal amount and allowances for loans and advances to banks and customers, including loan commitments and financial guarantees' disclosure for 31 December 2018 reflects this re-presentation in other movements of $8,935m, and for foreign exchange there was a $72m adverse movement. There is no impact upon total gross carrying values/nominal amounts, personal lending amounts or allowance for ECL.

Summary of credit risk

The following disclosure presents the gross carrying/nominal amount of financial instruments to which the impairment requirements in IFRS 9 are applied and the associated allowance for ECL.

The allowance for ECL increased from $9.2bn at 31 December 2018 to $9.4bn at 31 December 2019. This increase included adverse foreign exchange movements of $0.1bn.

The allowance for ECL at 31 December 2019 comprised $8.9bn in respect of assets held at amortised cost, $0.4bn in respect of loan commitments and financial guarantees, and $0.2bn in respect of debt instruments measured at fair value through other comprehensive income ('FVOCI').

Summary of financial instruments to which the impairment requirements in IFRS 9 are applied

(Audited)

		31 Dec 2019		At 31 Dec 2018	
		Gross carrying/ nominal amount	**Allowance for ECL[1]**	Gross carrying/ nominal amount	Allowance for ECL[1]
	Footnotes	**$m**	**$m**	$m	$m
Loans and advances to customers at amortised cost		**1,045,475**	**(8,732)**	990,321	(8,625)
– personal		**434,271**	**(3,134)**	394,337	(2,947)
– corporate and commercial		**540,499**	**(5,438)**	534,577	(5,552)
– non-bank financial institutions		**70,705**	**(160)**	61,407	(126)
Loans and advances to banks at amortised cost		**69,219**	**(16)**	72,180	(13)
Other financial assets measured at amortised cost		**615,179**	**(118)**	582,917	(55)
– cash and balances at central banks		**154,101**	**(2)**	162,845	(2)
– items in the course of collection from other banks		**4,956**	**—**	5,787	—
– Hong Kong Government certificates of indebtedness		**38,380**	**—**	35,859	—
– reverse repurchase agreements – non-trading		**240,862**	**—**	242,804	—
– financial investments		**85,788**	**(53)**	62,684	(18)
– prepayments, accrued income and other assets	2	**91,092**	**(63)**	72,938	(35)
Total gross carrying amount on-balance sheet		**1,729,873**	**(8,866)**	1,645,418	(8,693)
Loans and other credit-related commitments		**600,029**	**(329)**	592,008	(325)
– personal		**223,314**	**(15)**	207,351	(13)
– corporate and commercial		**278,524**	**(307)**	271,022	(305)
– non-bank financial institutions		**98,191**	**(7)**	113,635	(7)
Financial guarantees		**20,214**	**(48)**	23,518	(93)
– personal		**804**	**(1)**	927	(1)
– corporate and commercial		**14,804**	**(44)**	17,355	(85)
– non-bank financial institutions		**4,606**	**(3)**	5,236	(7)
Total nominal amount off-balance sheet	3	**620,243**	**(377)**	615,526	(418)
		2,350,116	**(9,243)**	2,260,944	(9,111)

	Fair value	**Memorandum allowance for ECL[4]**	Fair value	Memorandum allowance for ECL[4]
	$m	**$m**	$m	$m
Debt instruments measured at fair value through other comprehensive income ('FVOCI')	**355,664**	**(166)**	343,110	(84)

1 *The total ECL is recognised in the loss allowance for the financial asset unless the total ECL exceeds the gross carrying amount of the financial asset, in which case the ECL is recognised as a provision.*
2 *Includes only those financial instruments that are subject to the impairment requirements of IFRS 9. 'Prepayments, accrued income and other assets', as presented within the consolidated balance sheet on page 231, includes both financial and non-financial assets.*
3 *Represents the maximum amount at risk should the contracts be fully drawn upon and clients default.*
4 *Debt instruments measured at FVOCI continue to be measured at fair value with the allowance for ECL as a memorandum item. Change in ECL is recognised in 'Change in expected credit losses and other credit impairment charges' in the income statement.*

The following table provides an overview of the Group's credit risk by stage and industry, and the associated ECL coverage. The financial assets recorded in each stage have the following characteristics:

- Stage 1: These financial assets are unimpaired and without significant increase in credit risk on which a 12-month allowance for ECL is recognised.
- Stage 2: A significant increase in credit risk has been experienced on these financial assets since initial recognition for which a lifetime ECL is recognised.
- Stage 3: There is objective evidence of impairment and the financial assets are therefore considered to be in default or otherwise credit impaired on which a lifetime ECL is recognised.
- POCI: Financial assets that are purchased or originated at a deep discount are seen to reflect the incurred credit losses on which a lifetime ECL is recognised.

Summary of credit risk (excluding debt instruments measured at FVOCI) by stage distribution and ECL coverage by industry sector at 31 December 2019

(Audited)

	Gross carrying/nominal amount[1]					Allowance for ECL					ECL coverage %				
	Stage 1	Stage 2	Stage 3	POCI[2]	Total	Stage 1	Stage 2	Stage 3	POCI[2]	Total	Stage 1	Stage 2	Stage 3	POCI[2]	Total
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m	%	%	%	%	%
Loans and advances to customers at amortised cost	951,583	80,182	13,378	332	1,045,475	(1,297)	(2,284)	(5,052)	(99)	(8,732)	0.1	2.8	37.8	29.8	0.8
– personal	413,669	15,751	4,851	–	434,271	(583)	(1,336)	(1,215)	–	(3,134)	0.1	8.5	25.0	–	0.7
– corporate and commercial	472,253	59,599	8,315	332	540,499	(672)	(920)	(3,747)	(99)	(5,438)	0.1	1.5	45.1	29.8	1.0
– non-bank financial institutions	65,661	4,832	212	–	70,705	(42)	(28)	(90)	–	(160)	0.1	0.6	42.5	–	0.2
Loans and advances to banks at amortised cost	67,769	1,450	–	–	69,219	(14)	(2)	–	–	(16)	–	0.1	–	–	–
Other financial assets measured at amortised cost	613,200	1,827	151	1	615,179	(38)	(38)	(42)	–	(118)	–	2.1	27.8	–	–
Loan and other credit-related commitments	577,631	21,618	771	9	600,029	(137)	(133)	(59)	–	(329)	–	0.6	7.7	–	0.1
– personal	221,490	1,630	194	–	223,314	(13)	(2)	–	–	(15)	–	0.1	–	–	–
– corporate and commercial	259,138	18,804	573	9	278,524	(118)	(130)	(59)	–	(307)	–	0.7	10.3	–	0.1
– financial	97,003	1,184	4	–	98,191	(6)	(1)	–	–	(7)	–	0.1	–	–	–
Financial guarantees	17,684	2,340	186	4	20,214	(16)	(22)	(10)	–	(48)	0.1	0.9	5.4	–	0.2
– personal	802	1	1	–	804	(1)	–	–	–	(1)	0.1	–	–	–	0.1
– corporate and commercial	12,540	2,076	184	4	14,804	(14)	(21)	(9)	–	(44)	0.1	1.0	4.9	–	0.3
– financial	4,342	263	1	–	4,606	(1)	(1)	(1)	–	(3)	–	0.4	100.0	–	0.1
At 31 Dec 2019	2,227,867	107,417	14,486	346	2,350,116	(1,502)	(2,479)	(5,163)	(99)	(9,243)	0.1	2.3	35.6	28.6	0.4

1 *Represents the maximum amount at risk should the contracts be fully drawn upon and clients default.*
2 *Purchased or originated credit-impaired ('POCI').*

Unless identified at an earlier stage, all financial assets are deemed to have suffered a significant increase in credit risk when they are 30 days past due ('DPD') and are transferred from stage 1 to stage 2. The following disclosure presents the ageing of stage 2 financial assets by those less than 30 days and greater than 30 DPD and therefore presents those financial assets classified as stage 2 due to ageing (30 DPD) and those identified at an earlier stage (less than 30 DPD).

Stage 2 days past due analysis at 31 December 2019

(Audited)

	Gross carrying amount			Allowance for ECL			ECL coverage %		
	Stage 2	*Of which: 1 to 29 DPD[1]*	*Of which: 30 and > DPD[1]*	Stage 2	*Of which: 1 to 29 DPD[1]*	*Of which: 30 and > DPD[1]*	Stage 2	*Of which: 1 to 29 DPD[1]*	*Of which: 30 and > DPD[1]*
	$m	$m	$m	$m	$m	$m	%	%	%
Loans and advances to customers at amortised cost	80,182	*2,471*	*1,676*	(2,284)	*(208)*	*(247)*	2.8	*8.4*	*14.7*
– personal	15,751	*1,804*	*1,289*	(1,336)	*(178)*	*(217)*	8.5	*9.9*	*16.8*
– corporate and commercial	59,599	*657*	*385*	(920)	*(30)*	*(30)*	1.5	*4.6*	*7.8*
– non-bank financial institutions	4,832	*10*	*2*	(28)	–	–	0.6	–	–
Loans and advances to banks at amortised cost	1,450	–	–	(2)	–	–	0.1	–	–
Other financial assets measured at amortised cost	1,827	*14*	*30*	(38)	–	–	2.1	–	–

1 *Days past due ('DPD'). Up to date accounts in stage 2 are not shown in amounts.*

Summary of credit risk (excluding debt instruments measured at FVOCI) by stage distribution and ECL coverage by industry sector at 31 December 2018[3] (continued)

(Audited)

	Gross carrying/nominal amount[1]					Allowance for ECL					ECL coverage %				
	Stage 1	Stage 2	Stage 3	POCI[2]	Total	Stage 1	Stage 2	Stage 3	POCI[2]	Total	Stage 1	Stage 2	Stage 3	POCI[2]	Total
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m	%	%	%	%	%
Loans and advances to customers at amortised cost	908,393	68,581	13,023	324	990,321	(1,276)	(2,108)	(5,047)	(194)	(8,625)	0.1	3.1	38.8	59.9	0.9
– personal	374,681	15,075	4,581	—	394,337	(534)	(1,265)	(1,148)	—	(2,947)	0.1	8.4	25.1	—	0.7
– corporate and commercial	474,700	51,341	8,212	324	534,577	(698)	(812)	(3,848)	(194)	(5,552)	0.1	1.6	46.9	59.9	1.0
– non-bank financial institutions	59,012	2,165	230	—	61,407	(44)	(31)	(51)	—	(126)	0.1	1.4	22.2	—	0.2
Loans and advances to banks at amortised cost	71,873	307	—	—	72,180	(11)	(2)	—	—	(13)	—	0.7	—	—	—
Other financial assets measured at amortised cost	581,118	1,673	126	—	582,917	(27)	(6)	(22)	—	(55)	—	0.4	17.5	—	—
Loan and other credit-related commitments	567,232	23,857	912	7	592,008	(143)	(139)	(43)	—	(325)	—	0.6	4.7	—	0.1
– personal	205,183	1,760	408	—	207,351	(12)	(1)	—	—	(13)	—	0.1	—	—	—
– corporate and commercial	249,587	20,925	503	7	271,022	(126)	(136)	(43)	—	(305)	0.1	0.6	8.5	—	0.1
– financial	112,462	1,172	1	—	113,635	(5)	(2)	—	—	(7)	—	0.2	—	—	—
Financial guarantees	20,834	2,384	297	3	23,518	(19)	(29)	(45)	—	(93)	0.1	1.2	15.2	—	0.4
– personal	920	3	4	—	927	(1)	—	—	—	(1)	0.1	—	—	—	0.1
– corporate and commercial	14,963	2,101	288	3	17,355	(16)	(25)	(44)	—	(85)	0.1	1.2	15.3	—	0.5
– financial	4,951	280	5	—	5,236	(2)	(4)	(1)	—	(7)	—	1.4	20.0	—	0.1
At 31 Dec 2018	2,149,450	96,802	14,358	334	2,260,944	(1,476)	(2,284)	(5,157)	(194)	(9,111)	0.1	2.4	35.9	58.1	0.4

1 Represents the maximum amount at risk should the contracts be fully drawn upon and clients default.
2 Purchased or originated credit-impaired ('POCI').
3 During the period, the Group has re-presented the UK wholesale lending stage 1 and stage 2 amount. For further details, see page 86.

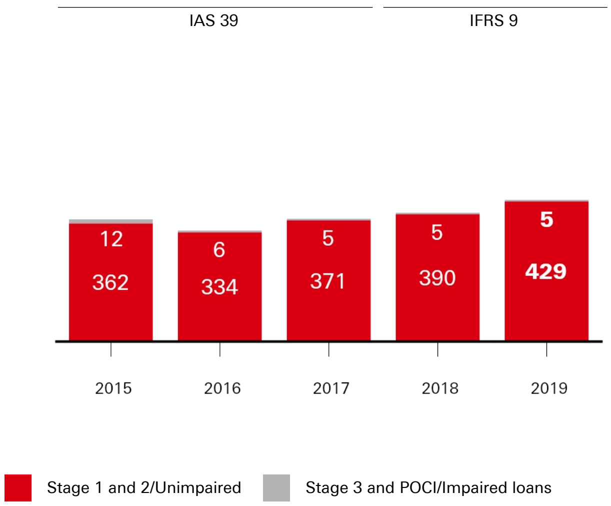
Stage 2 days past due analysis at 31 December 2018[2]

(Audited)

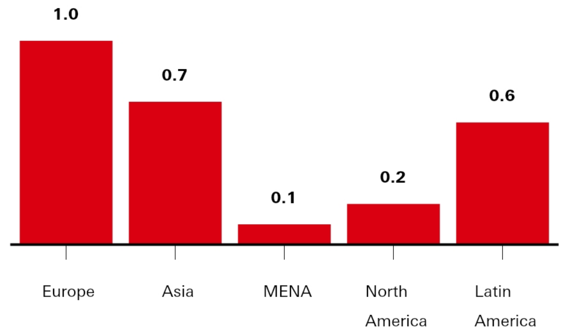
	Gross carrying amount			Allowance for ECL			ECL coverage %		
		Of which:	*Of which:*		*Of which:*	*Of which:*		*Of which:*	*Of which:*
	Stage 2	*1 to 29 DPD[1]*	*30 and > DPD[1]*	Stage 2	*1 to 29 DPD[1]*	*30 and > DPD[1]*	Stage 2	*1 to 29 DPD[1]*	*30 and > DPD[1]*
	$m	$m	$m	$m	$m	$m	%	%	%
Loans and advances to customers at amortised cost	68,581	*2,561*	*1,914*	(2,108)	*(204)*	*(254)*	3.1	*8.0*	*13.3*
– personal	15,075	*1,807*	*1,383*	(1,265)	*(165)*	*(220)*	8.4	*9.1*	*15.9*
– corporate and commercial	51,341	*744*	*485*	(812)	*(39)*	*(34)*	1.6	*5.2*	*7.0*
– non-bank financial institutions	2,165	*10*	*46*	(31)	—	—	1.4	—	—
Loans and advances to banks at amortised cost	307	—	—	(2)	—	—	0.7	—	—
Other financial assets measured at amortised cost	1,673	*10*	*26*	(6)	—	—	0.4	—	—

1 Days past due ('DPD'). Up to date accounts in stage 2 are not shown in amounts.
2 During the period, the Group has re-presented the UK wholesale lending stage 1 and stage 2 amount. For further details, see page 86.

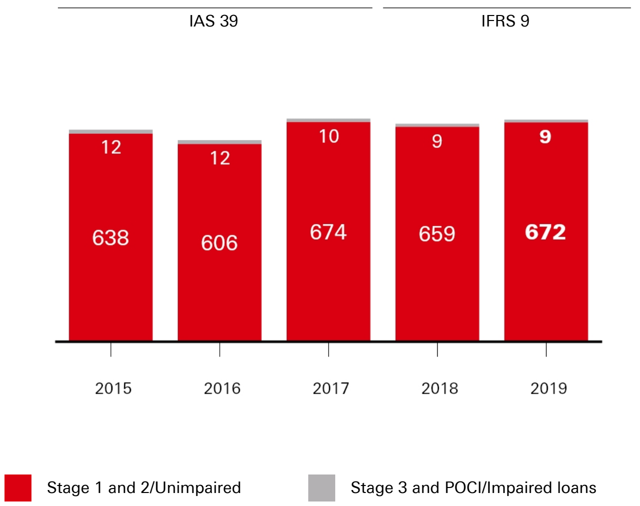
Personal gross loans to customers over five years ($bn)



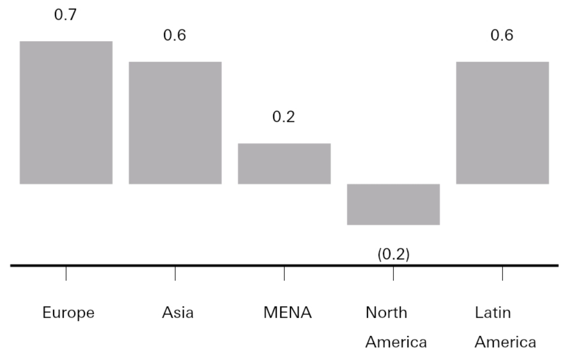
Loans and advances change in ECL by geographical region in 2019 ($bn)



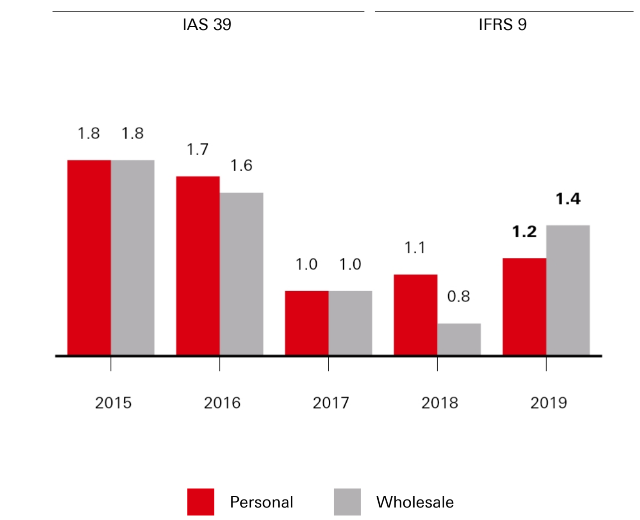
Wholesale gross loans to customers and banks over five years ($bn)



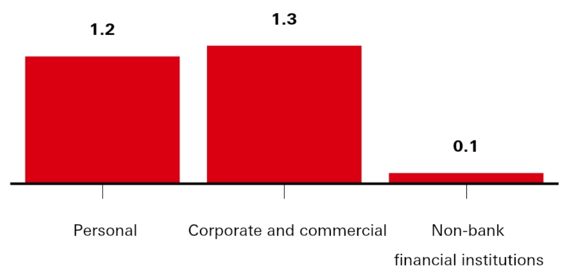
Loan and advances change in ECL by geographical region in 2018 ($bn)



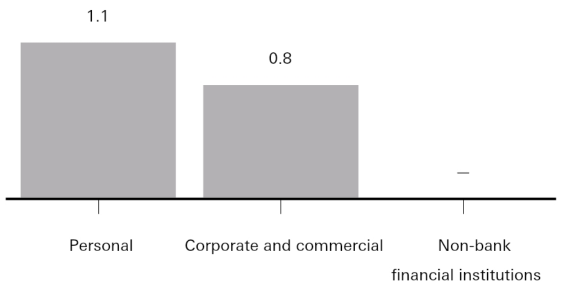
Loans and advances change in ECL/loan impairment charge ($bn)



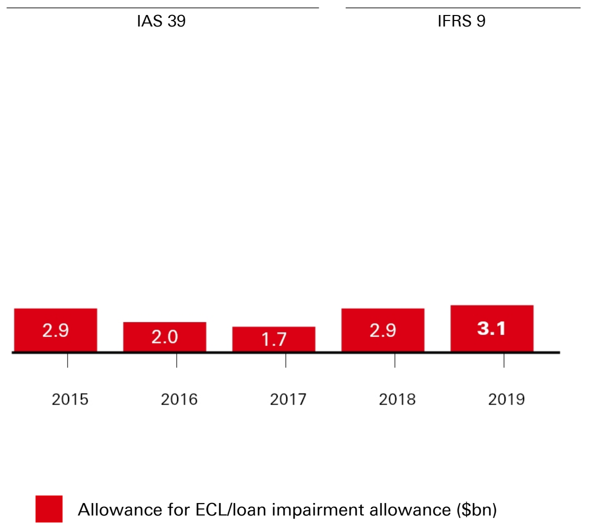
Loans and advances to customers change in ECL in 2019 ($bn)



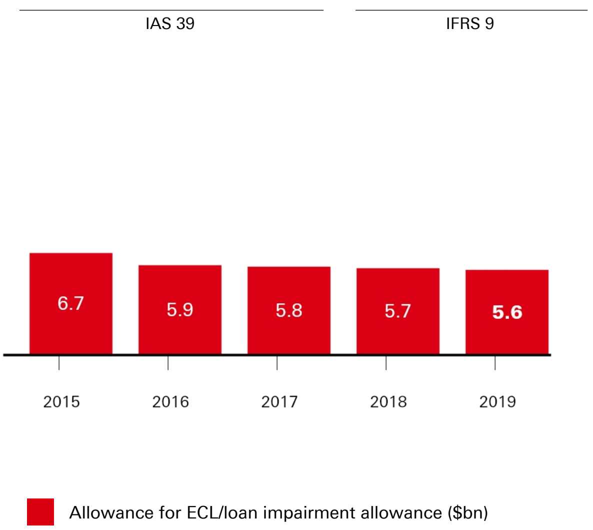
Loans and advances to customers loan impairment charges by industry in 2018 ($bn)



Personal loans and advances allowance for ECL/loan impairment allowance over five years ($bn)



Wholesale loans and advances allowance for ECL/loan impairment allowance over five years ($bn)



Credit exposure

Maximum exposure to credit risk

(Audited)

This section provides information on balance sheet items and their offsets as well as loan and other credit-related commitments. Commentary on consolidated balance sheet movements in 2019 is provided on page 53.

The offset on derivatives remains in line with the movements in maximum exposure amounts.

'Maximum exposure to credit risk' table

The following table presents our maximum exposure before taking account of any collateral held or other credit enhancements (unless such enhancements meet accounting offsetting requirements). The table excludes financial instruments whose carrying amount best represents the net exposure to credit risk, and it excludes equity securities as they are not subject to credit risk. For the financial assets recognised on the balance sheet, the maximum exposure to credit risk equals their carrying amount; for financial guarantees and other guarantees granted, it is the maximum amount that we would have to pay if the guarantees were called upon. For loan commitments and other credit-related commitments, it is generally the full amount of the committed facilities.

The offset in the table relates to amounts where there is a legally enforceable right of offset in the event of counterparty default and where, as a result, there is a net exposure for credit risk purposes. However, as there is no intention to settle these balances on a net basis under normal circumstances, they do not qualify for net presentation for accounting purposes. No offset has been applied to off-balance sheet collateral. In the case of derivatives, the offset column also includes collateral received in cash and other financial assets.

Other credit risk mitigants

While not disclosed as an offset in the following 'Maximum exposure to credit risk' table, other arrangements are in place that reduce our maximum exposure to credit risk. These include a charge over collateral on borrowers' specific assets, such as residential properties, collateral held in the form of financial instruments that are not held on the balance sheet and short positions in securities. In addition, for financial assets held as part of linked insurance/investment contracts the risk is predominantly borne by the policyholder. See page 245 and Note 30 on the financial statements for further details of collateral in respect of certain loans and advances and derivatives.

Collateral available to mitigate credit risk is disclosed in the 'Collateral' section on page 112.

Maximum exposure to credit risk

(Audited)

	2019			2018		
	Maximum exposure	**Offset**	**Net**	Maximum exposure	Offset	Net
	$m	**$m**	**$m**	$m	$m	$m
Loans and advances to customers held at amortised cost	**1,036,743**	**(28,524)**	**1,008,219**	981,696	(29,534)	952,162
– personal	**431,137**	**(4,640)**	**426,497**	391,390	(3,679)	387,711
– corporate and commercial	**535,061**	**(21,745)**	**513,316**	529,025	(23,421)	505,604
– non-bank financial institutions	**70,545**	**(2,139)**	**68,406**	61,281	(2,434)	58,847
Loans and advances to banks at amortised cost	**69,203**	**—**	**69,203**	72,167	—	72,167
Other financial assets held at amortised cost	**616,648**	**(28,826)**	**587,822**	585,600	(21,788)	563,812
– cash and balances at central banks	**154,099**	**—**	**154,099**	162,843	—	162,843
– items in the course of collection from other banks	**4,956**	**—**	**4,956**	5,787	—	5,787
– Hong Kong Government certificates of indebtedness	**38,380**	**—**	**38,380**	35,859	—	35,859
– reverse repurchase agreements – non-trading	**240,862**	**(28,826)**	**212,036**	242,804	(21,788)	221,016
– financial investments	**85,735**	**—**	**85,735**	62,666	—	62,666
– prepayments, accrued income and other assets	**92,616**	**—**	**92,616**	75,641	—	75,641
Derivatives	**242,995**	**(232,908)**	**10,087**	207,825	(194,306)	13,519
Total on-balance sheet exposure to credit risk	**1,965,589**	**(290,258)**	**1,675,331**	1,847,288	(245,628)	1,601,660
Total off-balance sheet	**893,246**	**—**	**893,246**	874,751	—	874,751
– financial and other guarantees	**95,967**	**—**	**95,967**	94,810	—	94,810
– loan and other credit-related commitments	**797,279**	**—**	**797,279**	779,941	—	779,941
At 31 Dec	**2,858,835**	**(290,258)**	**2,568,577**	2,722,039	(245,628)	2,476,411

Concentration of exposure

We have a number of global businesses with a broad range of products. We operate in a number of geographical markets with the majority of our exposures in Asia and Europe.

For an analysis of:

- financial investments, see Note 16 on the financial statements;
- trading assets, see Note 11 on the financial statements;
- derivatives, see page 119 and Note 15 on the financial statements; and
- loans and advances by industry sector and by the location of the principal operations of the lending subsidiary (or, in the case of the operations of The Hongkong and Shanghai Banking Corporation, HSBC Bank plc, HSBC Bank Middle East Limited and HSBC Bank USA, by the location of the lending branch), see page 104 for wholesale lending and page 119 for personal lending.

Credit deterioration of financial instruments

(Audited)

A summary of our current policies and practices regarding the identification, treatment and measurement of stage 1, stage 2, stage 3 (credit impaired) and POCI financial instruments can be found in Note 1.2 on the financial statements.

Measurement uncertainty and sensitivity analysis of ECL estimates

(Audited)

The recognition and measurement of ECL involves the use of significant judgement and estimation. We form multiple economic scenarios based on economic forecasts, apply these assumptions to credit risk models to estimate future credit losses, and probability-weight the results to determine an unbiased ECL estimate.

Methodology

We use multiple economic scenarios to reflect assumptions about future economic conditions, starting with three economic scenarios based on consensus forecast distributions, supplemented by alternative or additional economic scenarios and/or management adjustments where, in management's judgement, the consensus forecast distribution does not adequately capture the relevant risks.

The three economic scenarios represent the 'most likely' outcome and two less likely outcomes referred to as the Upside and Downside scenarios. Each outer scenario is consistent with a probability of 10%, while the Central scenario is assigned the remaining 80%, according to the decision of HSBC's senior management. This weighting scheme is deemed appropriate for the unbiased estimation of ECL in most circumstances.

Economic assumptions in the Central consensus economic scenario are set using the average of forecasts of external economists. Reliance on external forecasts helps ensure that the Central scenario is unbiased and maximises the use of independent information. The Upside and Downside scenarios are selected with reference to externally available forecast distributions and are designed to be cyclical, in that GDP growth, inflation and unemployment usually revert back to the Central scenario after the first three years for major economies. We determine the maximum divergence of GDP growth from the Central scenario using the 10th and the 90th percentile of the entire distribution of forecast outcomes for major economies. While key economic variables are set with reference to external distributional forecasts, we also align the overall narrative of the scenarios to the macroeconomic risks described in HSBC's 'Top and emerging risks' on page 76. This ensures that scenarios remain consistent with the more qualitative assessment of these risks. We project additional variable paths using an external provider's global macro model.

The Upside and Downside scenarios are generated once a year, reviewed at each reporting date to ensure that they are an appropriate reflection of management's view and updated if economic conditions change significantly. The Central scenario is generated every quarter. For quarters without updates to outer scenarios, we use the updated Central scenario to approximate the impact of the most recent outer scenarios on wholesale and retail credit risk exposures.

Additional scenarios are created, as required, to address those forward-looking risks that management considers are not adequately captured by the consensus. At the reporting date, we deployed additional scenarios to address economic uncertainty in the UK, the impact of deteriorating trade relations between China and the US on key Asian economies and to address the possibility of a further weakening in economic growth in Hong Kong.

Description of consensus economic scenarios

The economic assumptions presented in this section have been formed by HSBC with reference to external forecasts specifically for the purpose of calculating ECL.

The consensus Central scenario

Our Central scenario is one of moderate growth over the forecast 2020–2024 period, which reflects an overall trend of deterioration observed over the course of 2019. Global GDP growth is expected to be 2.8% on average over the period, which is marginally lower than the average growth rate over the 2014–2018 period. Across the key markets, we note:

- Expected average rates of GDP growth over the 2020–2024 period are lower than average growth rates achieved over the 2014–2018 period in all of our key markets. For the UK, this reflects expectations that the long-term impact of current economic uncertainty will be moderately adverse, while for China, it is consistent with the theme of ongoing rebalancing from an export-oriented economy to deeper domestic consumption. Short-term expectations of economic growth in Hong Kong weakened in the second half of 2019.
- The unemployment rate is expected to rise over the forecast horizon in most of our major markets.
- Inflation is expected to be stable and will remain close to central bank targets in our core markets over the forecast period.
- Major central banks lowered their main policy interest rates in 2019 and are expected to continue to maintain a low interest rate environment over the projection horizon. The FRB has resumed asset purchases to provide liquidity and the ECB has restarted its asset purchase programmes.
- The West Texas Intermediate oil price is forecast to average $59 per barrel over the projection period.

The following table describes key macroeconomic variables and the probabilities assigned in the consensus Central scenario.

Central scenario (average 2020–2024)

	UK	France	Hong Kong	Mainland China	UAE	US	Canada	Mexico
	%	%	%	%	%	%	%	%
GDP growth rate[1]	1.6	1.3	1.9	5.6	2.8	1.9	1.8	2.1
Inflation	2.0	1.6	2.2	2.4	2.0	2.0	2.0	3.5
Unemployment	4.4	7.8	3.1	4.0	2.7	4.1	6.0	3.6
Short-term interest rate	0.6	(0.6)	1.1	3.8	1.8	1.4	1.6	6.7
10-year Treasury bond yields	1.7	1.0	2.4	N/A	N/A	2.4	2.2	7.4
House price growth	3.0	2.9	3.8	4.6	(2.4)	3.4	2.6	5.4
Equity price growth	2.8	3.4	5.1	7.9	N/A	6.4	3.8	5.6
Probability	55.0	80.0	50.0	80.0	80.0	80.0	80.0	80.0

Note: N/A – not required in credit models.

1 Comparative GDP growth rates for 2019–2023 period were: UK (1.7%), France (1.5%), Hong Kong (2.6%), mainland China (5.9%) and US (2.0%).

The consensus Upside scenario

The economic forecast distribution of risks (as captured by consensus probability distributions of GDP growth) has shown a decrease in upside risks across our main markets over the course of 2019. In the first two years of the Upside scenario, global real GDP growth rises before converging to the Central scenario.

Increased confidence, de-escalation of trade tensions, removal of trade barriers, expansionary fiscal policy, positive resolution of economic uncertainty in the UK, stronger oil prices and a calming of geopolitical tensions are the risk themes that support the Upside scenario.

The following table describes key macroeconomic variables and the probabilities assigned in the consensus Upside scenario.

Upside scenario (average 2020–2024)

	UK	France	Hong Kong	Mainland China	UAE	US	Canada	Mexico
	%	%	%	%	%	%	%	%
GDP growth rate[1]	2.1	1.7	2.2	5.9	3.5	2.6	1.9	2.9
Inflation	2.4	2.0	2.5	2.7	2.3	2.4	2.2	4.1
Unemployment	4.0	7.4	2.9	3.9	2.5	3.7	5.7	3.3
Short-term interest rate	0.6	(0.5)	1.2	3.9	1.9	1.5	1.6	6.8
10-year Treasury bond yields	1.7	1.0	2.5	N/A	N/A	2.5	2.2	7.6
House price growth	4.4	3.7	5.0	5.8	0.6	4.5	5.7	6.1
Equity price growth	4.4	7.3	6.9	10.7	N/A	10.0	6.7	9.6
Probability	10	10	10	10	10	10	10	10

1 Comparative GDP growth rates for 2019–2023 period were: UK (2.2%), France (1.9%), Hong Kong (2.9%), mainland China (6.1%) and US (2.7%).

The consensus Downside scenario

The distribution of risks (as captured by consensus probability distributions of GDP growth) has shown a marginal increase in downside risks over the course of 2019 for the US, Hong Kong, the eurozone and the UK. In the Downside scenario, global real GDP growth declines for two years before recovering towards its long-run trend. House price growth either stalls or contracts and equity markets correct abruptly in our major markets in this scenario. The potential slowdown in global demand would drive commodity prices lower and result in an accompanying fall in inflation. Central banks would be expected to enact loose monetary policy, which in some markets would result in a reduction in the key policy interest rate. The scenario is consistent with our top and emerging risks, which include an intensification of global protectionism and trade barriers, a worsening of economic uncertainty in the UK, a slowdown in China, further risks to economic growth in Hong Kong and weaker commodity prices.

The following table describes key macroeconomic variables and the probabilities assigned in the consensus Downside scenario.

Downside scenario (average 2020–2024)

	UK	France	Hong Kong	Mainland China	UAE	US	Canada	Mexico
	%	%	%	%	%	%	%	%
GDP growth rate[1]	**1.0**	**1.0**	**1.4**	**5.6**	**2.1**	**1.2**	**1.5**	**1.5**
Inflation	**1.7**	**1.3**	**1.9**	**2.1**	**1.7**	**1.7**	**1.8**	**3.1**
Unemployment	**4.8**	**8.2**	**3.3**	**4.0**	**2.9**	**4.5**	**6.4**	**4.0**
Short-term interest rate	**0.1**	**(0.9)**	**(0.1)**	**3.6**	**0.4**	**0.3**	**0.8**	**5.7**
10-year Treasury bond yields	**0.8**	**0.2**	**1.2**	**N/A**	**N/A**	**1.2**	**1.4**	**6.6**
House price growth	**1.6**	**1.9**	**2.3**	**3.9**	**(5.2)**	**2.2**	**(0.8)**	**4.9**
Equity price growth	**(1.1)**	**(2.3)**	**(0.7)**	**1.1**	**N/A**	**1.2**	**0.6**	**(1.6)**
Probability	**0**	**10**	**10**	**0**	**10**	**10**	**10**	**10**

1 *Comparative GDP growth rates for 2019–2023 period were: UK (1.1%), France (1.1%), Hong Kong (2.2%), mainland China (5.8%) and US (1.2%).*

Alternative Downside scenarios

Alternative Downside scenarios have been created to reflect management's view of risk in some of our key markets.

UK alternative Downside scenarios

Three alternative Downside scenarios were maintained in 2019 for the UK, reflecting management's view of the distribution of economic risks. These scenarios reflect management's judgement that the consensus distribution does not adequately reflect the risks that stem from the UK's departure from the EU on 31 January 2020. Management evaluated events over the course of 2019 and assigned probabilities to these scenarios that take into consideration all relevant economic and political events. The three scenarios and associated probabilities are described below.

- UK alternative Downside scenario 1: Economic uncertainty could have a large impact on the UK economy resulting in a long-lasting recession with a weak recovery. This scenario reflects the consequences of such a recession with an initial risk-premium shock and weaker long-run productivity growth. This scenario has been used with a 25% weighting.
- UK alternative Downside scenario 2: This scenario reflects the possibility that economic uncertainty could result in a deep cyclical shock triggering a steep depreciation in sterling, a sharp increase in inflation and an associated monetary policy response. This represents a tail risk and has been assigned a 5% weighting.
- UK alternative Downside scenario 3: This scenario reflects the possibility that the adverse impact associated with economic uncertainty currently in the UK could manifest over a far longer period of time with the worst effects occurring later than in the above two scenarios. This scenario is also considered a tail risk and has been assigned a 5% weighting.

The table below describes key macroeconomic variables and the probabilities for each of the alternative Downside scenarios:

Average 2020–2024

	Alternative Downside scenario 1	Alternative Downside scenario 2	Alternative Downside scenario 3
	%	%	%
GDP growth rate	**0.3**	**(0.3)**	**(0.8)**
Inflation	**2.3**	**2.5**	**2.7**
Unemployment	**6.5**	**8.0**	**7.7**
Short-term interest rate	**0.4**	**2.5**	**2.5**
10-year Treasury bond yields	**1.8**	**4.0**	**4.0**
House price growth	**(1.7)**	**(3.7)**	**(4.8)**
Equity price growth	**(3.3)**	**(4.6)**	**(9.6)**
Probability	**25**	**5**	**5**

Asia-Pacific alternative Downside scenarios

Two alternative Downside scenarios have been created for key Asia-Pacific markets to represent management's view of economic uncertainty arising from trade and tariff tensions between China and the US and the current economic situation in Hong Kong. These scenarios and their associated probabilities are described as follows.

Asia-Pacific alternative Downside scenario

A continuation of trade- and tariff-related tensions throughout 2019 resulted in management modelling an alternative Downside scenario for eight of our key Asia-Pacific markets. This scenario models the effects of a significant escalation in global tensions, stemming from trade disputes but going beyond increases in tariffs to affect non-tariff barriers, cross-border investment flows and threats to the international trade architecture. This scenario assumes actions that lie beyond currently enacted tariffs and proposed tariffs and has been modelled as an addition to the three consensus-driven scenarios for these economies. In management's judgement, the impact on the US and other countries is largely captured by the consensus Downside scenario.

Key macroeconomic variables are shown in the table below:

Average 2020–2024

	Hong Kong	Mainland China
	%	%
GDP growth rate	**0.8**	**5.2**
Inflation	**1.6**	**2.0**
Unemployment	**5.1**	**4.3**
Short-term interest rate	**0.7**	**2.9**
10-year Treasury bond yields	**1.6**	**N/A**
House price growth	**(3.7)**	**2.6**
Equity price growth	**(3.3)**	**(1.6)**
Probability	**20**	**10**

Hong Kong alternative Downside scenario

A deep cyclical recessionary scenario has been modelled to reflect Hong Kong-specific risks and the possibility of a further weakening in the economic environment. This scenario has been applied to Hong Kong only and has been assigned a 10% probability.

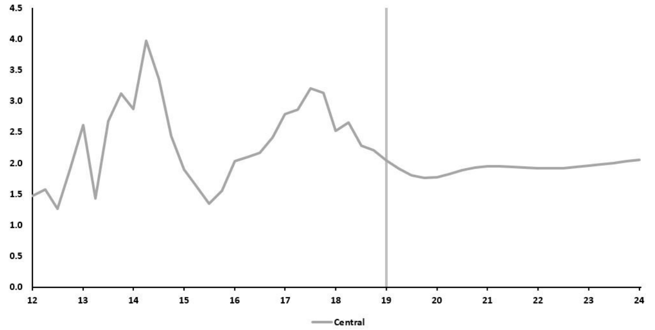
Average 2020–2024

	Hong Kong
	%
GDP growth rate	**(0.1)**
Inflation	**1.3**
Unemployment	**5.1**
Short-term interest rate	**0.4**
10-year Treasury bond yields	**1.4**
House price growth	**(3.7)**
Equity price growth	**(8.4)**
Probability	**10**

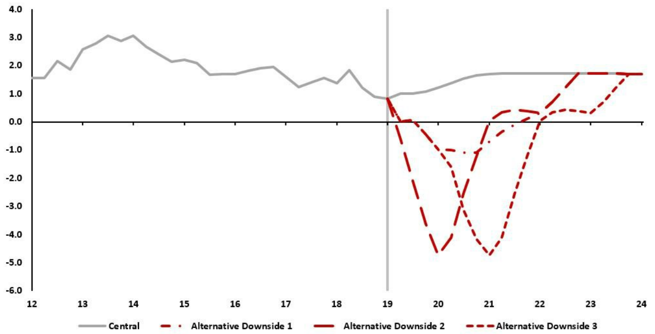
The conditions that resulted in departure from the consensus economic forecasts will be reviewed regularly as economic conditions change in future to determine whether these adjustments continue to be necessary.

The previous tables show the five-year average of GDP growth rate. The following graphs show the historical and forecasted GDP growth rate for the various economic scenarios in our four largest markets.

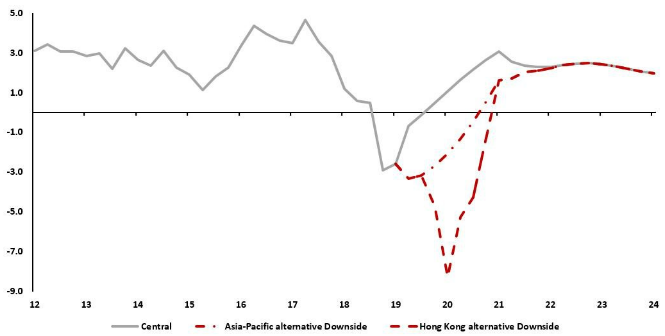
US



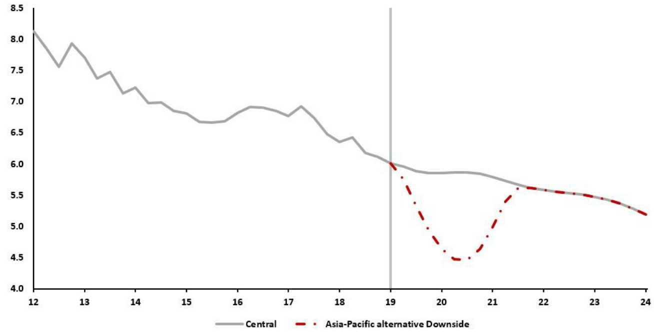
UK



Hong Kong



Mainland China



How economic scenarios are reflected in the wholesale calculation of ECL

We have developed a globally consistent methodology for the application of forward economic guidance into the calculation of ECL by incorporating forward economic guidance into the estimation of the term structure of probability of default ('PD') and loss given default ('LGD'). For PDs, we consider the correlation of forward economic guidance to default rates for a particular industry in a country. For LGD calculations, we consider the correlation of forward economic guidance to collateral values and realisation rates for a particular country and industry. PDs and LGDs are estimated for the entire term structure of each instrument.

For impaired loans, LGD estimates take into account independent recovery valuations provided by external consultants where available or internal forecasts corresponding to anticipated economic conditions and individual company conditions. In estimating the ECL on impaired loans that are individually considered not to be significant, we incorporate forward economic guidance proportionate to the probability-weighted outcome and the Central scenario outcome for non-stage 3 populations.

How economic scenarios are reflected in the retail calculation of ECL

We have developed and implemented a globally consistent methodology for incorporating forecasts of economic conditions into ECL estimates. The impact of economic scenarios on PD is modelled at a portfolio level. Historical relationships between observed default rates and macroeconomic variables are integrated into IFRS 9 ECL estimates by using economic response models. The impact of these scenarios on PD is modelled over a period equal to the remaining maturity of underlying asset or assets. The impact on LGD is modelled for mortgage portfolios by forecasting future loan-to-value ('LTV') profiles for the remaining maturity of the asset by using national level forecasts of the house price index and applying the corresponding LGD expectation.

Impact of alternative/additional scenarios

At 31 December 2019, the impact of using additional scenarios to the consensus distribution to address economic uncertainty in the UK was $311m (2018: $410m), consisting of $166m (2018: $160m) in the retail portfolio and $145m (2018: $250m) in the wholesale portfolio. The impact of deteriorating trade relations between China and the US on key Asian economies, and the possibility of a further weakening in economic growth in Hong Kong resulted in an additional ECL of $180m (2018: $40m), consisting of $60m (2018: $10m) in the retail portfolio and $120m (2018: $30m) in the wholesale portfolio, compared with consensus forecasts. We also considered developments after the balance sheet date and concluded that they did not necessitate any adjustment to the approach or judgements taken on 31 December 2019.

Economic scenarios sensitivity analysis of ECL estimates

Management considered the sensitivity of the ECL outcome against the economic forecasts as part of the ECL governance process by recalculating the ECL under each scenario described above for selected portfolios, applying a 100% weighting to each scenario in turn. The weighting is reflected in both the determination of a significant increase in credit risk and the measurement of the resulting ECL.

The ECL calculated for the Upside and Downside scenarios should not be taken to represent the upper and lower limits of possible actual ECL outcomes. The impact of defaults that might occur in future under different economic scenarios is captured by recalculating ECL for loans in stages 1 and 2 at the balance sheet date. The population of stage 3 loans (in default) at the balance sheet date is unchanged in these sensitivity calculations. Stage 3 ECL would only be sensitive to changes in forecasts of future economic conditions if the LGD of a particular portfolio was sensitive to these changes.

There is a particularly high degree of estimation uncertainty in numbers representing tail risk scenarios when assigned a 100% weighting, and an indicative range is provided for the UK tail risk sensitivity analysis.

For wholesale credit risk exposures, the sensitivity analysis excludes ECL and financial instruments related to defaulted obligors because the measurement of ECL is relatively more sensitive to credit factors specific to the obligor than future economic scenarios, and it is impracticable to separate the effect of macroeconomic factors in individual assessments.

For retail credit risk exposures, the sensitivity analysis includes ECL for loans and advances to customers related to defaulted obligors. This is because the retail ECL for secured mortgage portfolios including loans in all stages is sensitive to macroeconomic variables.

Wholesale analysis

IFRS 9 ECL sensitivity to future economic conditions[1]

	UK	US	Hong Kong	Mainland China	Canada	Mexico	UAE	France
ECL coverage of financial instruments subject to significant measurement uncertainty at 31 December 2019[2]	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**
Reported ECL	**725**	**148**	**328**	**124**	**80**	**69**	**97**	**55**
Consensus scenarios								
Central scenario	**536**	**149**	**243**	**118**	**79**	**68**	**97**	**53**
Upside scenario	**480**	**132**	**241**	**95**	**63**	**48**	**89**	**50**
Downside scenario	**635**	**161**	**244**	**106**	**108**	**99**	**108**	**79**
Alternative scenarios								
UK alternative Downside scenario 1	**1,050**							
Tail risk scenarios (UK alternative Downside scenarios 2 and 3)	**1,900–2,100**							
Asia-Pacific alternative Downside scenario			**550**	**150**				
Hong Kong alternative Downside scenario			**700**					
Gross carrying amount/nominal amount[3]	**346,035**	**203,610**	**418,102**	**104,004**	**74,620**	**32,632**	**42,304**	**124,618**

IFRS 9 ECL sensitivity to future economic conditions[1]

	UK	US	Hong Kong	Mainland China	Canada	Mexico	UAE	France
ECL coverage of financial instruments subject to significant measurement uncertainty at 31 December 2018[2]	$m	$m	$m	$m	$m	$m	$m	$m
Reported ECL	906	163	162	83	81	76	74	46
Consensus scenarios								
Central scenario	649	156	162	82	81	74	74	44
Upside scenario	595	142	156	78	75	58	69	43
Downside scenario	745	177	170	88	88	93	80	58
Alternative scenarios								
UK alternative Downside scenario 1	1,000							
Tail risk scenarios (UK alternative Downside scenarios 2 and 3)	1,700–1,900							
Trade Downside scenario			500	150				
Gross carrying value/nominal amount[3]	360,637	211,318	407,402	99,379	72,759	31,798	37,546	105,416

1 *Excludes ECL and financial instruments relating to defaulted obligors because the measurement of ECL is relatively more sensitive to credit factors specific to the obligor than future economic scenarios.*
2 *Includes off-balance sheet financial instruments that are subject to significant measurement uncertainty.*
3 *Includes low credit-risk financial instruments such as debt instruments at FVOCI, which have high carrying amounts but low ECL under all the above scenarios.*

At 31 December 2019, the UK and Hong Kong portfolios were most sensitive to changes in macroeconomic forecasts. The possible impact of Downside scenarios increased over 2019, primarily due to downward revisions in consensus forecasts and their resultant impact on the additional Downside scenarios.

The reported ECL in Hong Kong increased due to the impact of worsening consensus forecasts and the use of additional Downside scenarios. The sensitivity in Hong Kong was reflected in the use of a deep cyclical recessionary scenario to consider the possibility of a further weakening in the economic environment.

The underlying movement in the reported ECL in the UK was driven by changes in the probability weights of the underlying scenarios together with a shift in the portfolio mix of underlying assets. Furthermore, the impact of the additional Downside scenarios, particularly alternative Downside scenario 2 and alternative Downside scenario 3, were relatively more severe than 2018 given marginally weaker than forecast economic performance in 2019.

Retail analysis

The geographies below were selected based on an 85% contribution to overall ECL within our retail lending business.

IFRS 9 ECL sensitivity to future economic conditions[1]

ECL of loans and advances to customers at 31 December 2019[2]	**UK**	**Mexico**	**Hong Kong**	**UAE**	**France**	**US**	**Malaysia**	**Singapore**	**Australia**	**Canada**
	$m	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**
Reported ECL	**936**	**584**	**349**	**174**	**133**	**90**	**94**	**60**	**38**	**39**
Consensus scenarios										
Central scenario	**773**	**583**	**296**	**173**	**133**	**90**	**94**	**58**	**37**	**39**
Upside scenario	**686**	**526**	**282**	**158**	**132**	**84**	**85**	**57**	**32**	**36**
Downside scenario	**918**	**652**	**306**	**193**	**133**	**98**	**106**	**58**	**45**	**41**
Alternative scenarios										
UK alternative Downside scenario 1	**1,200**									
Tail risk scenarios (UK alternative Downside scenarios 2 and 3)	**1,500–1,700**									
Asia-Pacific alternative Downside scenario			**530**				**110**	**80**	**50**	
Hong Kong alternative Downside scenario			**540**							
Gross carrying amount	**149,576**	**7,681**	**101,689**	**3,391**	**23,017**	**15,470**	**5,839**	**8,164**	**17,258**	**22,344**

IFRS 9 ECL sensitivity to future economic conditions[1]

ECL of loans and advances to customers at 31 December 2018[2]	UK	Mexico	Hong Kong	UAE	France	US	Malaysia	Singapore	Australia	Canada
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
Reported ECL	705	520	341	204	150	102	93	68	58	29
Consensus scenarios										
Central scenario	540	517	338	204	150	101	92	66	57	29
Upside scenario	480	475	322	195	149	94	82	61	54	28
Downside scenario	641	564	344	209	150	115	104	67	63	31
Alternative scenarios										
UK alternative Downside scenario 1	900									
Tail risk scenarios (UK alternative Downside scenarios 2 and 3)	1,100-1,300									
Asia-Pacific alternative Downside scenario[3]			400				110	70	70	
Gross carrying amount	138,026	6,098	92,356	3,453	21,622	15,262	5,906	7,378	14,156	19,992

1 *ECL sensitivities exclude portfolios utilising less complex modelling approaches.*
2 *ECL sensitivity includes only on-balance sheet financial instruments to which IFRS 9 impairment requirements are applied.*
3 *In 2018, this scenario was previously described as the 'trade Downside scenario'.*

At 31 December 2019, the most significant level of ECL sensitivity in the retail portfolio was observed in the UK, Mexico and Hong Kong due to the interaction between economic forecasts, the quantum of exposures and credit characteristics of the underlying portfolios.

In France, following management's review of the calculated ECL, results were adjusted to more accurately reflect views of ECL sensitivity under an Upside and Downside scenario by adjusting for factors including the economic forecast skew and forecast reversion approach, consistent with 2018. In Hong Kong, an additional alternative Downside scenario was introduced during 2019.

The changes in sensitivity from 31 December 2018 was reflective of changes in lending volumes, credit quality and movements in foreign exchange with key countries discussed below:

- UK: An increase in stage 3 ECL was due to a pause in write-offs and changes in credit quality.
- Mexico: An increase in sensitivity was due to changes in credit quality.
- Hong Kong: An increase in severity of the Asia-Pacific alternative Downside scenario was partly offset by changes in credit quality.

For all the above sensitivity analyses, changes to ECL sensitivity would occur should there be changes to the corresponding level of uncertainty, economic forecasts, historical economic variable correlations or credit quality.

Post-model adjustments

In the context of IFRS 9, post-model adjustments are short-term increases or decreases to the ECL at either a customer or portfolio level to account for late breaking events, model deficiencies and expert credit judgement applied following management review and challenge. We have internal governance in place to regularly monitor post-model adjustments and where possible to reduce the reliance on these through model recalibration or redevelopment, as appropriate.

Post-model adjustments included an adjustment relating to Argentina sovereign bonds given the uncertainty around the sovereign debt repayment. However, the impact of the UK economic uncertainty, global trade- and tariff-related tensions in Asia-Pacific, and the economic situation around Hong Kong were excluded as these were captured within the existing methodology and governance process for the impact of multiple economic scenarios on ECL.

Post-model adjustments at 31 December 2019 were $75m (2018: $161m) for the wholesale business and $131m (2018: $117m) for the retail business.

Reconciliation of changes in gross carrying/ nominal amount and allowances for loans and advances to banks and customers including loan commitments and financial guarantees

The following disclosure provides a reconciliation by stage of the Group's gross carrying/nominal amount and allowances for loans and advances to banks and customers, including loan commitments and financial guarantees. Movements are calculated on a quarterly basis and therefore fully capture stage movements between quarters. If movements were calculated on a year-to-date basis they would only reflect the opening and closing position of the financial instrument.

The transfers of financial instruments represents the impact of stage transfers upon the gross carrying/nominal amount and associated allowance for ECL.

The net remeasurement of ECL arising from stage transfers represents the increase or decrease due to these transfers, for example, moving from a 12-month (stage 1) to a lifetime (stage 2) ECL measurement basis. Net remeasurement excludes the underlying customer risk rating ('CRR')/probability of default ('PD') movements of the financial instruments transferring stage. This is captured, along with other credit quality movements in the 'changes in risk parameters – credit quality' line item.

Changes in 'New financial assets originated or purchased', 'assets derecognised (including final repayments)' and 'changes to risk parameters – further lending/repayment' represent the impact from volume movements within the Group's lending portfolio.

Reconciliation of changes in gross carrying/nominal amount and allowances for loans and advances to banks and customers including loan commitments and financial guarantees

(Audited)

	Non-credit impaired				Credit impaired					
	Stage 1		Stage 2		Stage 3		POCI		Total	
	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
At 1 Jan 2019	**1,502,976**	**(1,449)**	**95,104**	**(2,278)**	**14,232**	**(5,135)**	**334**	**(194)**	**1,612,646**	**(9,056)**
Transfers of financial instruments:	(36,244)	(543)	31,063	1,134	5,181	(591)	–	–	–	–
– transfers from stage 1 to stage 2	(108,434)	487	108,434	(487)	–	–	–	–	–	–
– transfers from stage 2 to stage 1	73,086	(1,044)	(73,086)	1,044	–	–	–	–	–	–
– transfers to stage 3	(1,284)	59	(5,022)	665	6,306	(724)	–	–	–	–
– transfers from stage 3	388	(45)	737	(88)	(1,125)	133	–	–	–	–
Net remeasurement of ECL arising from transfer of stage	–	669	–	(676)	–	(114)	–	–	–	(121)
New financial assets originated or purchased	504,064	(534)	–	–	–	–	135	(21)	504,199	(555)
Assets derecognised (including final repayments)	(352,961)	112	(19,909)	553	(2,712)	656	(26)	8	(375,608)	1,329
Changes to risk parameters – further lending/repayment	(72,239)	291	(2,560)	67	402	(6)	28	12	(74,369)	364
Changes to risk parameters – credit quality	–	2	–	(1,208)	–	(2,704)	–	(51)	–	(3,961)
Changes to models used for ECL calculation	–	(6)	–	4	–	14	–	–	–	12
Assets written off	–	–	–	–	(2,657)	2,657	(140)	140	(2,797)	2,797
Credit-related modifications that resulted in derecognition	–	–	–	–	(268)	125	–	–	(268)	125
Foreign exchange	16,838	(9)	1,201	(40)	160	(31)	1	1	18,200	(79)
Others	(821)	3	652	3	(3)	8	13	6	(159)	20
At 31 Dec 2019	**1,561,613**	**(1,464)**	**105,551**	**(2,441)**	**14,335**	**(5,121)**	**345**	**(99)**	**1,681,844**	**(9,125)**
ECL income statement change for the period		534		(1,260)		(2,154)		(52)		(2,932)
Recoveries										361
Others										(20)
Total ECL income statement change for the period										**(2,591)**

	At 31 Dec 2019		12 months ended 31 Dec 2019
	Gross carrying/nominal amount	Allowance for ECL	ECL charge
	$m	$m	$m
As above	**1,681,844**	**(9,125)**	**(2,591)**
Other financial assets measured at amortised cost	615,179	(118)	(26)
Non-trading reverse purchase agreement commitments	53,093	–	–
Performance and other guarantees not considered for IFRS 9	–	–	(34)
Summary of financial instruments to which the impairment requirements in IFRS 9 are applied/Summary consolidated income statement	**2,350,116**	**(9,243)**	**(2,651)**
Debt instruments measured at FVOCI	355,664	(166)	(105)
Total allowance for ECL/total income statement ECL change for the period	**n/a**	**(9,409)**	**(2,756)**

As shown in the previous table, the allowance for ECL for loans and advances to customers and banks and relevant loan commitments and financial guarantees increased $69m during the period from $9,056m at 31 December 2018 to $9,125m at 31 December 2019.

This increase was primarily driven by:

- $3,961m relating to underlying credit quality changes, including the credit quality impact of financial instruments transferring between stages;
- $121m relating to the net remeasurement impact of stage transfers; and
- foreign exchange and other movements of $59m.

These decreases were partly offset by:

- $2,797m of assets written off;
- $1,138m relating to volume movements, which included the ECL allowance associated with new originations, assets derecognised and further lending/repayment;
- $125m credit-related modifications that resulted in derecognitions; and
- $12m changes to models used for ECL calculation.

The ECL charge for the period of $2,932m presented in the previous table consisted of $3,961m relating to underlying credit quality changes, including the credit quality impact of financial instruments transferring between stage and $121m relating to the net remeasurement impact of stage transfers. This was partly offset by $1,138m relating to underlying net book volume movements and $12m in changes to models used for ECL calculation.

Summary views of the movement in wholesale and personal lending are presented on pages 107 and 120.

Reconciliation of changes in gross carrying/nominal amount and allowances for loans and advances to banks and customers including loan commitments and financial guarantees[1,2]

(Audited)

	Non-credit impaired				Credit impaired					
	Stage 1		Stage 2		Stage 3		POCI		Total	
	Gross exposure	Allowance/ provision for ECL	Gross exposure	Allowance/ provision for ECL	Gross exposure	Allowance/ provision for ECL	Gross exposure	Allowance/ provision for ECL	Gross exposure	Allowance/ provision for ECL
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
At 1 Jan 2018	1,446,857	(1,469)	102,032	(2,406)	15,083	(5,722)	1,042	(242)	1,565,014	(9,839)
Transfers of financial instruments:	(8,747)	(685)	3,582	1,185	5,165	(500)	–	–	–	–
– transfers from stage 1 to stage 2	(84,181)	319	84,181	(319)	–	–	–	–	–	–
– transfers from stage 2 to stage 1	77,325	(999)	(77,325)	999	–	–	–	–	–	–
– transfers to stage 3	(2,250)	35	(4,439)	607	6,689	(642)	–	–	–	–
– transfers from stage 3	359	(40)	1,165	(102)	(1,524)	142	–	–	–	–
Net remeasurement of ECL arising from transfer of stage	–	620	–	(605)	–	(103)	–	–	–	(88)
Net new lending and further lending/payments	126,868	(512)	(16,162)	564	(2,902)	733	(587)	42	107,217	827
Changes to risk parameters – credit quality	–	423	–	(1,087)	–	(2,238)	–	(51)	–	(2,953)
Changes to models used for ECL calculation	–	–	–	–	–	–	–	–	–	–
Assets written off	–	–	–	–	(2,568)	2,552	(1)	1	(2,569)	2,553
Foreign exchange	(52,911)	76	(2,935)	99	(636)	232	(26)	6	(56,508)	413
Other	(9,091)	98	8,587	(28)	90	(89)	(94)	50	(508)	31
At 31 Dec 2018	1,502,976	(1,449)	95,104	(2,278)	14,232	(5,135)	334	(194)	1,612,646	(9,056)
ECL income statement change for the period		531		(1,128)		(1,608)		(9)		(2,214)
Recoveries										408
Others										(62)
Total ECL income statement change for the period										(1,868)

	At 31 Dec 2018		12 months ended 31 Dec 2018
	Gross carrying/ nominal amount	Allowance for ECL	ECL charge
	$m	$m	$m
As above	1,612,646	(9,056)	(1,868)
Other financial assets measured at amortised cost	582,917	(55)	21
Non-trading reverse purchase agreement commitments	65,381	–	–
Performance and other guarantees not considered for IFRS 9	–	–	(25)
Summary of financial instruments to which the impairment requirements in IFRS 9 are applied/ Summary consolidated income statement	2,260,944	(9,111)	(1,872)
Debt instruments measured at FVOCI	343,110	(84)	105
Total allowance for ECL/total income statement ECL change for the period	n/a	(9,195)	(1,767)

1 *The 31 December 2018 comparative 'Reconciliation of changes in gross carrying/nominal amount and allowances for loans and advances to banks and customers' disclosure presents 'New financial assets originated or purchased', 'Assets derecognised (including final repayments)' and 'Changes to risk parameters – further lending/repayments' under 'Net new lending and further lending/repayments'. To provide greater granularity, these amounts have been separately presented in the 31 December 2019 disclosure.*

2 *During the period, the Group has re-presented the UK wholesale lending stage 1 and stage 2 amount for 31 December 2018 only. For further details, see page 86.*

Credit quality

Credit quality of financial instruments

(Audited)

We assess the credit quality of all financial instruments that are subject to credit risk. The credit quality of financial instruments is a point-in-time assessment of PD, whereas stages 1 and 2 are determined based on relative deterioration of credit quality since initial recognition. Accordingly, for non-credit-impaired financial instruments, there is no direct relationship between the credit quality assessment and stages 1 and 2, although typically the lower credit quality bands exhibit a higher proportion in stage 2.

The five credit quality classifications each encompass a range of granular internal credit rating grades assigned to wholesale and personal lending businesses and the external ratings attributed by external agencies to debt securities, as shown in the table on page 85.

Distribution of financial instruments by credit quality at 31 December 2019

(Audited)

	Gross carrying/notional amount							
	Strong	Good	Satisfactory	Sub-standard	Credit impaired	Total	Allowance for ECL/other credit provisions	Net
	$m	$m	$m	$m	$m	$m	$m	$m
In-scope for IFRS 9								
Loans and advances to customers held at amortised cost	524,889	258,402	228,485	20,007	13,692	1,045,475	(8,732)	1,036,743
– personal	354,461	45,037	27,636	2,286	4,851	434,271	(3,134)	431,137
– corporate and commercial	138,126	190,470	186,383	16,891	8,629	540,499	(5,438)	535,061
– non-bank financial institutions	32,302	22,895	14,466	830	212	70,705	(160)	70,545
Loans and advances to banks held at amortised cost	60,636	5,329	1,859	1,395	–	69,219	(16)	69,203
Cash and balances at central banks	151,788	1,398	915	–	–	154,101	(2)	154,099
Items in the course of collection from other banks	4,935	18	3	–	–	4,956	–	4,956
Hong Kong Government certificates of indebtedness	38,380	–	–	–	–	38,380	–	38,380
Reverse repurchase agreements – non-trading	193,157	37,947	9,621	137	–	240,862	–	240,862
Financial investments	78,318	6,503	906	61	–	85,788	(53)	85,735
Prepayments, accrued income and other assets	70,675	8,638	11,321	306	152	91,092	(63)	91,029
– endorsements and acceptances	1,133	4,651	4,196	230	4	10,214	(16)	10,198
– accrued income and other	69,542	3,987	7,125	76	148	80,878	(47)	80,831
Debt instruments measured at fair value through other comprehensive income[1]	333,158	10,966	7,222	544	1	351,891	(166)	351,725
Out-of-scope for IFRS 9								
Trading assets	135,059	15,240	22,964	2,181	–	175,444	–	175,444
Other financial assets designated and otherwise mandatorily measured at fair value through profit or loss	4,655	1,391	5,584	139	–	11,769	–	11,769
Derivatives	187,636	42,642	11,894	821	2	242,995	–	242,995
Total gross carrying amount on balance sheet	1,783,286	388,474	300,774	25,591	13,847	2,511,972	(9,032)	2,502,940
Percentage of total credit quality	70.9%	15.5%	12.0%	1.0%	0.6%	100%		
Loan and other credit-related commitments	369,424	146,988	77,499	5,338	780	600,029	(329)	599,700
Financial guarantees	7,441	6,033	5,539	1,011	190	20,214	(48)	20,166
In-scope: Irrevocable loan commitments and financial guarantees	376,865	153,021	83,038	6,349	970	620,243	(377)	619,866
Loan and other credit-related commitments[2]	66,148	69,890	58,754	2,605	182	197,579	–	197,579
Performance and other guarantees	30,099	23,335	20,062	2,057	380	75,933	(132)	75,801
Out-of-scope: Revocable loan commitments and non-financial guarantees	96,247	93,225	78,816	4,662	562	273,512	(132)	273,380

Distribution of financial instruments by credit quality at 31 December 2018 (continued)

(Audited)

	Gross carrying/notional amount						Allowance for ECL/other credit provisions	Net
	Strong	Good	Satisfactory	Sub-standard	Credit impaired	Total		
	$m	$m	$m	$m	$m	$m	$m	$m
In-scope for IFRS 9								
Loans and advances to customers held at amortised cost	485,451	244,199	230,357	16,993	13,321	990,321	(8,625)	981,696
– personal	316,616	43,764	27,194	2,182	4,581	394,337	(2,947)	391,390
– corporate and commercial	140,387	181,984	189,357	14,339	8,510	534,577	(5,552)	529,025
– non-bank financial institutions	28,448	18,451	13,806	472	230	61,407	(126)	61,281
Loans and advances to banks held at amortised cost	60,249	7,371	4,549	11	—	72,180	(13)	72,167
Cash and balances at central banks	160,995	1,508	324	18	—	162,845	(2)	162,843
Items in the course of collection from other banks	5,765	21	1	—	—	5,787	—	5,787
Hong Kong Government certificates of indebtedness	35,859	—	—	—	—	35,859	—	35,859
Reverse repurchase agreements – non-trading	200,774	29,423	12,607	—	—	242,804	—	242,804
Financial investments	56,031	5,703	949	1	—	62,684	(18)	62,666
Prepayments, accrued income and other assets	55,424	8,069	9,138	181	126	72,938	(35)	72,903
– endorsements and acceptances	1,514	4,358	3,604	155	3	9,634	(11)	9,623
– accrued income and other	53,910	3,711	5,534	26	123	63,304	(24)	63,280
Debt instruments measured at fair value through other comprehensive income[1]	319,632	12,454	7,210	2,558	12	341,866	(84)	341,782
Out-of-scope for IFRS 9								
Trading assets	139,484	18,888	16,991	1,871	—	177,234	—	177,234
Other financial assets designated and otherwise mandatorily measured at fair value through profit or loss	6,079	2,163	6,683	9	—	14,934	—	14,934
Derivatives	169,121	31,225	6,813	625	41	207,825	—	207,825
Total gross carrying amount on balance sheet	1,694,864	361,024	295,622	22,267	13,500	2,387,277	(8,777)	2,378,500
Percentage of total credit quality	71%	15.1%	12.4%	0.9%	0.6%	100%		
Loan and other credit-related commitments	373,302	137,076	75,478	5,233	919	592,008	(325)	591,683
Financial guarantees	9,716	7,400	5,505	597	300	23,518	(93)	23,425
In-scope: Irrevocable loan commitments and financial guarantees	383,018	144,476	80,983	5,830	1,219	615,526	(418)	615,108
Loan and other credit-related commitments[2]	188,258	—	—	—	—	188,258	—	188,258
Performance and other guarantees	26,679	25,743	16,790	1,869	403	71,484	(99)	71,385
Out-of-scope: Revocable loan commitments and non-financial guarantees	214,937	25,743	16,790	1,869	403	259,742	(99)	259,643

1 *For the purposes of this disclosure, gross carrying value is defined as the amortised cost of a financial asset before adjusting for any loss allowance. As such, the gross carrying value of debt instruments at FVOCI as presented above will not reconcile to the balance sheet as it excludes fair value gains and losses.*

2 *In 2018, revocable loan and other commitments, which are out of scope of IFRS 9, are presented within the 'Strong' classification.*

Distribution of financial instruments to which the impairment requirements in IFRS 9 are applied, by credit quality and stage allocation

(Audited)

	Footnotes	Gross carrying/notional amount						Allowance for ECL	Net
		Strong	Good	Satisfactory	Sub-standard	Credit impaired	Total		
		$m	$m	$m	$m	$m	$m	$m	$m
Loans and advances to customers at amortised cost		524,889	258,402	228,485	20,007	13,692	1,045,475	(8,732)	1,036,743
– stage 1		523,092	242,631	181,056	4,804	–	951,583	(1,297)	950,286
– stage 2		1,797	15,771	47,429	15,185	–	80,182	(2,284)	77,898
– stage 3		–	–	–	–	13,378	13,378	(5,052)	8,326
– POCI		–	–	–	18	314	332	(99)	233
Loans and advances to banks at amortised cost		60,636	5,329	1,859	1,395	–	69,219	(16)	69,203
– stage 1		60,548	5,312	1,797	112	–	67,769	(14)	67,755
– stage 2		88	17	62	1,283	–	1,450	(2)	1,448
– stage 3		–	–	–	–	–	–	–	–
– POCI		–	–	–	–	–	–	–	–
Other financial assets measured at amortised cost		537,253	54,505	22,766	503	152	615,179	(118)	615,061
– stage 1		536,942	54,058	21,921	279	–	613,200	(38)	613,162
– stage 2		311	447	845	224	–	1,827	(38)	1,789
– stage 3		–	–	–	–	151	151	(42)	109
– POCI		–	–	–	–	1	1	–	1
Loan and other credit-related commitments		369,424	146,988	77,499	5,338	780	600,029	(329)	599,700
– stage 1		368,711	141,322	66,283	1,315	–	577,631	(137)	577,494
– stage 2		713	5,666	11,216	4,023	–	21,618	(133)	21,485
– stage 3		–	–	–	–	771	771	(59)	712
– POCI		–	–	–	–	9	9	–	9
Financial guarantees		7,441	6,033	5,539	1,011	190	20,214	(48)	20,166
– stage 1		7,400	5,746	4,200	338	–	17,684	(16)	17,668
– stage 2		41	287	1,339	673	–	2,340	(22)	2,318
– stage 3		–	–	–	–	186	186	(10)	176
– POCI		–	–	–	–	4	4	–	4
At 31 Dec 2019		1,499,643	471,257	336,148	28,254	14,814	2,350,116	(9,243)	2,340,873
Debt instruments at FVOCI	1								
– stage 1		333,072	10,941	6,902	–	–	350,915	(39)	350,876
– stage 2		86	25	320	544	–	975	(127)	848
– stage 3		–	–	–	–	–	–	–	–
– POCI		–	–	–	–	1	1	–	1
At 31 Dec 2019		333,158	10,966	7,222	544	1	351,891	(166)	351,725

1 *For the purposes of this disclosure, gross carrying value is defined as the amortised cost of a financial asset before adjusting for any loss allowance. As such, the gross carrying value of debt instruments at FVOCI as presented above will not reconcile to the balance sheet as it excludes fair value gains and losses.*

Distribution of financial instruments to which the impairment requirements in IFRS 9 are applied, by credit quality and stage allocation[2] (continued)

(Audited)

		Gross carrying/notional amount							
		Strong	Good	Satisfactory	Sub-standard	Credit impaired	Total	Allowance for ECL	Net
	Footnotes	$m	$m	$m	$m	$m	$m	$m	$m
Loans and advances to customers at amortised cost		485,451	244,199	230,357	16,993	13,321	990,321	(8,625)	981,696
– stage 1		483,170	232,004	187,773	5,446	—	908,393	(1,276)	907,117
– stage 2		2,281	12,195	42,584	11,521	—	68,581	(2,108)	66,473
– stage 3		—	—	—	—	13,023	13,023	(5,047)	7,976
– POCI		—	—	—	26	298	324	(194)	130
Loans and advances to banks at amortised cost		60,249	7,371	4,549	11	—	72,180	(13)	72,167
– stage 1		60,199	7,250	4,413	11	—	71,873	(11)	71,862
– stage 2		50	121	136	—	—	307	(2)	305
– stage 3		—	—	—	—	—	—	—	—
– POCI		—	—	—	—	—	—	—	—
Other financial assets measured at amortised cost		514,848	44,724	23,019	200	126	582,917	(55)	582,862
– stage 1		514,525	44,339	22,184	70	—	581,118	(27)	581,091
– stage 2		323	385	835	130	—	1,673	(6)	1,667
– stage 3		—	—	—	—	126	126	(22)	104
– POCI		—	—	—	—	—	—	—	—
Loan and other credit-related commitments		373,302	137,076	75,478	5,233	919	592,008	(325)	591,683
– stage 1		372,529	131,278	62,452	973	—	567,232	(143)	567,089
– stage 2		773	5,798	13,026	4,260	—	23,857	(139)	23,718
– stage 3		—	—	—	—	912	912	(43)	869
– POCI		—	—	—	—	7	7	—	7
Financial guarantees		9,716	7,400	5,505	597	300	23,518	(93)	23,425
– stage 1		9,582	6,863	4,231	158	—	20,834	(19)	20,815
– stage 2		134	537	1,274	439	—	2,384	(29)	2,355
– stage 3		—	—	—	—	297	297	(45)	252
– POCI		—	—	—	—	3	3	—	3
At 31 Dec 2018		1,443,566	440,770	338,908	23,034	14,666	2,260,944	(9,111)	2,251,833
Debt instruments at FVOCI	1	—							
– stage 1		319,623	12,358	6,856	2,218	—	341,055	(33)	341,022
– stage 2		9	96	354	340	—	799	(50)	749
– stage 3		—	—	—	—	8	8	(1)	7
– POCI		—	—	—	—	4	4	—	4
At 31 Dec 2018		319,632	12,454	7,210	2,558	12	341,866	(84)	341,782

1 *For the purposes of this disclosure, gross carrying value is defined as the amortised cost of a financial asset before adjusting for any loss allowance. As such, the gross carrying value of debt instruments at FVOCI as presented above will not reconcile to the balance sheet as it excludes fair value gains and losses.*
2 *During the period, the Group has re-presented the UK wholesale lending stage 1 and stage 2 amount. For further details, see page 86.*

Credit-impaired loans

(Audited)

We determine that a financial instrument is credit impaired and in stage 3 by considering relevant objective evidence, primarily whether:

- contractual payments of either principal or interest are past due for more than 90 days;
- there are other indications that the borrower is unlikely to pay, such as when a concession has been granted to the borrower for economic or legal reasons relating to the borrower's financial condition; and
- the loan is otherwise considered to be in default. If such unlikeliness to pay is not identified at an earlier stage, it is deemed to occur when an exposure is 90 days past due, even where regulatory rules permit default to be defined based on 180 days past due. Therefore, the definitions of credit impaired and default are aligned as far as possible so that stage 3 represents all loans that are considered defaulted or otherwise credit impaired.

Renegotiated loans and forbearance

The following table shows the gross carrying amounts of the Group's holdings of renegotiated loans and advances to customers by industry sector and by stages.

A summary of our current policies and practices for renegotiated loans and forbearance is set out in 'Credit risk management' on page 84.

Renegotiated loans and advances to customers at amortised cost by stage allocation

	Stage 1	Stage 2	Stage 3	POCI	Total
	$m	$m	$m	$m	$m
Gross carrying amount					
Personal	**–**	**–**	**2,207**	**–**	**2,207**
– first lien residential mortgages	**–**	**–**	**1,558**	**–**	**1,558**
– other personal lending	**–**	**–**	**649**	**–**	**649**
Wholesale	**1,168**	**1,179**	**3,353**	**310**	**6,010**
– corporate and commercial	**1,168**	**1,179**	**3,290**	**310**	**5,947**
– non-bank financial institutions	**–**	**–**	**63**	**–**	**63**
At 31 Dec 2019	**1,168**	**1,179**	**5,560**	**310**	**8,217**
Allowance for ECL					
Personal	**–**	**–**	**(397)**	**–**	**(397)**
– first lien residential mortgages	**–**	**–**	**(181)**	**–**	**(181)**
– other personal lending	**–**	**–**	**(216)**	**–**	**(216)**
Wholesale	**(13)**	**(55)**	**(1,349)**	**(86)**	**(1,503)**
– corporate and commercial	**(13)**	**(55)**	**(1,316)**	**(86)**	**(1,470)**
– non-bank financial institutions	**–**	**–**	**(33)**	**–**	**(33)**
At 31 Dec 2019	**(13)**	**(55)**	**(1,746)**	**(86)**	**(1,900)**
Gross carrying amount					
Personal	–	–	2,248	–	2,248
– first lien residential mortgages	–	–	1,641	–	1,641
– other personal lending	–	–	607	–	607
Wholesale	1,532	1,193	3,845	270	6,840
– corporate and commercial	1,517	1,193	3,789	270	6,769
– non-bank financial institutions	15	–	56	–	71
At 31 Dec 2018	1,532	1,193	6,093	270	9,088
Allowance for ECL					
Personal	–	–	(381)	–	(381)
– first lien residential mortgages	–	–	(186)	–	(186)
– other personal lending	–	–	(195)	–	(195)
Wholesale	(29)	(49)	(1,461)	(146)	(1,685)
– corporate and commercial	(29)	(49)	(1,438)	(146)	(1,662)
– non-bank financial institutions	–	–	(23)	–	(23)
At 31 Dec 2018	(29)	(49)	(1,842)	(146)	(2,066)

Renegotiated loans and advances to customers by geographical region

	Europe	Asia	MENA	North America	Latin America	Total	*Of which:* *UK*	*Hong Kong*
	$m	$m	$m	$m	$m	$m	*$m*	*$m*
At 31 Dec 2019	**4,182**	**838**	**1,805**	**1,185**	**207**	**8,217**	***3,438***	***277***
At 31 Dec 2018	4,533	864	1,973	1,352	366	9,088	*3,609*	*305*

Wholesale lending

This section provides further details on the regions, countries, territories and products comprising wholesale loans and advances to customers and banks. Product granularity is also provided by stage with geographical data presented for loans and advances to customers, banks, other credit commitments, financial guarantees and similar contracts. Additionally, this section provides a reconciliation of the opening 1 January 2019 to 31 December 2019 closing gross carrying/nominal amounts and the associated allowance for ECL.

At 31 December 2019, wholesale lending for loans and advances to banks and customers of $680bn increased by $12.3bn since 31 December 2018. This included favourable foreign exchange movements of $6.1bn.

Excluding foreign exchange movements, the total wholesale lending growth was driven by an $8.7bn increase in balances from non-bank financial institutions and $0.3bn in corporate and commercial balances. These were partly offset by a decrease in loans and advances to banks of $2.8bn. The primary drivers of the increase in balances from non-bank financial institutions were $3.4bn in Europe, notably $2.8bn in France, and $4.9bn in Asia. The allowance for ECL attributable to loans and advances to banks and customers of $5.6bn at 31 December 2019 decreased from $5.7bn at 31 December 2018.

Total wholesale lending for loans and advances to banks and customers by stage distribution

	Gross carrying amount					Allowance for ECL				
	Stage 1	Stage 2	Stage 3	POCI	Total	Stage 1	Stage 2	Stage 3	POCI	Total
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
Corporate and commercial	472,253	59,599	8,315	332	540,499	(672)	(920)	(3,747)	(99)	(5,438)
– agriculture, forestry and fishing	5,416	1,000	278	2	6,696	(13)	(29)	(139)	(1)	(182)
– mining and quarrying	9,923	4,189	311	12	14,435	(22)	(70)	(122)	(12)	(226)
– manufacturing	88,138	14,525	1,581	136	104,380	(143)	(211)	(806)	(50)	(1,210)
– electricity, gas, steam and air-conditioning supply	13,479	1,386	175	–	15,040	(14)	(41)	(25)	–	(80)
– water supply, sewerage, waste management and remediation	2,963	508	30	–	3,501	(6)	(4)	(18)	–	(28)
– construction	10,520	3,883	852	32	15,287	(16)	(49)	(467)	(32)	(564)
– wholesale and retail trade, repair of motor vehicles and motorcycles	83,151	9,897	1,625	8	94,681	(111)	(137)	(934)	(2)	(1,184)
– transportation and storage	22,604	2,359	588	29	25,580	(42)	(37)	(158)	–	(237)
– accommodation and food	20,109	4,284	262	1	24,656	(37)	(46)	(62)	(1)	(146)
– publishing, audiovisual and broadcasting	18,103	1,706	141	21	19,971	(30)	(23)	(33)	(1)	(87)
– real estate	122,972	6,450	1,329	1	130,752	(108)	(97)	(475)	–	(680)
– professional, scientific and technical activities	21,085	2,687	350	–	24,122	(31)	(33)	(145)	–	(209)
– administrative and support services	21,370	3,817	438	89	25,714	(33)	(58)	(179)	–	(270)
– public administration and defence, compulsory social security	1,889	488	–	–	2,377	(1)	(7)	–	–	(8)
– education	1,700	184	16	–	1,900	(7)	(5)	(6)	–	(18)
– health and care	3,543	811	111	–	4,465	(9)	(20)	(28)	–	(57)
– arts, entertainment and recreation	2,537	257	30	–	2,824	(6)	(8)	(11)	–	(25)
– other services	13,143	941	191	1	14,276	(35)	(31)	(133)	–	(199)
– activities of households	725	66	–	–	791	–	–	–	–	–
– extra-territorial organisations and bodies activities	2	–	–	–	2	–	–	–	–	–
– government	8,159	147	7	–	8,313	(6)	(2)	(6)	–	(14)
– asset-backed securities	722	14	–	–	736	(2)	(12)	–	–	(14)
Non-bank financial institutions	65,661	4,832	212	–	70,705	(42)	(28)	(90)	–	(160)
Loans and advances to banks	67,769	1,450	–	–	69,219	(14)	(2)	–	–	(16)
At 31 Dec 2019	**605,683**	**65,881**	**8,527**	**332**	**680,423**	**(728)**	**(950)**	**(3,837)**	**(99)**	**(5,614)**
By geography										
Europe	190,528	20,276	4,671	129	215,604	(318)	(458)	(1,578)	(45)	(2,399)
– of which: UK	*131,007*	*16,253*	*3,343*	*79*	*150,682*	*(252)*	*(385)*	*(989)*	*(32)*	*(1,658)*
Asia	308,305	32,287	1,419	148	342,159	(228)	(253)	(986)	(38)	(1,505)
– of which: Hong Kong	*182,501*	*23,735*	*673*	*48*	*206,957*	*(118)*	*(172)*	*(475)*	*(28)*	*(793)*
MENA	25,470	3,314	1,686	18	30,488	(55)	(85)	(946)	(12)	(1,098)
North America	64,501	7,495	458	–	72,454	(45)	(96)	(141)	–	(282)
Latin America	16,879	2,509	293	37	19,718	(82)	(58)	(186)	(4)	(330)
At 31 Dec 2019	**605,683**	**65,881**	**8,527**	**332**	**680,423**	**(728)**	**(950)**	**(3,837)**	**(99)**	**(5,614)**

Total wholesale lending for loans and other credit-related commitments and financial guarantees by stage distribution[1]

	Nominal amount					Allowance for ECL				
	Stage 1	Stage 2	Stage 3	POCI	Total	Stage 1	Stage 2	Stage 3	POCI	Total
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
Corporate and commercial	271,678	20,880	757	13	293,328	(132)	(151)	(68)	–	(351)
Financial	101,345	1,447	5	–	102,797	(7)	(2)	(1)	–	(10)
At 31 Dec 2019	**373,023**	**22,327**	**762**	**13**	**396,125**	**(139)**	**(153)**	**(69)**	**–**	**(361)**
By geography										
Europe	190,604	7,852	645	13	199,114	(60)	(43)	(56)	–	(159)
– of which: UK	*76,013*	*4,193*	*494*	*9*	*80,709*	*(48)*	*(32)*	*(31)*	*–*	*(111)*
Asia	60,759	3,762	8	–	64,529	(43)	(33)	(4)	–	(80)
– of which: Hong Kong	*27,047*	*2,114*	*5*	*–*	*29,166*	*(14)*	*(23)*	*(2)*	*–*	*(39)*
MENA	5,690	621	31	–	6,342	(12)	(13)	(4)	–	(29)
North America	112,812	9,933	77	–	122,822	(22)	(62)	(5)	–	(89)
Latin America	3,158	159	1	–	3,318	(2)	(2)	–	–	(4)
At 31 Dec 2019	**373,023**	**22,327**	**762**	**13**	**396,125**	**(139)**	**(153)**	**(69)**	**–**	**(361)**

1 *Included in loans and other credit-related commitments and financial guarantees is $53bn relating to unsettled reverse repurchase agreements, which once drawn are classified as 'Reverse repurchase agreements – non-trading'.*

Total wholesale lending for loans and advances to banks and customers by stage distribution[1]

	Gross carrying amount					Allowance for ECL				
	Stage 1	Stage 2	Stage 3	POCI	Total	Stage 1	Stage 2	Stage 3	POCI	Total
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
Corporate and commercial	474,700	51,341	8,212	324	534,577	(698)	(812)	(3,848)	(194)	(5,552)
– agriculture, forestry and fishing	4,791	1,672	236	2	6,701	(15)	(34)	(117)	(1)	(167)
– mining and quarrying	11,892	1,919	359	2	14,172	(29)	(51)	(94)	(2)	(176)
– manufacturing	92,193	11,817	1,569	125	105,704	(132)	(156)	(791)	(83)	(1,162)
– electricity, gas, steam and air-conditioning supply	14,431	1,513	40	60	16,044	(18)	(60)	(15)	(54)	(147)
– water supply, sewerage, waste management and remediation	3,212	287	24	—	3,523	(5)	(2)	(17)	—	(24)
– construction	12,577	1,458	1,168	51	15,254	(27)	(41)	(524)	(44)	(636)
– wholesale and retail trade, repair of motor vehicles and motorcycles	83,192	12,784	1,652	37	97,665	(115)	(128)	(968)	(7)	(1,218)
– transportation and storage	23,195	1,957	351	38	25,541	(37)	(46)	(82)	(1)	(166)
– accommodation and food	18,370	2,904	270	3	21,547	(43)	(41)	(83)	(1)	(168)
– publishing, audiovisual and broadcasting	19,529	1,453	189	1	21,172	(42)	(16)	(84)	—	(142)
– real estate	115,615	6,502	1,115	1	123,233	(97)	(80)	(594)	—	(771)
– professional, scientific and technical activities	19,567	2,656	350	—	22,573	(29)	(29)	(113)	—	(171)
– administrative and support services	22,553	2,110	437	3	25,103	(41)	(48)	(166)	(1)	(256)
– public administration and defence, compulsory social security	1,425	30	8	—	1,463	(1)	(3)	(5)	—	(9)
– education	1,585	230	14	—	1,829	(11)	(7)	(6)	—	(24)
– health and care	3,558	609	141	—	4,308	(10)	(16)	(33)	—	(59)
– arts, entertainment and recreation	4,244	758	39	—	5,041	(9)	(9)	(15)	—	(33)
– other services	13,234	436	242	1	13,913	(31)	(31)	(140)	—	(202)
– activities of households	770	59	1	—	830	—	—	—	—	—
– extra-territorial organisations and bodies activities	49	3	7	—	59	—	—	(1)	—	(1)
– government	7,905	168	—	—	8,073	(6)	(1)	—	—	(7)
– asset-backed securities	813	16	—	—	829	—	(13)	—	—	(13)
Non-bank financial institutions	59,012	2,165	230	—	61,407	(44)	(31)	(51)	—	(126)
Loans and advances to banks	71,873	307	—	—	72,180	(11)	(2)	—	—	(13)
At 31 Dec 2018	605,585	53,813	8,442	324	668,164	(753)	(845)	(3,899)	(194)	(5,691)
By geography										
Europe	183,592	25,868	4,233	150	213,843	(366)	(529)	(1,598)	(102)	(2,595)
– of which: UK	*126,209*	*22,165*	*2,928*	*8*	*151,310*	*(313)*	*(471)*	*(998)*	*—*	*(1,782)*
Asia	314,591	17,729	1,736	92	334,148	(179)	(121)	(1,040)	(36)	(1,376)
– of which: Hong Kong	*194,186*	*8,425*	*729*	*69*	*203,409*	*(99)*	*(54)*	*(413)*	*(35)*	*(601)*
MENA	25,684	2,974	1,769	53	30,480	(73)	(77)	(974)	(46)	(1,170)
North America	62,631	6,928	314	—	69,873	(37)	(107)	(101)	—	(245)
Latin America	19,087	314	390	29	19,820	(98)	(11)	(186)	(10)	(305)
At 31 Dec 2018	605,585	53,813	8,442	324	668,164	(753)	(845)	(3,899)	(194)	(5,691)

1 *During the period, the Group has re-presented the UK wholesale lending stage 1 and stage 2 amount. For further details, see page 86.*

Total wholesale lending for loans and other credit-related commitments and financial guarantees by stage distribution[1,2]

	Nominal amount					Allowance for ECL				
	Stage 1	Stage 2	Stage 3	POCI	Total	Stage 1	Stage 2	Stage 3	POCI	Total
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
Corporate and commercial	264,550	23,026	791	10	288,377	(142)	(161)	(87)	—	(390)
Financial	117,413	1,452	6	—	118,871	(7)	(6)	(1)	—	(14)
At 31 Dec 2018	381,963	24,478	797	10	407,248	(149)	(167)	(88)	—	(404)
By geography	—	—	—	—	—	—	—	—	—	—
Europe	201,024	11,794	614	10	213,442	(82)	(66)	(53)	—	(201)
– of which: UK	*80,504*	*8,446*	*442*	*—*	*89,392*	*(69)*	*(57)*	*(39)*	*—*	*(165)*
Asia	61,206	3,076	102	—	64,384	(39)	(16)	(28)	—	(83)
– of which: Hong Kong	*27,022*	*1,115*	*89*	*—*	*28,226*	*(12)*	*(2)*	*(27)*	*—*	*(41)*
MENA	5,304	732	18	—	6,054	(8)	(10)	(2)	—	(20)
North America	111,494	8,850	62	—	120,406	(17)	(75)	(4)	—	(96)
Latin America	2,935	26	1	—	2,962	(3)	—	(1)	—	(4)
At 31 Dec 2018	381,963	24,478	797	10	407,248	(149)	(167)	(88)	—	(404)

1 *Included in loans and other credit-related commitments and financial guarantees is $65bn relating to unsettled reverse repurchase agreements, which once drawn are classified as 'Reverse repurchase agreements – non-trading'.*
2 *During the period, the Group has re-presented the UK wholesale lending stage 1 and stage 2 amount. For further details, see page 86.*

Wholesale lending – reconciliation of changes in gross carrying/nominal amount and allowances for loans and advances to banks and customers including loan commitments and financial guarantees

(Audited)

	Non-credit impaired				Credit impaired				Total	
	Stage 1		Stage 2		Stage 3		POCI			
	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
At 1 Jan 2019	922,192	(902)	78,266	(1,012)	9,239	(3,987)	334	(194)	1,010,031	(6,095)
Transfers of financial instruments	(31,493)	(169)	28,418	276	3,075	(107)	–	–	–	–
Net remeasurement of ECL arising from transfer of stage	–	223	–	(268)	–	(38)	–	–	–	(83)
Net new and further lending/ repayments	27,918	(134)	(20,121)	167	(1,552)	369	137	(1)	6,382	401
Change in risk parameters – credit quality	–	102	–	(193)	–	(1,514)	–	(51)	–	(1,656)
Changes to models used for ECL calculation	–	–	–	(56)	–	–	–	–	–	(56)
Assets written off	–	–	–	–	(1,312)	1,312	(140)	140	(1,452)	1,452
Credit-related modifications that resulted in derecognition	–	–	–	–	(268)	125	–	–	(268)	125
Foreign exchange and other	7,035	13	1,606	(17)	107	(66)	14	7	8,762	(63)
At 31 Dec 2019	925,652	(867)	88,169	(1,103)	9,289	(3,906)	345	(99)	1,023,455	(5,975)
ECL income statement change for the period		191		(350)		(1,183)		(52)		(1,394)
Recoveries										47
Others										(24)
Total ECL income statement change for the period										(1,371)

As shown in the above table, the allowance for ECL for loans and advances to customers and banks and relevant loan commitments and financial guarantees decreased $120m during the period from $6,095m at 31 December 2018 to $5,975m at 31 December 2019.

This decrease was primarily driven by:

- $1,452m of assets written off;
- $401m relating to volume movements, which included the ECL allowance associated with new originations, assets derecognised and further lending/repayments; and
- $125m of credit-related modifications that resulted in derecognition.

These decreases were partly offset by increases of:

- $1,656m relating to underlying credit quality changes, including the credit quality impact of financial instruments transferring between stages;
- $83m relating to the net remeasurement impact of stage transfers;
- $56m changes to models used for ECL calculation; and
- foreign exchange and other movements of $63m.

The ECL charge for the period of $1,394m presented in the above table consisted of $1,656m relating to underlying credit quality changes, including the credit quality impact of financial instruments transferring between stage and $83m relating to the net remeasurement impact of stage transfers. This was partly offset by $401m relating to underlying net book volume movements and $56m in changes to models used for ECL calculation.

Wholesale lending – reconciliation of changes in gross carrying/nominal amount and allowances for loans and advances to banks and customers including loan commitments and financial guarantees[1]

(Audited)

	Non-credit impaired				Credit impaired					
	Stage 1		Stage 2		Stage 3		POCI		Total	
	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
At 1 Jan 2018	897,529	(873)	84,354	(1,249)	10,209	(4,410)	1,042	(242)	993,134	(6,774)
Transfers of financial instruments	(4,477)	(274)	1,535	386	2,942	(112)	—	—	—	—
Net remeasurement of ECL arising from transfer of stage	—	262	—	(231)	—	(92)	—	—	—	(61)
Net new and further lending/ repayments	74,107	(271)	(13,709)	342	(2,414)	406	(587)	42	57,397	519
Changes to risk parameters – credit quality	—	157	—	(301)	—	(1,041)	—	(51)	—	(1,236)
Assets written off	—	—	—	—	(1,182)	1,172	(1)	1	(1,183)	1,173
Foreign exchange and other	(44,967)	97	6,086	41	(316)	90	(120)	56	(39,317)	284
At 31 Dec 2018	922,192	(902)	78,266	(1,012)	9,239	(3,987)	334	(194)	1,010,031	(6,095)
ECL income statement change for the period		148		(190)		(727)		(9)		(778)
Recoveries										118
Others										(69)
Total ECL income statement change for the period										(729)

1 *During the period, the Group has re-presented the UK wholesale lending stage 1 and stage 2 amount for 31 December 2018 only. For further details, see page 86.*

Wholesale lending – distribution of financial instruments to which the impairment requirements of IFRS 9 are applied by credit quality

	Gross carrying/nominal amount							
	Strong	**Good**	**Satisfactory**	**Sub-standard**	**Credit impaired**	**Total**	**Allowance for ECL**	**Net**
	$m	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**
By geography								
Europe	**57,340**	**69,427**	**74,143**	**9,895**	**4,799**	**215,604**	**(2,399)**	**213,205**
of which: UK	***35,838***	***53,046***	***51,355***	***7,023***	***3,420***	***150,682***	***(1,658)***	***149,024***
Asia	**145,450**	**106,313**	**86,685**	**2,158**	**1,553**	**342,159**	**(1,505)**	**340,654**
of which: Hong Kong	***82,053***	***67,541***	***55,379***	***1,263***	***721***	***206,957***	***(793)***	***206,164***
MENA	**12,036**	**6,003**	**9,307**	**1,439**	**1,703**	**30,488**	**(1,098)**	**29,390**
North America	**12,319**	**31,496**	**24,860**	**3,320**	**459**	**72,454**	**(282)**	**72,172**
Latin America	**3,919**	**5,455**	**7,713**	**2,304**	**327**	**19,718**	**(330)**	**19,388**
At 31 Dec 2019	**231,064**	**218,694**	**202,708**	**19,116**	**8,841**	**680,423**	**(5,614)**	**674,809**
Percentage of total credit quality	**34.0%**	**32.1%**	**29.8%**	**2.8%**	**1.3%**	**100.0%**		
By geography								
Europe	60,145	62,098	79,466	7,752	4,382	213,843	(2,595)	211,248
of which: UK	*39,840*	*46,396*	*56,974*	*5,164*	*2,936*	*151,310*	*(1,782)*	*149,528*
Asia	143,864	100,437	86,065	1,977	1,805	334,148	(1,376)	332,772
of which: Hong Kong	*82,854*	*63,564*	*55,357*	*837*	*797*	*203,409*	*(601)*	*202,808*
MENA	10,393	7,905	9,173	1,186	1,823	30,480	(1,170)	29,310
North America	10,952	31,278	24,708	2,621	314	69,873	(245)	69,628
Latin America	3,730	6,088	8,300	1,286	416	19,820	(305)	19,515
At 31 Dec 2018	229,084	207,806	207,712	14,822	8,740	668,164	(5,691)	662,473
Percentage of total credit quality	34.3%	31.1%	31.1%	2.2%	1.3%	100.0%		

Our risk rating system facilitates the internal ratings-based approach under the Basel framework adopted by the Group to support calculation of our minimum credit regulatory capital requirement. The credit quality classifications can be found on page 85.

Wholesale lending – credit risk profile by obligor grade for loans and advances at amortised cost

	Basel one-year PD range	Gross carrying amount					Allowance for ECL					ECL coverage	Mapped external rating
		Stage 1	Stage 2	Stage 3	POCI	Total	Stage 1	Stage 2	Stage 3	POCI	Total		
	%	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m	%	
Corporate and commercial		472,253	59,599	8,315	332	540,499	(672)	(920)	(3,747)	(99)	(5,438)	1.0	
– CRR 1	0.000 to 0.053	44,234	18	–	–	44,252	(7)	–	–	–	(7)	–	AA- and above
– CRR 2	0.054 to 0.169	92,861	1,013	–	–	93,874	(20)	(10)	–	–	(30)	–	A+ to A-
– CRR 3	0.170 to 0.740	178,662	11,808	–	–	190,470	(164)	(91)	–	–	(255)	0.1	BBB+ to BBB-
– CRR 4	0.741 to 1.927	105,708	17,829	–	–	123,537	(244)	(151)	–	–	(395)	0.3	BB+ to BB-
– CRR 5	1.928 to 4.914	46,423	16,423	–	–	62,846	(190)	(218)	–	–	(408)	0.6	BB- to B
– CRR 6	4.915 to 8.860	3,323	7,592	–	15	10,930	(33)	(141)	–	–	(174)	1.6	B-
– CRR 7	8.861 to 15.000	795	3,067	–	3	3,865	(11)	(172)	–	–	(183)	4.7	CCC+
– CRR 8	15.001 to 99.999	247	1,849	–	–	2,096	(3)	(137)	–	–	(140)	6.7	CCC to C
– CRR 9/10	100.000	–	–	8,315	314	8,629	–	–	(3,747)	(99)	(3,846)	44.6	D
Non-bank financial institutions		65,661	4,832	212	–	70,705	(42)	(28)	(90)	–	(160)	0.2	
– CRR 1	0.000 to 0.053	16,616	–	–	–	16,616	(1)	–	–	–	(1)	–	AA- and above
– CRR 2	0.054 to 0.169	15,630	56	–	–	15,686	(4)	–	–	–	(4)	–	A+ to A-
– CRR 3	0.170 to 0.740	21,562	1,333	–	–	22,895	(12)	(4)	–	–	(16)	0.1	BBB+ to BBB-
– CRR 4	0.741 to 1.927	7,535	1,169	–	–	8,704	(12)	(7)	–	–	(19)	0.2	BB+ to BB-
– CRR 5	1.928 to 4.914	4,024	1,738	–	–	5,762	(12)	(11)	–	–	(23)	0.4	BB- to B
– CRR 6	4.915 to 8.860	280	517	–	–	797	(1)	(4)	–	–	(5)	0.6	B-
– CRR 7	8.861 to 15.000	12	7	–	–	19	–	–	–	–	–	–	CCC+
– CRR 8	15.001 to 99.999	2	12	–	–	14	–	(2)	–	–	(2)	14.3	CCC to C
– CRR 9/10	100.000	–	–	212	–	212	–	–	(90)	–	(90)	42.5	D
Banks		67,769	1,450	–	–	69,219	(14)	(2)	–	–	(16)	–	
– CRR 1	0.000 to 0.053	49,858	21	–	–	49,879	(2)	–	–	–	(2)	–	AA- and above
– CRR 2	0.054 to 0.169	10,689	68	–	–	10,757	(7)	–	–	–	(7)	0.1	A+ to A-
– CRR 3	0.170 to 0.740	5,312	17	–	–	5,329	(2)	–	–	–	(2)	–	BBB+ to BBB-
– CRR 4	0.741 to 1.927	1,725	31	–	–	1,756	(1)	(1)	–	–	(2)	0.1	BB+ to BB-
– CRR 5	1.928 to 4.914	71	32	–	–	103	–	–	–	–	–	–	BB- to B
– CRR 6	4.915 to 8.860	113	2	–	–	115	(2)	–	–	–	(2)	1.7	B-
– CRR 7	8.861 to 15.000	1	1	–	–	2	–	–	–	–	–	–	CCC+
– CRR 8	15.001 to 99.999	–	1,278	–	–	1,278	–	(1)	–	–	(1)	0.1	CCC to C
– CRR 9/10	100.000	–	–	–	–	–	–	–	–	–	–	–	D
At 31 Dec 2019		605,683	65,881	8,527	332	680,423	(728)	(950)	(3,837)	(99)	(5,614)	0.8	

Wholesale lending – credit risk profile by obligor grade for loans and advances at amortised cost[1] (continued)

	Basel one-year PD range	Gross carrying amount					Allowance for ECL					ECL coverage	Mapped external rating
		Stage 1	Stage 2	Stage 3	POCI	Total	Stage 1	Stage 2	Stage 3	POCI	Total		
	%	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m	%	
Corporate and commercial		474,700	51,341	8,212	324	534,577	(698)	(812)	(3,848)	(194)	(5,552)	1.0	
– CRR 1	0.000 to 0.053	45,401	67	—	—	45,468	(4)	(2)	—	—	(6)	—	AA- and above
– CRR 2	0.054 to 0.169	93,266	1,653	—	—	94,919	(17)	(4)	—	—	(21)	—	A+ to A-
– CRR 3	0.170 to 0.740	172,496	9,487	—	—	181,983	(162)	(85)	—	—	(247)	0.1	BBB+ to BBB-
– CRR 4	0.741 to 1.927	111,949	14,352	—	—	126,301	(231)	(114)	—	—	(345)	0.3	BB+ to BB-
– CRR 5	1.928 to 4.914	46,396	16,661	—	—	63,057	(209)	(252)	—	—	(461)	0.7	BB- to B
– CRR 6	4.915 to 8.860	3,662	4,544	—	22	8,228	(41)	(103)	—	—	(144)	1.8	B-
– CRR 7	8.861 to 15.000	1,228	2,882	—	4	4,114	(22)	(147)	—	—	(169)	4.1	CCC+
– CRR 8	15.001 to 99.999	302	1,695	—	—	1,997	(12)	(105)	—	—	(117)	5.9	CCC to C
– CRR 9/10	100.000	—	—	8,212	298	8,510	—	—	(3,848)	(194)	(4,042)	47.5	D
Non-bank financial institutions		59,012	2,165	230	—	61,407	(44)	(31)	(51)	—	(126)	0.2	
– CRR 1	0.000 to 0.053	13,256	—	—	—	13,256	(1)	—	—	—	(1)	—	AA- and above
– CRR 2	0.054 to 0.169	15,172	20	—	—	15,192	(2)	—	—	—	(2)	—	A+ to A-
– CRR 3	0.170 to 0.740	17,950	501	—	—	18,451	(13)	(1)	—	—	(14)	0.1	BBB+ to BBB-
– CRR 4	0.741 to 1.927	7,521	798	—	—	8,319	(10)	(2)	—	—	(12)	0.1	BB+ to BB-
– CRR 5	1.928 to 4.914	4,882	606	—	—	5,488	(14)	(5)	—	—	(19)	0.3	BB- to B
– CRR 6	4.915 to 8.860	61	133	—	—	194	—	(2)	—	—	(2)	1.0	B-
– CRR 7	8.861 to 15.000	169	23	—	—	192	(4)	(1)	—	—	(5)	2.6	CCC+
– CRR 8	15.001 to 99.999	1	84	—	—	85	—	(20)	—	—	(20)	23.5	CCC to C
– CRR 9/10	100.000	—	—	230	—	230	—	—	(51)	—	(51)	22.2	D
Banks		71,873	307	—	—	72,180	(11)	(2)	—	—	(13)	—	
– CRR 1	0.000 to 0.053	47,680	32	—	—	47,712	(3)	—	—	—	(3)	—	AA- and above
– CRR 2	0.054 to 0.169	12,519	18	—	—	12,537	(2)	—	—	—	(2)	—	A+ to A-
– CRR 3	0.170 to 0.740	7,250	121	—	—	7,371	(3)	(1)	—	—	(4)	0.1	BBB+ to BBB-
– CRR 4	0.741 to 1.927	4,032	118	—	—	4,150	(3)	(1)	—	—	(4)	0.1	BB+ to BB-
– CRR 5	1.928 to 4.914	381	18	—	—	399	—	—	—	—	—	—	BB- to B
– CRR 6	4.915 to 8.860	8	—	—	—	8	—	—	—	—	—	—	B-
– CRR 7	8.861 to 15.000	1	—	—	—	1	—	—	—	—	—	—	CCC+
– CRR 8	15.001 to 99.999	2	—	—	—	2	—	—	—	—	—	—	CCC to C
– CRR 9/10	100.000	—	—	—	—	—	—	—	—	—	—	—	D
At 31 Dec 2018		605,585	53,813	8,442	324	668,164	(753)	(845)	(3,899)	(194)	(5,691)	0.9	

1 *During the period, the Group has re-presented the UK wholesale lending stage 1 and stage 2 amount. For further details, see page 86.*

Commercial real estate

Commercial real estate lending includes the financing of corporate, institutional and high net worth customers who are investing primarily in income-producing assets and, to a lesser extent, in their construction and development. The portfolio is globally diversified with larger concentrations in Hong Kong, the UK and the US.

Our global exposure is centred largely on cities with economic, political or cultural significance. In more developed markets, our exposure mainly comprises the financing of investment assets, the redevelopment of existing stock and the augmentation of both commercial and residential markets to support economic and population growth. In less-developed commercial real estate markets, our exposures comprise lending for development assets on relatively short tenors with a particular focus on supporting larger, better capitalised developers involved in residential construction or assets supporting economic expansion.

Commercial real estate lending grew $7.2bn, including foreign exchange movements, mainly in Hong Kong and, to a lesser extent, within Canada.

Commercial real estate lending

	Europe	Asia	MENA	North America	Latin America	Total	Of which: UK	Of which: Hong Kong
	$m	$m	$m	$m	$m	$m	*$m*	*$m*
Gross loans and advances								
Stage 1	**25,017**	**76,832**	**1,507**	**10,938**	**1,653**	**115,947**	***17,953***	***60,632***
Stage 2	**3,988**	**2,673**	**18**	**508**	**41**	**7,228**	***2,953***	***1,696***
Stage 3	**1,115**	**21**	**208**	**33**	**27**	**1,404**	***948***	***17***
POCI	**1**	**—**	**—**	**—**	**—**	**1**	***—***	***—***
At 31 Dec 2019	**30,121**	**79,526**	**1,733**	**11,479**	**1,721**	**124,580**	***21,854***	***62,345***
– *of which: renegotiated loans*	***788***	***—***	***195***	***—***	***—***	***983***	***782***	***—***
Allowance for ECL	**(372)**	**(78)**	**(170)**	**(17)**	**(7)**	**(644)**	***(305)***	***(40)***

Commercial real estate lending[1] (continued)

	Europe	Asia	MENA	North America	Latin America	Total	Of which: UK	Of which: Hong Kong
	$m	$m	$m	$m	$m	$m	*$m*	*$m*
Gross loans and advances								
Stage 1	26,265	70,769	1,607	9,129	1,796	109,566	*19,624*	*55,872*
Stage 2	2,406	3,176	120	677	13	6,392	*1,809*	*2,032*
Stage 3	1,022	16	209	43	118	1,408	*673*	*12*
POCI	—	—	—	—	14	14	*—*	*—*
At 31 Dec 2018	29,693	73,961	1,936	9,849	1,941	117,380	*22,106*	*57,916*
– *of which: renegotiated loans*	*944*	*1*	*186*	*1*	*—*	*1,132*	*816*	*—*
Allowance for ECL	(364)	(59)	(171)	(9)	(52)	(655)	*(282)*	*(33)*

1 *During the period, the Group has re-presented the UK wholesale lending stage 1 and stage 2 amount. For further details, see page 86.*

Refinance risk in commercial real estate

Commercial real estate lending tends to require the repayment of a significant proportion of the principal at maturity. Typically, a customer will arrange repayment through the acquisition of a new loan to settle the existing debt. Refinance risk is the risk that a customer, being unable to repay the debt on maturity, fails to refinance it at commercial rates. We monitor our commercial real estate portfolio closely, assessing indicators for signs of potential issues with refinancing.

Commercial real estate gross loans and advances maturity analysis

	Europe	Asia	MENA	North America	Latin America	Total	Of which: UK	Of which: Hong Kong
	$m	$m	$m	$m	$m	$m	*$m*	*$m*
On demand, overdrafts or revolving								
< 1 year	**13,808**	**21,625**	**816**	**5,905**	**135**	**42,289**	***11,775***	***16,937***
1–2 years	**6,197**	**17,638**	**142**	**1,548**	**107**	**25,632**	***5,274***	***13,776***
2–5 years	**7,797**	**35,557**	**509**	**3,511**	**1,332**	**48,706**	***4,347***	***27,860***
> 5 years	**2,319**	**4,706**	**266**	**515**	**147**	**7,953**	***458***	***3,772***
At 31 Dec 2019	**30,121**	**79,526**	**1,733**	**11,479**	**1,721**	**124,580**	***21,854***	***62,345***
On demand, overdrafts or revolving								
< 1 year	13,790	22,100	896	4,942	427	42,155	*11,305*	*18,094*
1–2 years	5,850	13,174	305	1,949	117	21,395	*5,153*	*9,120*
2–5 years	7,257	32,894	417	2,152	1,053	43,773	*5,232*	*26,061*
> 5 years	2,796	5,793	318	806	344	10,057	*416*	*4,641*
At 31 Dec 2018	29,693	73,961	1,936	9,849	1,941	117,380	*22,106*	*57,916*

Collateral and other credit enhancements

(Audited)

Although collateral can be an important mitigant of credit risk, it is the Group's practice to lend on the basis of the customer's ability to meet their obligations out of cash flow resources rather than placing primary reliance on collateral and other credit risk enhancements. Depending on the customer's standing and the type of product, facilities may be provided without any collateral or other credit enhancements. For other lending, a charge over collateral is obtained and considered in determining the credit decision and pricing. In the event of default, the Group may utilise the collateral as a source of repayment.

Depending on its form, collateral can have a significant financial effect in mitigating our exposure to credit risk. Where there is sufficient collateral, an expected credit loss is not recognised. This is the case for reverse repurchase agreements and for certain loans and advances to customers where the loan to value ('LTV') is very low.

Mitigants may include a charge on borrowers' specific assets, such as real estate or financial instruments. Other credit risk mitigants include short positions in securities and financial assets held as part of linked insurance/investment contracts where the risk is predominantly borne by the policyholder. Additionally, risk may be managed by employing other types of collateral and credit risk enhancements, such as second charges, other liens and unsupported guarantees. Guarantees are normally taken from corporates and export credit agencies. Corporates would normally provide guarantees as part of a parent/subsidiary relationship and span a number of credit grades. The export credit agencies will normally be investment grade.

Certain credit mitigants are used strategically in portfolio management activities. While single name concentrations arise in portfolios managed by Global Banking and Corporate Banking, it is only in Global Banking that their size requires the use of portfolio level credit mitigants. Across Global Banking, risk limits and utilisations, maturity profiles and risk quality are monitored and managed proactively. This process is key to the setting of risk appetite for these larger, more complex, geographically distributed customer groups. While the principal form of risk management continues to be at the point of exposure origination, through the lending decision-making process, Global Banking also utilises loan sales and credit default swap ('CDS') hedges to manage concentrations and reduce risk. These transactions are the responsibility of a dedicated Global Banking portfolio management team. Hedging activity is carried out within agreed credit parameters, and is subject to market risk limits and a robust governance structure. Where applicable, CDSs are entered into directly with a central clearing house counterparty. Otherwise our exposure to CDS protection providers is diversified among mainly banking counterparties with strong credit ratings.

CDS mitigants are held at portfolio level and are not included in the expected loss calculations. CDS mitigants are not reported in the following tables.

Collateral on loans and advances

Collateral held is analysed separately for commercial real estate and for other corporate, commercial and financial (non-bank) lending. The following tables include off-balance sheet loan commitments, primarily undrawn credit lines.

The collateral measured in the following tables consists of fixed first charges on real estate, and charges over cash and marketable financial instruments. The values in the tables represent the expected market value on an open market basis. No adjustment has been made to the collateral for any expected costs of recovery. Marketable securities are measured at their fair value.

Other types of collateral such as unsupported guarantees and floating charges over the assets of a customer's business are not measured in the following tables. While such mitigants have value, often providing rights in insolvency, their assignable value is not sufficiently certain and they are therefore assigned no value for disclosure purposes.

The LTV ratios presented are calculated by directly associating loans and advances with the collateral that individually and uniquely supports each facility. When collateral assets are shared by multiple loans and advances, whether specifically or, more generally, by way of an all monies charge, the collateral value is pro-rated across the loans and advances protected by the collateral.

For credit-impaired loans, the collateral values cannot be directly compared with impairment allowances recognised. The LTV figures use open market values with no adjustments. Impairment allowances are calculated on a different basis, by considering other cash flows and adjusting collateral values for costs of realising collateral as explained further on page 244.

Commercial real estate loans and advances

The value of commercial real estate collateral is determined by using a combination of external and internal valuations and physical inspections. For CRR 1–7, local valuation policies determine the frequency of review on the basis of local market conditions because of the complexity of valuing collateral for commercial real estate. For CRR 8–10, almost all collateral would have been revalued within the last three years.

In Hong Kong, market practice is typically for lending to major property companies to be either secured by guarantees or unsecured. In Europe, facilities of a working capital nature are generally not secured by a first fixed charge, and are therefore disclosed as not collateralised.

Wholesale lending – commercial real estate loans and advances including loan commitments by level of collateral for key countries/territories (by stage)

(Audited)

	Total		Of which: UK		Of which: Hong Kong		Of which: US	
	Gross carrying/ nominal amount	ECL coverage	Gross carrying/ nominal amount	ECL coverage	Gross carrying/ nominal amount	ECL coverage	Gross carrying/ nominal amount	ECL coverage
	$m	%	$m	%	$m	%	$m	%
Stage 1								
Not collateralised	61,820	0.1	7,266	0.1	32,478	–	541	–
Fully collateralised	89,319	0.1	18,535	–	41,798	–	4,722	–
LTV ratio:								
– less than 50%	46,318	0.1	7,018	0.1	28,776	–	1,703	0.1
– 51% to 75%	32,583	0.1	9,349	–	10,815	0.1	2,854	–
– 76% to 90%	5,018	0.1	1,649	0.1	1,436	0.1	96	–
– 91% to 100%	5,400	0.2	519	–	771	–	69	–
Partially collateralised (A):	6,563	0.2	682	–	1,627	0.1	–	–
– *collateral value on A*	3,602		535		1,142		–	
Total	157,702	0.1	26,483	0.1	75,903	–	5,263	–
Stage 2								
Not collateralised	3,040	1.2	1,857	1.2	440	0.2	–	–
Fully collateralised	5,184	1.1	1,419	1.2	1,501	0.6	354	1.4
LTV ratio:								
– less than 50%	2,167	1.1	615	1.8	955	0.3	62	–
– 51% to 75%	1,986	0.9	712	0.6	497	1.0	292	1.4
– 76% to 90%	333	2.1	16	6.3	29	–	–	–
– 91% to 100%	698	1.1	76	1.3	20	–	–	–
Partially collateralised (B):	500	0.6	296	0.3	42	–	–	–
– *collateral value on B*	203		56		25		–	
Total	8,724	1.1	3,572	1.1	1,983	0.5	354	–
Stage 3								
Not collateralised	315	57.8	66	92.4	–	–	–	–
Fully collateralised	557	14.9	404	12.9	17	11.8	–	–
LTV ratio:								
– less than 50%	87	16.1	42	7.1	6	16.7	–	–
– 51% to 75%	90	7.8	69	4.3	10	–	–	–
– 76% to 90%	89	15.7	72	4.2	–	–	–	–
– 91% to 100%	291	16.5	221	19.5	1	–	–	–
Partially collateralised (C):	773	41.5	507	27.8	–	–	–	–
– *collateral value on C*	380		166		–		–	
Total	1,645	35.6	977	26.0	17	11.8	–	–
POCI								
Not collateralised	–	–	–	–	–	–	–	–
Fully collateralised	1	–	–	–	–	–	–	–
LTV ratio:								
– less than 50%	1	–	–	–	–	–	–	–
– 51% to 75%	–	–	–	–	–	–	–	–
– 76% to 90%	–	–	–	–	–	–	–	–
– 91% to 100%	–	–	–	–	–	–	–	–
Partially collateralised (D):	–	–	–	–	–	–	–	–
– *collateral value on D*	–		–		–		–	
Total	1	–	–	–	–	–	–	–
At 31 Dec 2019	168,072	0.5	31,032	1.0	77,903	0.1	5,617	0.1

Wholesale lending – commercial real estate loans and advances including loan commitments by level of collateral for key countries/territories (by stage)[1] (continued)

	Total		Of which: UK		Hong Kong		US	
	Gross carrying/ nominal amount	ECL coverage	*Gross carrying/ nominal amount*	*ECL coverage*	*Gross carrying/ nominal amount*	*ECL coverage*	*Gross carrying/ nominal amount*	*ECL coverage*
	$m	%	*$m*	*%*	*$m*	*%*	*$m*	*%*
Stage 1								
Not collateralised	61,486	0.1	*9,920*	*0.2*	*31,224*	*—*	*—*	*—*
Fully collateralised	86,960	0.1	*17,196*	*0.1*	*39,174*	*—*	*4,862*	*—*
LTV ratio:								
– less than 50%	46,650	0.1	*7,673*	*0.1*	*25,870*	*—*	*3,463*	*—*
– 51% to 75%	29,384	0.1	*7,937*	*0.1*	*10,452*	*0.1*	*787*	*—*
– 76% to 90%	5,167	0.1	*1,038*	*—*	*1,168*	*0.1*	*519*	*—*
– 91% to 100%	5,759	0.2	*548*	*0.2*	*1,684*	*0.1*	*93*	*—*
Partially collateralised (A):	6,101	0.1	*487*	*0.2*	*2,130*	*—*	*—*	*—*
– *collateral value on A*	*3,735*		*285*		*1,401*		*—*	
Total	154,547	0.1	*27,603*	*0.1*	*72,528*	*—*	*4,862*	*—*
Stage 2								
Not collateralised	2,886	0.9	*1,083*	*1.0*	*1,140*	*0.2*	*—*	*—*
Fully collateralised	5,309	1.1	*1,352*	*2.6*	*1,576*	*0.4*	*439*	*0.5*
LTV ratio:								
– less than 50%	2,372	0.9	*727*	*1.9*	*795*	*0.4*	*303*	*0.7*
– 51% to 75%	1,667	0.7	*567*	*0.7*	*505*	*0.4*	*7*	*—*
– 76% to 90%	363	5.0	*34*	*44.1*	*29*	*—*	*129*	*—*
– 91% to 100%	907	1.0	*24*	*8.3*	*247*	*—*	*—*	*—*
Partially collateralised (B):	289	1.4	*52*	*5.8*	*15*	*—*	*—*	*—*
– *collateral value on B*	*156*		*20*		*5*		*—*	
Total	8,484	1.1	*2,487*	*2.0*	*2,731*	*0.3*	*439*	*0.5*
Stage 3								
Not collateralised	338	57.1	*61*	*85.2*	*—*	*—*	*—*	*—*
Fully collateralised	606	12.7	*433*	*9.2*	*12*	*—*	*—*	*—*
LTV ratio:								
– less than 50%	412	10.0	*304*	*9.2*	*2*	*—*	*—*	*—*
– 51% to 75%	88	27.3	*58*	*6.9*	*10*	*—*	*—*	*—*
– 76% to 90%	38	2.6	*35*	*5.7*	*—*	*—*	*—*	*—*
– 91% to 100%	68	16.2	*36*	*16.7*	*—*	*—*	*—*	*—*
Partially collateralised (C):	474	56.5	*261*	*42.9*	*—*	*—*	*—*	*—*
– *collateral value on C*	*321*		*137*		*—*		*—*	
Total	1,418	37.9	*755*	*27.0*	*12*	*—*	*—*	*—*
POCI								
Not collateralised	—	—	*—*	*—*	*—*	*—*	*—*	*—*
Fully collateralised	15	53.3	*—*	*—*	*—*	*—*	*—*	*—*
LTV ratio:								
– less than 50%	13	61.5	*—*	*—*	*—*	*—*	*—*	*—*
– 51% to 75%	2	—	*—*	*—*	*—*	*—*	*—*	*—*
– 76% to 90%	—	—	*—*	*—*	*—*	*—*	*—*	*—*
– 91% to 100%	—	—	*—*	*—*	*—*	*—*	*—*	*—*
Partially collateralised (D):	—	—	*—*	*—*	*—*	*—*	*—*	*—*
– *collateral value on D*	—		*—*		*—*		*—*	
Total	15	53.3	*—*	*—*	*—*	*—*	*—*	*—*
At 31 Dec 2018	164,464	0.5	*30,845*	*0.9*	*75,271*	*—*	*5,301*	*0.1*

1 *During the period, the Group has re-presented the UK wholesale lending stage 1 and stage 2 amount. For further details, see page 86.*

Wholesale lending – commercial real estate loans and advances including loan commitments by level of collateral for key countries/territories

(Audited)

	Total		Of which: UK		Of which: Hong Kong		Of which: US	
	Gross carrying/ nominal amount	**ECL coverage**	***Gross carrying/ nominal amount***	***ECL coverage***	***Gross carrying/ nominal amount***	***ECL coverage***	***Gross carrying/ nominal amount***	***ECL coverage***
	$m	**%**	***$m***	***%***	***$m***	***%***	***$m***	***%***
Rated CRR/PD1 to 7								
Not collateralised	**64,850**	**0.1**	***9,119***	***0.3***	***32,918***	***—***	***541***	***—***
Fully collateralised	**94,299**	**0.1**	***19,833***	***0.1***	***43,299***	***0.1***	***5,021***	***0.1***
Partially collateralised (A):	**7,052**	**0.2**	***971***	***0.1***	***1,669***	***0.1***	***—***	***—***
– *collateral value on A*	***3,796***		***586***		***1,167***		***—***	
Total	**166,201**	**0.1**	***29,923***	***0.1***	***77,886***	***—***	***5,562***	***0.1***
Rated CRR/PD8								
Not collateralised	**10**	**50.0**	***4***	***100.0***	***—***	***—***	***—***	***—***
Fully collateralised	**204**	**4.9**	***121***	***5.0***	***—***	***—***	***55***	***3.6***
LTV ratio:								
– less than 50%	**47**	**8.5**	***27***	***14.8***	***—***	***—***	***13***	***—***
– 51% to 75%	**120**	**3.3**	***68***	***1.5***	***—***	***—***	***42***	***4.8***
– 76% to 90%	**25**	**4.0**	***15***	***6.7***	***—***	***—***	***—***	***—***
– 91% to 100%	**12**	**8.3**	***11***	***—***	***—***	***—***	***—***	***—***
Partially collateralised (B):	**11**	**—**	***7***	***—***	***—***	***—***	***—***	***—***
– *collateral value on B*	***9***		***5***		***—***		***—***	
Total	**225**	**6.7**	***132***	***7.6***	***—***	***—***	***55***	***3.6***
Rated CRR/PD9 to 10								
Not collateralised	**315**	**57.8**	***66***	***92.4***	***—***	***—***	***—***	***—***
Fully collateralised	**557**	**14.9**	***404***	***12.9***	***17***	***11.8***	***—***	***—***
LTV ratio:								
– less than 50%	**87**	**16.1**	***42***	***7.1***	***6***	***16.7***	***—***	***—***
– 51% to 75%	**90**	**7.8**	***69***	***4.3***	***10***	***—***	***—***	***—***
– 76% to 90%	**89**	**15.7**	***72***	***4.2***	***—***	***—***	***—***	***—***
– 91% to 100%	**291**	**16.5**	***221***	***19.5***	***1***	***100.0***	***—***	***—***
Partially collateralised (C):	**774**	**41.6**	***507***	***27.8***	***—***	***—***	***—***	***—***
– *collateral value on C*	***380***		***166***		***—***		***—***	
Total	**1,646**	**35.7**	***977***	***26.0***	***17***	***11.8***	***—***	***—***
At 31 Dec 2019	**168,072**	**0.5**	***31,032***	***1.0***	***77,903***	***0.1***	***5,617***	***0.1***
Rated CRR/PD1 to 7								
Not collateralised	64,324	0.1	*11,001*	*0.2*	*32,364*	*—*	*—*	*—*
Fully collateralised	91,791	0.1	*18,112*	*0.2*	*40,747*	*0.1*	*5,282*	*0.1*
Partially collateralised (A):	6,377	0.2	*532*	*0.6*	*2,145*	*—*	*—*	*—*
– *collateral value on A*	*3,879*		*299*		*1,406*		*—*	
Total	162,492	0.1	*29,645*	*0.3*	*75,256*	*—*	*5,282*	*0.1*
Rated CRR/PD8								
Not collateralised	49	2.0	*2*	*—*	*—*	*—*	*—*	*—*
Fully collateralised	477	1.5	*435*	*1.1*	*3*	*33.3*	*19*	*—*
LTV ratio:								
– less than 50%	178	1.7	*149*	*1.3*	*3*	*33.3*	*19*	*—*
– 51% to 75%	269	0.4	*265*	*0.4*	*—*	*—*	*—*	*—*
– 76% to 90%	13	7.7	*7*	*14.3*	*—*	*—*	*—*	*—*
– 91% to 100%	17	11.8	*14*	*14.3*	*—*	*—*	*—*	*—*
Partially collateralised (B):	13	7.7	*8*	*12.5*	*—*	*—*	*—*	*—*
– *collateral value on B*	*12*		*6*		*—*		*—*	
Total	539	1.7	*445*	*1.3*	*3*	*33.3*	*19*	*—*
Rated CRR/PD9 to 10								
Not collateralised	338	57.1	*61*	*85.2*	*—*	*—*	*—*	*—*
Fully collateralised	621	13.5	*433*	*9.2*	*12*	*—*	*—*	*—*
LTV ratio:								
– less than 50%	425	11.5	*304*	*9.2*	*2*	*—*	*—*	*—*
– 51% to 75%	90	26.7	*58*	*6.9*	*10*	*—*	*—*	*—*
– 76% to 90%	38	2.6	*35*	*5.7*	*—*	*—*	*—*	*—*
– 91% to 100%	68	16.2	*36*	*16.7*	*—*	*—*	*—*	*—*
Partially collateralised (C):	474	56.5	*261*	*42.9*	*—*	*—*	*—*	*—*
– *collateral value on C*	*321*		*137*		*—*		*—*	
Total	1,433	38.0	*755*	*27.0*	*12*	*—*	*—*	*—*
At 31 Dec 2018	164,464	0.5	*30,845*	*0.9*	*75,271*	*—*	*5,301*	*0.1*

Other corporate, commercial and financial (non-bank) loans and advances

Other corporate, commercial and financial (non-bank) loans are analysed separately in the following table, which focuses on the countries/territories containing the majority of our loans and advances balances. For financing activities in other corporate and commercial lending, collateral value is not strongly correlated to principal repayment performance.

Collateral values are generally refreshed when an obligor's general credit performance deteriorates and we have to assess the likely performance of secondary sources of repayment should it prove necessary to rely on them.

Accordingly, the following table reports values only for customers with CRR 8–10, recognising that these loans and advances generally have valuations that are comparatively recent.

Wholesale lending – other corporate, commercial and financial (non-bank) loans and advances including loan commitments by level of collateral for key countries/territories (by stage)

(Audited)

	Total		Of which:					
			UK		*Hong Kong*		*US*	
	Gross carrying/ nominal amount	ECL coverage	*Gross carrying/ nominal amount*	*ECL coverage*	*Gross carrying/ nominal amount*	*ECL coverage*	*Gross carrying/ nominal amount*	*ECL coverage*
	$m	%	*$m*	*%*	*$m*	*%*	*$m*	*%*
Stage 1								
Not collateralised	680,079	0.1	*132,197*	*0.2*	*116,536*	*–*	*112,911*	*–*
Fully collateralised	128,290	0.1	*40,172*	*0.1*	*32,818*	*0.1*	*14,830*	*–*
LTV ratio:								
– less than 50%	48,012	0.1	*13,831*	*0.1*	*11,009*	*0.1*	*5,326*	*–*
– 51% to 75%	37,891	0.1	*11,903*	*0.2*	*12,783*	*0.1*	*3,717*	*0.1*
– 76% to 90%	13,072	0.1	*3,399*	*0.2*	*4,697*	*0.1*	*130*	*–*
– 91% to 100%	29,315	–	*11,039*	*–*	*4,329*	*0.1*	*5,657*	*–*
Partially collateralised (A):	52,890	0.1	*8,122*	*0.1*	*20,162*	*0.1*	*1,629*	*–*
– *collateral value on A*	*25,824*		*3,809*		*9,616*		*1,337*	
Total	861,259	0.1	*180,491*	*0.2*	*169,516*	*–*	*129,370*	*–*
Stage 2								
Not collateralised	61,540	1.2	*13,318*	*2.2*	*13,308*	*0.7*	*10,129*	*0.9*
Fully collateralised	21,126	0.8	*3,139*	*1.8*	*12,934*	*0.6*	*868*	*0.8*
LTV ratio:								
– less than 50%	7,081	0.9	*1,208*	*2.0*	*3,845*	*0.6*	*303*	*0.3*
– 51% to 75%	8,482	0.9	*1,111*	*1.8*	*5,580*	*0.7*	*465*	*1.1*
– 76% to 90%	2,684	0.9	*282*	*2.1*	*1,646*	*0.5*	*47*	*2.1*
– 91% to 100%	2,879	0.6	*538*	*1.3*	*1,863*	*0.2*	*53*	*–*
Partially collateralised (B):	8,463	0.8	*1,516*	*1.4*	*3,768*	*0.4*	*124*	*1.6*
– *collateral value on B*	*3,669*		*370*		*1,801*		*53*	
Total	91,129	1.1	*17,973*	*2.1*	*30,010*	*0.6*	*11,121*	*0.9*
Stage 3								
Not collateralised	4,768	49.2	*1,899*	*33.0*	*504*	*83.5*	*2*	*50.0*
Fully collateralised	1,479	22.4	*494*	*12.6*	*86*	*12.8*	*214*	*–*
LTV ratio:								
– less than 50%	335	35.2	*103*	*17.5*	*9*	*33.3*	*2*	*–*
– 51% to 75%	352	24.4	*198*	*8.6*	*21*	*4.8*	*–*	*–*
– 76% to 90%	373	23.6	*101*	*20.8*	*40*	*7.5*	*–*	*–*
– 91% to 100%	419	9.1	*92*	*7.6*	*16*	*25.0*	*212*	*–*
Partially collateralised (C):	1,367	44.8	*369*	*20.1*	*87*	*48.3*	*92*	*44.6*
– *collateral value on C*	*693*		*192*		*34*		*65*	
Total	7,614	43.2	*2,762*	*27.6*	*677*	*70.0*	*308*	*13.6*
POCI								
Not collateralised	223	32.7	*32*	*96.9*	*7*	*–*	*–*	*–*
Fully collateralised	28	3.6	*–*	*–*	*10*	*–*	*–*	*–*
LTV ratio:								
– less than 50%	2	50.0	*–*	*–*	*–*	*–*	*–*	*–*
– 51% to 75%	26	–	*–*	*–*	*10*	*–*	*–*	*–*
– 76% to 90%	–	–	*–*	*–*	*–*	*–*	*–*	*–*
– 91% to 100%	–	–	*–*	*–*	*–*	*–*	*–*	*–*
Partially collateralised (D):	97	33.0	*57*	*1.8*	*31*	*90.3*	*–*	*–*
– *collateral value on D*	*57*		*19*		*30*		*–*	
Total	348	30.5	*89*	*36.0*	*48*	*58.3*	*–*	*–*
At 31 Dec 2019	960,350	0.5	*201,315*	*0.7*	*200,251*	*0.4*	*140,799*	*0.1*

Wholesale lending – other corporate, commercial and financial (non-bank) loans and advances including loan commitments by level of collateral for key countries/territories (by stage)[1,2] (continued)

(Audited)

	Total		Of which: UK		Of which: Hong Kong		Of which: US	
	Gross carrying/ nominal amount	ECL coverage	*Gross carrying/ nominal amount*	*ECL coverage*	*Gross carrying/ nominal amount*	*ECL coverage*	*Gross carrying/ nominal amount*	*ECL coverage*
	$m	%	*$m*	*%*	*$m*	*%*	*$m*	*%*
Stage 1								
Not collateralised	673,589	0.1	*137,269*	*0.2*	*122,259*	*—*	*116,001*	*—*
Fully collateralised	127,443	0.1	*30,492*	*0.1*	*36,730*	*0.1*	*11,229*	*0.1*
LTV ratio:								
– less than 50%	39,509	0.1	*8,519*	*0.2*	*12,032*	*0.1*	*4,686*	*—*
– 51% to 75%	49,518	0.1	*9,275*	*0.2*	*14,264*	*0.1*	*2,424*	*—*
– 76% to 90%	12,627	0.1	*3,201*	*0.2*	*4,567*	*0.1*	*318*	*—*
– 91% to 100%	25,789	0.1	*9,497*	*—*	*5,867*	*0.1*	*3,801*	*—*
Partially collateralised (A):	54,412	0.1	*6,668*	*0.2*	*21,942*	*—*	*1,875*	*—*
– collateral value on A	*23,857*		*3,250*		*10,263*		*912*	
Total	855,444	0.1	*174,429*	*0.2*	*180,931*	*—*	*129,105*	*—*
Stage 2								
Not collateralised	61,464	1.1	*21,035*	*1.7*	*6,212*	*0.4*	*10,085*	*1.2*
Fully collateralised	13,633	1.2	*5,645*	*1.5*	*3,378*	*0.5*	*1,131*	*9.3*
LTV ratio:								
– less than 50%	5,109	1.1	*2,047*	*1.7*	*1,421*	*0.4*	*342*	*0.6*
– 51% to 75%	4,950	1.3	*2,154*	*1.8*	*1,290*	*0.6*	*467*	*0.6*
– 76% to 90%	1,399	1.8	*496*	*1.2*	*391*	*0.5*	*85*	*1.2*
– 91% to 100%	2,175	0.8	*948*	*0.4*	*276*	*0.4*	*237*	*1.7*
Partially collateralised (B):	6,623	0.7	*1,793*	*1.2*	*2,287*	*0.3*	*63*	*1.6*
– collateral value on B	*2,324*		*339*		*971*		*16*	
Total	81,720	1.1	*28,473*	*1.6*	*11,877*	*0.4*	*11,279*	*1.1*
Stage 3								
Not collateralised	5,240	50.2	*1,882*	*38.8*	*478*	*81.2*	*1*	*100.0*
Fully collateralised	1,460	22.9	*517*	*6.2*	*146*	*—*	*130*	*13.8*
LTV ratio:								
– less than 50%	361	36.0	*133*	*10.5*	*11*	*—*	*4*	*—*
– 51% to 75%	328	9.8	*179*	*1.7*	*62*	*—*	*—*	*—*
– 76% to 90%	427	24.6	*131*	*13.7*	*32*	*—*	*—*	*—*
– 91% to 100%	344	19.8	*74*	*8.1*	*41*	*—*	*126*	*—*
Partially collateralised (C):	1,147	43.1	*228*	*21.1*	*158*	*15.2*	*71*	*31.0*
– collateral value on C	*580*		*132*		*38*		*55*	
Total	7,847	44.1	*2,627*	*31.2*	*782*	*52.7*	*202*	*10.9*
POCI								
Not collateralised	232	66.8	*—*	*—*	*25*	*20.0*	*—*	*—*
Fully collateralised	37	2.7	*—*	*—*	*9*	*—*	*—*	*—*
LTV ratio:								
– less than 50%	1	—	*—*	*—*	*—*	*—*	*—*	*—*
– 51% to 75%	—	—	*—*	*—*	*—*	*—*	*—*	*—*
– 76% to 90%	22	—	*—*	*—*	*—*	*—*	*—*	*—*
– 91% to 100%	14	—	*—*	*—*	*9*	*—*	*—*	*—*
Partially collateralised (D):	49	63.3	*8*	*—*	*35*	*85.7*	*—*	*—*
– collateral value on D	*38*		*3*		*34*		*—*	
Total	318	59.2	*8*	*—*	*69*	*50.7*	*—*	*—*
At 31 Dec 2018	945,329	0.6	*205,537*	*0.8*	*193,659*	*0.3*	*140,586*	*0.1*

1 *During the period, the Group has re-presented the UK wholesale lending stage 1 and stage 2 amount. For further details, see page 86.*
2 *The 2018 comparative amounts have been re-presented to reclassify amounts from fully collateralised to not collateralised and to include not collateralised amounts previously excluded. The impact of these re-presentations is to increase stage 1 not collateralised amounts by $130bn and decrease fully collateralised amounts by $105bn; increase stage 2 not collateralised amounts by $14bn and decrease fully collateralised amounts by $12bn; and to increase stage 3 not collateralised amounts by $0.3bn and decrease fully collateralised amounts by $0.1bn.*

Wholesale lending – other corporate, commercial and financial (non-bank) loans and advances including loan commitments by level of collateral for key countries/territories

(Audited)

	Total		*Of which:* UK		*Of which:* Hong Kong		*Of which:* US	
	Gross carrying/ nominal amount	ECL coverage	*Gross carrying/ nominal amount*	*ECL coverage*	*Gross carrying/ nominal amount*	*ECL coverage*	*Gross carrying/ nominal amount*	*ECL coverage*
	$m	%	*$m*	*%*	*$m*	*%*	*$m*	*%*
Rated CRR/PD8								
Not collateralised	**2,499**	**5.8**	***285***	***13.0***	***10***	***70.0***	***1,645***	***3.3***
Fully collateralised	**694**	**3.3**	***382***	***2.6***	***–***	***–***	***166***	***1.2***
LTV ratio:								
– less than 50%	**246**	**2.8**	***120***	***1.7***	***–***	***–***	***85***	***1.2***
– 51% to 75%	**189**	**4.2**	***93***	***3.2***	***–***	***–***	***18***	***–***
– 76% to 90%	**97**	**2.1**	***42***	***2.4***	***–***	***–***	***45***	***2.2***
– 91% to 100%	**162**	**3.7**	***127***	***3.9***	***–***	***–***	***18***	***–***
Partially collateralised (A):	**279**	**4.7**	***53***	***5.7***	***73***	***2.7***	***66***	***3.0***
– *collateral value on A*	***152***		***34***		***6***		***39***	
Total	**3,472**	**5.2**	***720***	***6.9***	***83***	***12.0***	***1,877***	***3.0***
Rated CRR/PD9 to 10								
Not collateralised	**4,991**	**48.5**	***1,930***	***34.1***	***510***	***82.5***	***2***	***50.0***
Fully collateralised	**1,507**	**22.0**	***494***	***12.6***	***96***	***11.5***	***214***	***–***
LTV ratio:								
– less than 50%	**338**	**35.2**	***103***	***17.5***	***10***	***–***	***2***	***–***
– 51% to 75%	**377**	**22.8**	***198***	***8.6***	***30***	***3.3***	***–***	***–***
– 76% to 90%	**373**	**23.6**	***101***	***20.8***	***40***	***7.5***	***–***	***–***
– 91% to 100%	**419**	**9.1**	***92***	***7.6***	***16***	***–***	***212***	***–***
Partially collateralised (B):	**1,464**	**44.0**	***427***	***17.6***	***119***	***58.8***	***92***	***44.6***
– *collateral value on B*	***750***		***211***		***64***		***65***	
Total	**7,962**	**42.7**	***2,851***	***27.9***	***725***	***69.2***	***308***	***13.6***
At 31 Dec 2019	**11,434**	**31.3**	***3,571***	***23.7***	***808***	***63.4***	***2,185***	***4.5***
Rated CRR/PD8								
Not collateralised	1,243	5.4	*565*	*6.2*	*94*	*7.4*	*191*	*5.2*
Fully collateralised	1,895	3.6	*74*	*4.1*	*11*	*9.1*	*1,621*	*3.1*
LTV ratio:								
– less than 50%	693	4.2	*21*	*4.8*	*–*	*–*	*594*	*4.2*
– 51% to 75%	292	2.7	*49*	*2.0*	*11*	*9.1*	*169*	*2.4*
– 76% to 90%	45	15.6	*2*	*–*	*–*	*–*	*20*	*–*
– 91% to 100%	865	2.8	*2*	*–*	*–*	*–*	*838*	*–*
Partially collateralised (A):	212	2.8	*23*	*4.3*	*153*	*1.3*	*–*	*–*
– *collateral value on A*	*84*		*14*		*49*		*–*	
Total	3,350	4.2	*662*	*6*	*258*	*3.9*	*1,812*	*3.4*
Rated CRR/PD9 to 10								
Not collateralised	5,199	53.2	*1,775*	*42.1*	*503*	*78.1*	*6*	*16.7*
Fully collateralised	1,719	24.8	*513*	*6.2*	*155*	*–*	*188*	*9.6*
LTV ratio:								
– less than 50%	608	36.0	*181*	*7.7*	*11*	*–*	*77*	*22.1*
– 51% to 75%	503	8.7	*172*	*1.7*	*62*	*–*	*103*	*1.0*
– 76% to 90%	405	24.2	*86*	*10.5*	*32*	*–*	*–*	*–*
– 91% to 100%	203	31.5	*74*	*8.1*	*50*	*–*	*8*	*–*
Partially collateralised (B):	974	46.1	*187*	*21.9*	*193*	*28.0*	*5*	*60.0*
– *collateral value on B*	*466*		*116*		*73*		*2*	
Total	7,892	46.1	*2,475*	*33.2*	*851*	*52.6*	*199*	*11.1*
At 31 Dec 2018	11,242	33.7	*3,137*	*27.4*	*1,109*	*41.3*	*2,011*	*4.2*

Other credit risk exposures

In addition to collateralised lending, other credit enhancements are employed and methods used to mitigate credit risk arising from financial assets. These are summarised below:

- Some securities issued by governments, banks and other financial institutions benefit from additional credit enhancements provided by government guarantees that cover the assets.
- Debt securities issued by banks and financial institutions include asset-backed securities ('ABSs') and similar instruments, which are supported by underlying pools of financial assets. Credit risk associated with ABSs is reduced through the purchase of credit default swap ('CDS') protection.
- Trading loans and advances mainly pledged against cash collateral are posted to satisfy margin requirements. There is limited credit risk on cash collateral posted since in the event of default of the counterparty this would be set off against the related liability. Reverse repos and stock borrowing are by their nature collateralised.

Collateral accepted as security that the Group is permitted to sell or repledge under these arrangements is described on page 282 of the financial statements.

- The Group's maximum exposure to credit risk includes financial guarantees and similar contracts granted, as well as loan and other credit-related commitments. Depending on the terms of the arrangement, we may use additional credit mitigation if a guarantee is called upon or a loan commitment is drawn and subsequently defaults.

For further information on these arrangements, see Note 32 on the financial statements.

Derivatives

We participate in transactions exposing us to counterparty credit risk. Counterparty credit risk is the risk of financial loss if the counterparty to a transaction defaults before satisfactorily settling it. It arises principally from over-the-counter ('OTC') derivatives and securities financing transactions and is calculated in both the trading and non-trading books. Transactions vary in value by reference to a market factor such as an interest rate, exchange rate or asset price.

The counterparty risk from derivative transactions is taken into account when reporting the fair value of derivative positions. The adjustment to the fair value is known as the credit valuation adjustment ('CVA').

For an analysis of CVAs, see Note 12 on the financial statements.

The following table reflects by risk type the fair values and gross notional contract amounts of derivatives cleared through an exchange, central counterparty or non-central counterparty.

Notional contract amounts and fair values of derivatives

	2019			2018		
	Notional amount	Fair value		Notional amount	Fair value	
		Assets	Liabilities		Assets	Liabilities
	$m	$m	$m	$m	$m	$m
Total OTC derivatives	**26,244,531**	**282,778**	**279,101**	31,982,343	255,190	251,001
– total OTC derivatives cleared by central counterparties	**12,563,343**	**45,140**	**46,351**	17,939,035	52,424	52,845
– total OTC derivatives not cleared by central counterparties	**13,681,188**	**237,638**	**232,750**	14,043,308	202,766	198,156
Total exchange traded derivatives	**1,583,590**	**1,956**	**2,135**	2,030,580	2,346	4,545
Gross	**27,828,121**	**284,734**	**281,236**	34,012,923	257,536	255,546
Offset		**(41,739)**	**(41,739)**		(49,711)	(49,711)
At 31 Dec		**242,995**	**239,497**		207,825	205,835

The purposes for which HSBC uses derivatives are described in Note 15 on the financial statements.

The International Swaps and Derivatives Association ('ISDA') master agreement is our preferred agreement for documenting derivatives activity. It is common, and our preferred practice, for the parties involved in a derivative transaction to execute a credit support annex ('CSA') in conjunction with the ISDA master agreement. Under a CSA, collateral is passed between the parties to mitigate the counterparty risk inherent in outstanding positions. The majority of our CSAs are with financial institutional clients.

We manage the counterparty exposure on our OTC derivative contracts by using collateral agreements with counterparties and netting agreements. Currently, we do not actively manage our general OTC derivative counterparty exposure in the credit markets, although we may manage individual exposures in certain circumstances.

We place strict policy restrictions on collateral types and as a consequence the types of collateral received and pledged are, by value, highly liquid and of a strong quality, being predominantly cash.

Where a collateral type is required to be approved outside the collateral policy, approval is required from a committee of senior representatives from Markets, Legal and Risk.

See page 304 and Note 30 on the financial statements for details regarding legally enforceable right of offset in the event of counterparty default and collateral received in respect of derivatives.

Personal lending

This section presents further disclosures related to personal lending. It provides details of the regions, countries and products that are driving the change observed in personal loans and advances to customers, with the impact of foreign exchange separately identified. Additionally, Hong Kong and UK mortgage book LTV data is provided.

This section also provides a reconciliation of the opening 1 January 2019 to 31 December 2019 closing gross carrying/nominal amounts and associated allowance for ECL.

Further product granularity is also provided by stage, with geographical data presented for loans and advances to customers, loan and other credit-related commitments and financial guarantees.

At 31 December 2019, total personal lending for loans and advances to customers of $434bn increased by $40bn compared with 31 December 2018. This increase included favourable exchange movements of $6bn. Excluding foreign exchange movements, there was growth of $34bn, primarily driven by $18bn in Asia and $14bn in Europe. The allowance for ECL attributable to personal lending, excluding off-balance sheet loan commitments and guarantees, and foreign exchange movements, increased $0.2bn.

Excluding foreign exchange movements, total personal lending was primarily driven by mortgage growth, which grew by $23bn. Mortgages grew in Asia by $12bn, notably $7bn in Hong Kong and $3bn in Australia. In Europe, mortgages grew by $10bn, notably $9bn in the UK, driven by stronger acquisition performance, including the expanded use of broker relationships.

The quality of both our Hong Kong and UK mortgage books remained high, with negligible defaults and impairment allowances. The average LTV ratio on new mortgage lending in Hong Kong was 49%, compared with an estimated 41% for the overall mortgage portfolio. The average LTV ratio on new lending in the UK was 67%, compared with an estimated 51% for the overall mortgage portfolio.

Excluding foreign exchange movements, other personal lending balances at 31 December 2019 increased by $11bn compared with 31 December 2018. The increase was attributable to loans and overdrafts, which grew by $4bn in Hong Kong and $4bn in Europe, notably $2bn in France and $1bn in the UK. Credit cards increased by $1bn in the US, China and to a lesser extent from Mexico.

Total personal lending for loans and advances to customers at amortised cost by stage distribution

	Gross carrying amount				Allowance for ECL			
	Stage 1	**Stage 2**	**Stage 3**	**Total**	**Stage 1**	**Stage 2**	**Stage 3**	**Total**
	$m	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**
By portfolio								
First lien residential mortgages	**312,031**	**7,077**	**3,070**	**322,178**	**(39)**	**(68)**	**(422)**	**(529)**
– *of which: interest only (including offset)*	***31,201***	***1,602***	***376***	***33,179***	***(6)***	***(15)***	***(91)***	***(112)***
– *affordability (including US adjustable rate mortgages)*	***14,222***	***796***	***514***	***15,532***	***(3)***	***(3)***	***(3)***	***(9)***
Other personal lending	**101,638**	**8,674**	**1,781**	**112,093**	**(544)**	**(1,268)**	**(793)**	**(2,605)**
– other	**77,031**	**4,575**	**1,193**	**82,799**	**(229)**	**(451)**	**(491)**	**(1,171)**
– credit cards	**22,285**	**3,959**	**524**	**26,768**	**(310)**	**(801)**	**(284)**	**(1,395)**
– second lien residential mortgages	**750**	**84**	**55**	**889**	**(1)**	**(6)**	**(10)**	**(17)**
– motor vehicle finance	**1,572**	**56**	**9**	**1,637**	**(4)**	**(10)**	**(8)**	**(22)**
At 31 Dec 2019	**413,669**	**15,751**	**4,851**	**434,271**	**(583)**	**(1,336)**	**(1,215)**	**(3,134)**
By geography								
Europe	**186,561**	**6,854**	**2,335**	**195,750**	**(112)**	**(538)**	**(578)**	**(1,228)**
– *of which: UK*	***153,313***	***5,455***	***1,612***	***160,380***	***(104)***	***(513)***	***(370)***	***(987)***
Asia	**173,523**	**5,855**	**717**	**180,095**	**(223)**	**(339)**	**(170)**	**(732)**
– *of which: Hong Kong*	***117,013***	***2,751***	***189***	***119,953***	***(90)***	***(220)***	***(44)***	***(354)***
MENA	**5,671**	**247**	**299**	**6,217**	**(50)**	**(58)**	**(189)**	**(297)**
North America	**41,148**	**1,930**	**1,238**	**44,316**	**(56)**	**(119)**	**(141)**	**(316)**
Latin America	**6,766**	**865**	**262**	**7,893**	**(142)**	**(282)**	**(137)**	**(561)**
At 31 Dec 2019	**413,669**	**15,751**	**4,851**	**434,271**	**(583)**	**(1,336)**	**(1,215)**	**(3,134)**

Total personal lending for loans and other credit-related commitments and financial guarantees by stage distribution

	Nominal amount				Allowance for ECL			
	Stage 1	**Stage 2**	**Stage 3**	**Total**	**Stage 1**	**Stage 2**	**Stage 3**	**Total**
	$m	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**
Europe	**51,575**	**604**	**110**	**52,289**	**(10)**	**(2)**	**–**	**(12)**
– *of which: UK*	***49,322***	***493***	***105***	***49,920***	***(8)***	***(1)***	**–**	***(9)***
Asia	**149,336**	**682**	**9**	**150,027**	**–**	**–**	**–**	**–**
– *of which: Hong Kong*	***115,025***	***27***	***3***	***115,055***	**–**	**–**	**–**	**–**
MENA	**3,150**	**46**	**53**	**3,249**	**–**	**–**	**–**	**–**
North America	**13,919**	**256**	**20**	**14,195**	**(1)**	**–**	**–**	**(1)**
Latin America	**4,312**	**43**	**3**	**4,358**	**(3)**	**–**	**–**	**(3)**
At 31 Dec 2019	**222,292**	**1,631**	**195**	**224,118**	**(14)**	**(2)**	**–**	**(16)**

Total personal lending for loans and advances to customers at amortised cost by stage distribution (continued)

	Gross carrying amount				Allowance for ECL			
	Stage 1	Stage 2	Stage 3	Total	Stage 1	Stage 2	Stage 3	Total
	$m	$m	$m	$m	$m	$m	$m	$m
By portfolio								
First lien residential mortgages	284,103	6,286	2,944	293,333	(41)	(62)	(432)	(535)
– *of which: interest only (including offset)*	*31,874*	*1,324*	*338*	*33,536*	*(3)*	*(13)*	*(92)*	*(108)*
– *affordability (including US adjustable rate mortgages)*	*16,110*	*1,065*	*507*	*17,682*	*(3)*	*(4)*	*(5)*	*(12)*
Other personal lending	90,578	8,789	1,637	101,004	(493)	(1,203)	(716)	(2,412)
– other	67,196	4,400	1,121	72,717	(214)	(435)	(465)	(1,114)
– credit cards	20,932	4,259	453	25,644	(272)	(756)	(233)	(1,261)
– second lien residential mortgages	1,022	100	57	1,179	(2)	(9)	(13)	(24)
– motor vehicle finance	1,428	30	6	1,464	(5)	(3)	(5)	(13)
At 31 Dec 2018	374,681	15,075	4,581	394,337	(534)	(1,265)	(1,148)	(2,947)
By geography								
Europe	169,782	5,731	2,051	177,564	(105)	(453)	(450)	(1,008)
– *of which: UK*	*139,237*	*4,308*	*1,315*	*144,860*	*(93)*	*(421)*	*(219)*	*(733)*
Asia	155,661	5,413	693	161,767	(207)	(353)	(180)	(740)
– *of which: Hong Kong*	*104,909*	*2,715*	*169*	*107,793*	*(71)*	*(220)*	*(39)*	*(330)*
MENA	5,565	350	411	6,326	(61)	(70)	(263)	(394)
North America	38,283	2,552	1,186	42,021	(29)	(90)	(142)	(261)
Latin America	5,390	1,029	240	6,659	(132)	(299)	(113)	(544)
At 31 Dec 2018	374,681	15,075	4,581	394,337	(534)	(1,265)	(1,148)	(2,947)

Total personal lending for loans and other credit-related commitments and financial guarantees by stage distribution (continued)

	Nominal amount				Allowance for ECL			
	Stage 1	Stage 2	Stage 3	Total	Stage 1	Stage 2	Stage 3	Total
	$m	$m	$m	$m	$m	$m	$m	$m
Europe	52,719	291	290	53,300	(7)	—	—	(7)
– of which: UK	*50,195*	*224*	*285*	*50,704*	*(5)*	—	—	*(5)*
Asia	131,333	1,034	1	132,368	—	—	—	—
– of which: Hong Kong	*102,156*	*366*	—	*102,522*	—	—	—	—
MENA	3,264	67	23	3,354	—	—	—	—
North America	14,469	312	94	14,875	(1)	(1)	—	(2)
Latin America	4,318	59	4	4,381	(5)	—	—	(5)
At 31 Dec 2018	206,103	1,763	412	208,278	(13)	(1)	—	(14)

Exposure to UK interest-only mortgage loans

The following information is presented for HSBC branded UK interest-only mortgage loans with balances of $14.6bn. This excludes offset mortgages in the first direct brand, Private Bank mortgages, endowment mortgages and other products.

At the end of 2019, the average LTV ratio in the portfolio was 42% and 99% of mortgages had an LTV ratio of 75% or less.

Of the interest-only mortgages that expired in 2017, 86% were repaid within 12 months of expiry with a total of 95% being repaid within 24 months of expiry. For interest-only mortgages expiring during 2018, 91% were fully repaid within 12 months of expiry.

The profile of maturing UK interest-only loans is as follows:

UK interest-only mortgage loans

	$m
Expired interest-only mortgage loans	**158**
Interest-only mortgage loans by maturity	
– 2020	**306**
– 2021	**435**
– 2022	**430**
– 2023	**556**
– 2024–2028	**3,101**
– Post 2028	**9,587**
At 31 Dec 2019	**14,573**

Personal lending – reconciliation of changes in gross carrying/nominal amount and allowances for loans and advances to customers including loan commitments and financial guarantees

(Audited)

	Non-credit impaired				**Credit impaired**			
	Stage 1		**Stage 2**		**Stage 3**		**Total**	
	Gross carrying/ nominal amount	**Allowance for ECL**	**Gross carrying/ nominal amount**	**Allowance for ECL**	**Gross carrying/ nominal amount**	**Allowance for ECL**	**Gross carrying/ nominal amount**	**Allowance for ECL**
	$m	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**	**$m**
At 1 Jan 2019	**580,784**	**(547)**	**16,838**	**(1,266)**	**4,993**	**(1,148)**	**602,615**	**(2,961)**
Transfers of financial instruments	**(4,751)**	**(374)**	**2,645**	**858**	**2,106**	**(484)**	**–**	**–**
Net remeasurement of ECL arising from transfer of stage	**–**	**446**	**–**	**(408)**	**–**	**(76)**	**–**	**(38)**
Net new and further lending/repayments	**50,946**	**3**	**(2,348)**	**453**	**(758)**	**281**	**47,840**	**737**
Change in risk parameters – credit quality	**–**	**(100)**	**–**	**(1,015)**	**–**	**(1,190)**	**–**	**(2,305)**
Changes to models used for ECL calculation	**–**	**(6)**	**–**	**60**	**–**	**14**	**–**	**68**
Assets written off	**–**	**–**	**–**	**–**	**(1,345)**	**1,345**	**(1,345)**	**1,345**
Foreign exchange and other	**8,982**	**(19)**	**247**	**(20)**	**50**	**43**	**9,279**	**4**
At 31 Dec 2019	**635,961**	**(597)**	**17,382**	**(1,338)**	**5,046**	**(1,215)**	**658,389**	**(3,150)**
ECL income statement change for the period		**343**		**(910)**		**(971)**		**(1,538)**
Recoveries								**314**
Other								**4**
Total ECL income statement change for the period								**(1,220)**

As shown in the above table, the allowance for ECL for loans and advances to customers and banks and relevant loan commitments and financial guarantees increased $189m during the period from $2,961m at 31 December 2018 to $3,150m at 31 December 2019.

This increase was primarily driven by:

- $737m relating to volume movements, which included the ECL allowance associated with new originations, assets derecognised and further lending/repayments;
- $68m due to changes to models used for ECL calculation;
- $1,345m of assets written off; and
- foreign exchange and other movements of $4m.

These were offset by:

- $2,305m relating to underlying credit quality changes, including the credit quality impact of financial instruments transferring between stages; and
- $38m relating to the net remeasurement impact of stage transfers.

The ECL charge for the period of $1,538m presented in the above table consisted of $2,305m relating to underlying credit quality changes, including the credit quality impact of financial instruments transferring between stage and $38m relating to the net remeasurement impact of stage transfers. This was partly offset by $737m relating to underlying net book volume movements and $68m in changes to models used for ECL calculation.

Personal lending – reconciliation of changes in gross carrying/nominal amount and allowances for loans and advances to customers including loan commitments and financial guarantees

(Audited)

	Non-credit impaired				Credit impaired			
	Stage 1		Stage 2		Stage 3		Total	
	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL	Gross carrying/ nominal amount	Allowance for ECL
	$m	$m	$m	$m	$m	$m	$m	$m
At 1 Jan 2018	549,328	(596)	17,678	(1,157)	4,874	(1,312)	571,880	(3,065)
Transfers of financial instruments	(4,270)	(411)	2,047	799	2,223	(388)	—	—
Net remeasurement of ECL arising from transfer of stage	—	358	—	(374)	—	(11)	—	(27)
Net new and further lending/repayments	52,761	(241)	(2,453)	222	(488)	327	49,820	308
Changes to risk parameters – credit quality	—	266	—	(786)	—	(1,197)	—	(1,717)
Assets written off	—	—	—	—	(1,386)	1,380	(1,386)	1,380
Foreign exchange and other	(17,035)	77	(434)	30	(230)	53	(17,699)	160
At 31 Dec 2018	580,784	(547)	16,838	(1,266)	4,993	(1,148)	602,615	(2,961)
ECL income statement change for the period		383		(938)		(881)		(1,436)
Recoveries								290
Others								(18)
Total ECL income statement change for the period								(1,164)

Personal lending – credit risk profile by internal PD band for loans and advances to customers at amortised cost

		Gross carrying amount				Allowance for ECL				
	PD range[1]	Stage 1	Stage 2	Stage 3	Total	Stage 1	Stage 2	Stage 3	Total	ECL coverage
	%	$m	$m	$m	$m	$m	$m	$m	$m	%
First lien residential mortgages		**312,031**	**7,077**	**3,070**	**322,178**	**(39)**	**(68)**	**(422)**	**(529)**	**0.2**
– Band 1	**0.000 to 0.250**	**268,490**	**284**	**—**	**268,774**	**(16)**	**—**	**—**	**(16)**	**—**
– Band 2	**0.251 to 0.500**	**22,293**	**301**	**—**	**22,594**	**(4)**	**—**	**—**	**(4)**	**—**
– Band 3	**0.501 to 1.500**	**17,247**	**2,313**	**—**	**19,560**	**(13)**	**(3)**	**—**	**(16)**	**0.1**
– Band 4	**1.501 to 5.000**	**3,796**	**1,970**	**—**	**5,766**	**(5)**	**(7)**	**—**	**(12)**	**0.2**
– Band 5	**5.001 to 20.000**	**198**	**1,383**	**—**	**1,581**	**(1)**	**(23)**	**—**	**(24)**	**1.5**
– Band 6	**20.001 to 99.999**	**7**	**826**	**—**	**833**	**—**	**(35)**	**—**	**(35)**	**4.2**
– Band 7	**100.000**	**—**	**—**	**3,070**	**3,070**	**—**	**—**	**(422)**	**(422)**	**13.7**
Other personal lending		**101,638**	**8,674**	**1,781**	**112,093**	**(544)**	**(1,268)**	**(793)**	**(2,605)**	**2.3**
– Band 1	**0.000 to 0.250**	**46,533**	**60**	**—**	**46,593**	**(120)**	**—**	**—**	**(120)**	**0.3**
– Band 2	**0.251 to 0.500**	**16,435**	**65**	**—**	**16,500**	**(38)**	**(26)**	**—**	**(64)**	**0.4**
– Band 3	**0.501 to 1.500**	**25,160**	**317**	**—**	**25,477**	**(110)**	**(13)**	**—**	**(123)**	**0.5**
– Band 4	**1.501 to 5.000**	**10,951**	**3,483**	**—**	**14,434**	**(144)**	**(329)**	**—**	**(473)**	**3.3**
– Band 5	**5.001 to 20.000**	**2,421**	**3,434**	**—**	**5,855**	**(132)**	**(440)**	**—**	**(572)**	**9.8**
– Band 6	**20.001 to 99.999**	**138**	**1,315**	**—**	**1,453**	**—**	**(460)**	**—**	**(460)**	**31.7**
– Band 7	**100.000**	**—**	**—**	**1,781**	**1,781**	**—**	**—**	**(793)**	**(793)**	**44.5**
At 31 Dec 2019		**413,669**	**15,751**	**4,851**	**434,271**	**(583)**	**(1,336)**	**(1,215)**	**(3,134)**	**0.7**
First lien residential mortgages		284,103	6,286	2,944	293,333	(41)	(62)	(432)	(535)	0.2
– Band 1	0.000 to 0.250	247,046	308	—	247,354	(15)	—	—	(15)	—
– Band 2	0.251 to 0.500	15,458	78	—	15,536	(4)	—	—	(4)	—
– Band 3	0.501 to 1.500	17,987	1,881	—	19,868	(14)	(2)	—	(16)	0.1
– Band 4	1.501 to 5.000	3,295	1,575	—	4,870	(7)	(6)	—	(13)	0.3
– Band 5	5.001 to 20.000	301	1,445	—	1,746	(1)	(19)	—	(20)	1.1
– Band 6	20.001 to 99.999	16	999	—	1,015	—	(35)	—	(35)	3.4
– Band 7	100.000	—	—	2,944	2,944	—	—	(432)	(432)	14.7
Other personal lending		90,578	8,789	1,637	101,004	(493)	(1,203)	(716)	(2,412)	2.4
– Band 1	0.000 to 0.250	41,048	38	—	41,086	(95)	—	—	(95)	0.2
– Band 2	0.251 to 0.500	12,524	116	—	12,640	(34)	—	—	(34)	0.3
– Band 3	0.501 to 1.500	23,573	323	—	23,896	(122)	(26)	—	(148)	0.6
– Band 4	1.501 to 5.000	11,270	3,089	—	14,359	(131)	(285)	—	(416)	2.9
– Band 5	5.001 to 20.000	2,158	4,061	—	6,219	(111)	(465)	—	(576)	9.3
– Band 6	20.001 to 99.999	5	1,162	—	1,167	—	(427)	—	(427)	36.6
– Band 7	100.000	—	—	1,637	1,637	—	—	(716)	(716)	43.7
At 31 Dec 2018		374,681	15,075	4,581	394,337	(534)	(1,265)	(1,148)	(2,947)	0.7

1 *12-month point in time adjusted for multiple economic scenarios.*

Collateral on loans and advances

(Audited)

The following table provides a quantification of the value of fixed charges we hold over specific assets where we have a history of enforcing, and are able to enforce, collateral in satisfying a debt in the event of the borrower failing to meet its contractual obligations, and where the collateral is cash or can be realised by sale in an established market. The collateral valuation excludes any adjustments for obtaining and selling the collateral and, in particular, loans shown as not collateralised or partially collateralised may also benefit from other forms of credit mitigants.

Personal lending – residential mortgage loans including loan commitments by level of collateral for key countries/territories by stage

(Audited)

	Total		Of which: UK		Hong Kong		US	
	Gross carrying/ nominal amount	ECL coverage	Gross carrying/ nominal amount	ECL coverage	Gross carrying/ nominal amount	ECL coverage	Gross carrying/ nominal amount	ECL coverage
	$m	%	$m	%	$m	%	$m	%
Stage 1								
Fully collateralised	326,510	–	143,772	–	86,049	–	16,079	–
LTV ratio:								
– less than 50%	168,923	–	70,315	–	57,043	–	8,170	–
– 51% to 60%	55,287	–	21,898	–	13,169	–	3,330	–
– 61% to 70%	44,208	–	19,903	–	6,478	–	2,702	–
– 71% to 80%	33,049	–	17,649	–	3,195	–	1,610	–
– 81% to 90%	18,157	–	11,127	–	3,685	–	198	–
– 91% to 100%	6,886	–	2,880	–	2,479	–	69	–
Partially collateralised (A):	1,384	0.1	326	–	284	–	5	–
LTV ratio:								
– 101% to 110%	843	0.1	89	–	281	–	3	–
– 111% to 120%	195	0.2	48	–	1	–	1	–
– greater than 120%	346	0.1	189	–	2	–	1	–
– *collateral value on A*	1,232		232		279		5	
Total	327,894	–	144,098	–	86,333	–	16,084	–
Stage 2								
Fully collateralised	7,087	0.9	1,941	1.0	1,116	–	1,074	0.3
LTV ratio:								
– less than 50%	3,781	0.5	1,146	0.7	892	–	680	0.2
– 51% to 60%	923	1.1	233	1.5	95	–	184	0.3
– 61% to 70%	909	1.2	262	1.2	59	–	130	0.6
– 71% to 80%	894	1.1	231	1.0	32	–	53	1.3
– 81% to 90%	425	1.6	36	2.9	25	–	17	2.7
– 91% to 100%	155	4.4	33	1.8	13	–	10	1.1
Partially collateralised (B):	76	7.2	23	1.8	1	–	4	–
LTV ratio:								
– 101% to 110%	45	5.4	20	1.5	1	–	2	–
– 111% to 120%	10	11.1	1	4.8	–	–	1	–
– greater than 120%	21	9.0	2	3.0	–	–	1	–
– *collateral value on B*	69		20		1		3	
Total	7,163	1.0	1,964	1.0	1,117	–	1,078	0.3
Stage 3								
Fully collateralised	2,725	9.0	1,177	9.9	44	0.5	695	0.7
LTV ratio:								
– less than 50%	1,337	7.1	711	7.8	39	0.5	279	0.7
– 51% to 60%	410	7.0	159	10.0	3	0.2	126	0.8
– 61% to 70%	358	7.9	136	10.6	–	–	125	0.8
– 71% to 80%	309	13.4	100	18.9	1	–	93	1.1
– 81% to 90%	178	13.8	47	12.3	1	–	51	–
– 91% to 100%	133	21.8	24	26.3	–	–	21	–
Partially collateralised (C):	371	47.6	25	27.3	–	–	13	0.2
LTV ratio:								
– 101% to 110%	97	36.4	11	19.1	–	–	7	0.3
– 111% to 120%	62	37.8	6	22.7	–	–	2	0.3
– greater than 120%	212	55.6	8	42.0	–	–	4	–
– *collateral value on C*	305		24		–		13	
Total	3,096	13.7	1,202	10.3	44	0.5	708	0.7
At 31 Dec 2019	338,153	0.2	147,264	0.1	87,494	–	17,870	0.1

Personal lending – residential mortgage loans including loan commitments by level of collateral for key countries/territories by stage (continued)

(Audited)

	Total		Of which: UK		Of which: Hong Kong		Of which: US	
	Gross carrying/ nominal amount	ECL coverage	*Gross carrying/ nominal amount*	*ECL coverage*	*Gross carrying/ nominal amount*	*ECL coverage*	*Gross carrying/ nominal amount*	*ECL coverage*
	$m	%	*$m*	*%*	*$m*	*%*	*$m*	*%*
Stage 1								
Fully collateralised	299,072	—	*130,646*	*—*	*79,180*	*—*	*15,321*	*—*
LTV ratio:								
– less than 50%	160,563	—	*66,834*	*—*	*54,262*	*—*	*8,060*	*—*
– 51% to 60%	51,415	—	*20,937*	*—*	*11,591*	*—*	*3,382*	*—*
– 61% to 70%	40,273	—	*17,480*	*—*	*5,979*	*—*	*2,473*	*—*
– 71% to 80%	28,383	—	*15,086*	*—*	*2,986*	*—*	*1,113*	*—*
– 81% to 90%	14,191	—	*8,824*	*—*	*2,637*	*—*	*158*	*—*
– 91% to 100%	4,247	0.1	*1,485*	*—*	*1,725*	*—*	*135*	*—*
Partially collateralised (A):	1,420	0.1	*581*	*—*	*300*	*—*	*10*	*—*
LTV ratio:								
– 101% to 110%	808	0.1	*334*	*—*	*256*	*—*	*5*	*—*
– 111% to 120%	184	0.2	*46*	*—*	*41*	*—*	*2*	*—*
– greater than 120%	428	0.2	*201*	*—*	*3*	*—*	*3*	*—*
– collateral value on A	*1,266*		*493*		*284*		*8*	
Total	300,492	—	*131,227*	*—*	*79,480*	*—*	*15,331*	*—*
Stage 2								
Fully collateralised	6,170	1.0	*1,234*	*1.3*	*867*	*—*	*1,435*	*0.3*
LTV ratio:								
– less than 50%	3,334	0.7	*917*	*0.9*	*699*	*—*	*814*	*0.1*
– 51% to 60%	932	1.1	*113*	*3.0*	*74*	*—*	*268*	*0.4*
– 61% to 70%	853	1.0	*105*	*2.2*	*43*	*—*	*231*	*0.3*
– 71% to 80%	586	1.3	*39*	*3.4*	*28*	*—*	*79*	*0.9*
– 81% to 90%	331	1.7	*27*	*3.1*	*20*	*—*	*32*	*1.6*
– 91% to 100%	134	2.4	*33*	*1.5*	*3*	*—*	*11*	*0.8*
Partially collateralised (B):	123	2.9	*46*	*0.2*	*1*	*—*	*5*	*0.3*
LTV ratio:								
– 101% to 110%	76	1.5	*44*	*0.1*	*1*	*—*	*3*	*0.5*
– 111% to 120%	17	4.5	*1*	*4.3*	*—*	*—*	*1*	*—*
– greater than 120%	30	5.3	*1*	*0.6*	*—*	*—*	*1*	*—*
– collateral value on B	*118*		*44*		*1*		*4*	
Total	6,293	1.0	*1,280*	*1.3*	*868*	*—*	*1,440*	*0.3*
Stage 3								
Fully collateralised	2,557	12.3	*1,023*	*10.9*	*25*	*0.9*	*671*	*1.0*
LTV ratio:								
– less than 50%	1,255	13.6	*638*	*7.8*	*24*	*0.9*	*219*	*0.9*
– 51% to 60%	359	8.3	*151*	*11.3*	*1*	*—*	*107*	*0.9*
– 61% to 70%	336	12.0	*119*	*18.4*	*—*	*—*	*105*	*1.0*
– 71% to 80%	280	9.9	*70*	*14.8*	*—*	*—*	*114*	*0.9*
– 81% to 90%	190	9.4	*33*	*19.4*	*—*	*—*	*81*	*1.2*
– 91% to 100%	137	19.8	*12*	*45.9*	*—*	*—*	*45*	*2.2*
Partially collateralised (C):	391	33.6	*23*	*15.8*	*—*	*—*	*24*	*0.4*
LTV ratio:								
– 101% to 110%	73	17.4	*10*	*14.3*	*—*	*—*	*14*	*0.6*
– 111% to 120%	68	24.2	*5*	*26.4*	*—*	*—*	*6*	*0.3*
– greater than 120%	250	40.8	*8*	*11.1*	*—*	*—*	*4*	*0.2*
– collateral value on C	*372*		*20*		*—*		*22*	
Total	2,948	15.1	*1,046*	*11.0*	*25*	*0.9*	*695*	*1.0*
At 31 Dec 2018	309,733	0.2	*133,553*	*0.1*	*80,373*	*—*	*17,466*	*0.1*

Supplementary information

Wholesale lending – loans and advances to customers at amortised cost by country/territory

	Gross carrying amount				Allowance for ECL			
	Corporate and commercial	*Of which: real estate*[1]	Non-bank financial institutions	Total	Corporate and commercial	*Of which: real estate*[1]	Non-bank financial institutions	Total
	$m	*$m*	$m	$m	$m	*$m*	$m	$m
Europe	**175,215**	***26,587***	**26,497**	**201,712**	**(2,304)**	***(354)***	**(81)**	**(2,385)**
– UK	**126,760**	***18,941***	**18,545**	**145,305**	**(1,629)**	***(303)***	**(26)**	**(1,655)**
– France	**27,885**	***5,643***	**4,899**	**32,784**	**(423)**	***(28)***	**(52)**	**(475)**
– Germany	**9,771**	***390***	**1,743**	**11,514**	**(60)**	***—***	**—**	**(60)**
– Switzerland	**1,535**	***554***	**406**	**1,941**	**(1)**	***—***	**—**	**(1)**
– other	**9,264**	***1,059***	**904**	**10,168**	**(191)**	***(23)***	**(3)**	**(194)**
Asia	**267,709**	***85,556***	**32,157**	**299,866**	**(1,449)**	***(94)***	**(52)**	**(1,501)**
– Hong Kong	**168,380**	***67,856***	**19,776**	**188,156**	**(750)**	***(51)***	**(40)**	**(790)**
– Australia	**11,428**	***1,993***	**1,743**	**13,171**	**(70)**	***(3)***	**—**	**(70)**
– India	**6,657**	***1,565***	**2,622**	**9,279**	**(49)**	***(3)***	**(1)**	**(50)**
– Indonesia	**4,346**	***63***	**353**	**4,699**	**(222)**	***(1)***	**(2)**	**(224)**
– mainland China	**26,594**	***5,304***	**5,911**	**32,505**	**(198)**	***(29)***	**(8)**	**(206)**
– Malaysia	**6,914**	***1,597***	**230**	**7,144**	**(40)**	***(2)***	**—**	**(40)**
– Singapore	**19,986**	***5,235***	**618**	**20,604**	**(60)**	***(2)***	**—**	**(60)**
– Taiwan	**6,384**	***28***	**82**	**6,466**	**(2)**	***—***	**—**	**(2)**
– other	**17,020**	***1,915***	**822**	**17,842**	**(58)**	***(3)***	**(1)**	**(59)**
Middle East and North Africa (excluding Saudi Arabia)	**23,447**	***1,816***	**288**	**23,735**	**(1,087)**	***(181)***	**(13)**	**(1,100)**
– Egypt	**1,889**	***35***	**16**	**1,905**	**(132)**	***—***	**(3)**	**(135)**
– UAE	**13,697**	***1,695***	**122**	**13,819**	**(683)**	***(179)***	**(7)**	**(690)**
– other	**7,861**	***86***	**150**	**8,011**	**(272)**	***(2)***	**(3)**	**(275)**
North America	**59,680**	***15,128***	**10,078**	**69,758**	**(274)**	***(43)***	**(11)**	**(285)**
– US	**34,477**	***8,282***	**8,975**	**43,452**	**(116)**	***(14)***	**(2)**	**(118)**
– Canada	**24,427**	***6,556***	**979**	**25,406**	**(136)**	***(10)***	**(4)**	**(140)**
– other	**776**	***290***	**124**	**900**	**(22)**	***(19)***	**(5)**	**(27)**
Latin America	**14,448**	***1,665***	**1,685**	**16,133**	**(324)**	***(8)***	**(3)**	**(327)**
– Mexico	**12,352**	***1,664***	**1,625**	**13,977**	**(221)**	***(8)***	**(3)**	**(224)**
– other	**2,096**	***1***	**60**	**2,156**	**(103)**	***—***	**—**	**(103)**
At 31 Dec 2019	**540,499**	***130,752***	**70,705**	**611,204**	**(5,438)**	***(680)***	**(160)**	**(5,598)**
Europe	176,577	*25,715*	22,529	199,106	(2,507)	*(481)*	(82)	(2,589)
– UK	127,093	*18,384*	17,703	144,796	(1,701)	*(410)*	(78)	(1,779)
– France	28,204	*5,890*	2,488	30,692	(405)	*(36)*	(1)	(406)
– Germany	10,454	*246*	1,371	11,825	(35)	*—*	—	(35)
– Switzerland	1,674	*509*	348	2,022	(1)	*—*	—	(1)
– other	9,152	*686*	619	9,771	(365)	*(35)*	(3)	(368)
Asia	263,608	*79,941*	27,284	290,892	(1,343)	*(67)*	(31)	(1,374)
– Hong Kong	168,621	*63,287*	15,062	183,683	(579)	*(40)*	(20)	(599)
– Australia	11,335	*2,323*	2,115	13,450	(68)	*(3)*	—	(68)
– India	6,396	*1,408*	2,846	9,242	(77)	*(4)*	(1)	(78)
– Indonesia	4,286	*35*	354	4,640	(269)	*—*	(2)	(271)
– mainland China	24,225	*4,423*	5,146	29,371	(172)	*(15)*	(6)	(178)
– Malaysia	7,924	*1,649*	274	8,198	(77)	*(2)*	—	(77)
– Singapore	17,564	*4,463*	431	17,995	(31)	*(2)*	—	(31)
– Taiwan	6,008	*23*	156	6,164	(2)	*—*	—	(2)
– other	17,249	*2,330*	900	18,149	(68)	*(1)*	(2)	(70)
Middle East and North Africa (excluding Saudi Arabia)	23,738	*2,025*	322	24,060	(1,167)	*(178)*	(1)	(1,168)
– Egypt	1,746	*41*	—	1,746	(125)	*—*	—	(125)
– UAE	14,445	*1,849*	206	14,651	(721)	*(176)*	(1)	(722)
– other	7,547	*135*	116	7,663	(321)	*(2)*	—	(321)
North America	56,983	*14,169*	9,647	66,630	(236)	*(37)*	(8)	(244)
– US	35,714	*8,422*	8,777	44,491	(103)	*(8)*	(2)	(105)
– Canada	20,493	*5,354*	770	21,263	(105)	*(5)*	(2)	(107)
– other	776	*393*	100	876	(28)	*(24)*	(4)	(32)
Latin America	13,671	*1,383*	1,625	15,296	(299)	*(8)*	(4)	(303)
– Mexico	11,302	*1,354*	1,567	12,869	(225)	*(8)*	(4)	(229)
– other	2,369	*29*	58	2,427	(74)	*—*	—	(74)
At 31 Dec 2018	534,577	*123,233*	61,407	595,984	(5,552)	*(771)*	(126)	(5,678)

1 *Real estate lending within this disclosure corresponds solely to the industry of the borrower. Commercial real estate on page 111 includes borrowers in multiple industries investing in income-producing assets and to a lesser extent, their construction and development.*

Personal lending – loans and advances to customers at amortised cost by country/territory

	Gross carrying amount				Allowance for ECL			
	First lien residential mortgages	Other personal	*Of which: credit cards*	Total	First lien residential mortgages	Other personal	*Of which: credit cards*	Total
	$m	$m	*$m*	$m	$m	$m	*$m*	$m
Europe	**145,382**	**50,368**	***10,246***	**195,750**	**(266)**	**(962)**	***(438)***	**(1,228)**
– UK	**137,985**	**22,395**	***9,816***	**160,380**	**(159)**	**(828)**	***(434)***	**(987)**
– France	**3,520**	**21,120**	***376***	**24,640**	**(39)**	**(101)**	***(3)***	**(140)**
– Germany	**—**	**325**	***—***	**325**	**—**	**—**	***—***	**—**
– Switzerland	**1,183**	**6,165**	***—***	**7,348**	**(6)**	**(17)**	***—***	**(23)**
– other	**2,694**	**363**	***54***	**3,057**	**(62)**	**(16)**	***(1)***	**(78)**
Asia	**131,864**	**48,231**	***12,144***	**180,095**	**(42)**	**(690)**	***(463)***	**(732)**
– Hong Kong	**86,892**	**33,061**	***8,043***	**119,953**	**(1)**	**(353)**	***(242)***	**(354)**
– Australia	**16,997**	**693**	***603***	**17,690**	**(5)**	**(34)**	***(33)***	**(39)**
– India	**1,047**	**528**	***219***	**1,575**	**(5)**	**(21)**	***(15)***	**(26)**
– Indonesia	**67**	**329**	***204***	**396**	**—**	**(24)**	***(18)***	**(24)**
– mainland China	**8,966**	**1,190**	***656***	**10,156**	**(2)**	**(74)**	***(68)***	**(76)**
– Malaysia	**2,840**	**3,200**	***980***	**6,040**	**(22)**	**(73)**	***(33)***	**(95)**
– Singapore	**6,687**	**7,033**	***452***	**13,720**	**(1)**	**(60)**	***(19)***	**(61)**
– Taiwan	**5,286**	**1,004**	***297***	**6,290**	**0**	**(14)**	***(4)***	**(14)**
– other	**3,082**	**1,193**	***690***	**4,275**	**(6)**	**(37)**	***(31)***	**(43)**
Middle East and North Africa (excluding Saudi Arabia)	**2,303**	**3,914**	***1,042***	**6,217**	**(62)**	**(235)**	***(111)***	**(297)**
– Egypt	**—**	**346**	***88***	**346**	**—**	**(3)**	***(1)***	**(3)**
– UAE	**1,920**	**1,462**	***517***	**3,382**	**(59)**	**(121)**	***(54)***	**(180)**
– other	**383**	**2,106**	***437***	**2,489**	**(3)**	**(111)**	***(56)***	**(114)**
North America	**39,065**	**5,251**	***1,742***	**44,316**	**(122)**	**(194)**	***(142)***	**(316)**
– US	**17,870**	**2,551**	***1,424***	**20,421**	**(8)**	**(160)**	***(134)***	**(168)**
– Canada	**19,997**	**2,495**	***271***	**22,492**	**(21)**	**(25)**	***(7)***	**(46)**
– other	**1,198**	**205**	***47***	**1,403**	**(93)**	**(9)**	***(1)***	**(102)**
Latin America	**3,564**	**4,329**	***1,594***	**7,893**	**(37)**	**(524)**	***(241)***	**(561)**
– Mexico	**3,419**	**3,780**	***1,308***	**7,199**	**(31)**	**(488)**	***(224)***	**(519)**
– other	**145**	**549**	***286***	**694**	**(6)**	**(36)**	***(17)***	**(42)**
At 31 Dec 2019	**322,178**	**112,093**	***26,768***	**434,271**	**(529)**	**(2,605)**	***(1,395)***	**(3,134)**
Europe	131,557	46,007	*9,790*	177,564	(258)	(750)	*(313)*	(1,008)
– UK	124,357	20,503	*9,356*	144,860	(141)	(592)	*(309)*	(733)
– France	3,454	19,616	*376*	23,070	(43)	(114)	*(4)*	(157)
– Germany	—	288	*—*	288	—	—	*—*	—
– Switzerland	1,120	5,213	*—*	6,333	(2)	(19)	*—*	(21)
– other	2,626	387	*58*	3,013	(72)	(25)	*—*	(97)
Asia	119,718	42,049	*11,900*	161,767	(44)	(696)	(465)	(740)
– Hong Kong	79,059	28,734	*8,124*	107,793	(1)	(329)	*(228)*	(330)
– Australia	13,858	764	*626*	14,622	(5)	(55)	*(54)*	(60)
– India	1,030	608	*228*	1,638	(5)	(20)	*(14)*	(25)
– Indonesia	59	279	*206*	338	—	(34)	*(27)*	(34)
– mainland China	8,706	1,139	*502*	9,845	(2)	(57)	*(50)*	(59)
– Malaysia	2,890	3,209	*888*	6,099	(24)	(71)	*(33)*	(95)
– Singapore	5,991	5,353	*434*	11,344	—	(70)	*(21)*	(70)
– Taiwan	5,123	860	*289*	5,983	(1)	(20)	*(5)*	(21)
– other	3,002	1,103	*603*	4,105	(6)	(40)	*(33)*	(46)
Middle East and North Africa (excluding Saudi Arabia)	2,393	3,933	*1,181*	6,326	(88)	(306)	*(148)*	(394)
– Egypt	—	309	*71*	309	—	(5)	*(1)*	(5)
– UAE	1,974	1,477	*538*	3,451	(82)	(126)	*(54)*	(208)
– other	419	2,147	*572*	2,566	(6)	(175)	*(93)*	(181)
North America	36,964	5,057	*1,341*	42,021	(122)	(139)	*(81)*	(261)
– US	17,464	2,280	*1,028*	19,744	(13)	(106)	*(75)*	(119)
– Canada	18,267	2,562	*265*	20,829	(16)	(23)	*(5)*	(39)
– other	1,233	215	*48*	1,448	(93)	(10)	*(1)*	(103)
Latin America	2,701	3,958	*1,432*	6,659	(23)	(521)	*(254)*	(544)
– Mexico	2,550	3,192	*1,121*	5,742	(22)	(465)	*(227)*	(487)
– other	151	766	*311*	917	(1)	(56)	*(27)*	(57)
At 31 Dec 2018	293,333	101,004	*25,644*	394,337	(535)	(2,412)	*(1,261)*	(2,947)

Summary of financial instruments to which the impairment requirements in IFRS 9 are applied – by global business

	Gross carrying/nominal amount					Allowance for ECL				
	Stage 1	Stage 2	Stage 3	POCI	Total	Stage 1	Stage 2	Stage 3	POCI	Total
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
Loans and advances to customers at amortised cost	951,583	80,182	13,378	332	1,045,475	(1,297)	(2,284)	(5,052)	(99)	(8,732)
– RBWM	378,792	15,251	4,472	–	398,515	(593)	(1,320)	(1,210)	–	(3,123)
– CMB	297,319	46,423	6,649	212	350,603	(520)	(765)	(3,190)	(68)	(4,543)
– GB&M	228,546	16,934	1,598	120	247,198	(173)	(176)	(550)	(31)	(930)
– GPB	45,512	1,543	659	–	47,714	(9)	(10)	(102)	–	(121)
– Corporate Centre	1,414	31	–	–	1,445	(2)	(13)	–	–	(15)
Loans and advances to banks at amortised cost	67,769	1,450	–	–	69,219	(14)	(2)	–	–	(16)
– RBWM	4,733	388	–	–	5,121	–	(1)	–	–	(1)
– CMB	1,245	216	–	–	1,461	(2)	–	–	–	(2)
– GB&M	23,420	801	–	–	24,221	(9)	(1)	–	–	(10)
– GPB	28	–	–	–	28	–	–	–	–	–
– Corporate Centre	38,343	45	–	–	38,388	(3)	–	–	–	(3)
Other financial assets measured at amortised cost	613,200	1,827	151	1	615,179	(38)	(38)	(42)	–	(118)
– RBWM	55,915	535	32	–	56,482	(21)	(30)	(3)	–	(54)
– CMB	13,698	900	47	1	14,646	(8)	(7)	(26)	–	(41)
– GB&M	280,621	372	34	–	281,027	(5)	(1)	(11)	–	(17)
– GPB	1,406	9	4	–	1,419	–	–	(2)	–	(2)
– Corporate Centre	261,560	11	34	–	261,605	(4)	–	–	–	(4)
Total gross carrying amount on-balance sheet at 31 Dec 2019	**1,632,552**	**83,459**	**13,529**	**333**	**1,729,873**	**(1,349)**	**(2,324)**	**(5,094)**	**(99)**	**(8,866)**
Loans and other credit-related commitments	577,631	21,618	771	9	600,029	(137)	(133)	(59)	–	(329)
– RBWM	171,118	1,850	180	–	173,148	(14)	(1)	–	–	(15)
– CMB	117,703	11,403	558	9	129,673	(69)	(65)	(56)	–	(190)
– GB&M	246,805	8,270	28	–	255,103	(53)	(67)	(3)	–	(123)
– GPB	41,975	95	5	–	42,075	(1)	–	–	–	(1)
– Corporate Centre	30	–	–	–	30	–	–	–	–	–
Financial guarantees	17,684	2,340	186	4	20,214	(16)	(22)	(10)	–	(48)
– RBWM	61	2	1	–	64	–	–	–	–	–
– CMB	7,446	1,442	105	4	8,997	(9)	(12)	(6)	–	(27)
– GB&M	9,263	894	80	–	10,237	(7)	(10)	(4)	–	(21)
– GPB	911	2	–	–	913	–	–	–	–	–
– Corporate Centre	3	–	–	–	3	–	–	–	–	–
Total nominal amount off-balance sheet at 31 Dec 2019	**595,315**	**23,958**	**957**	**13**	**620,243**	**(153)**	**(155)**	**(69)**	**–**	**(377)**
RBWM	13,754	278	–	–	14,032	(5)	(58)	–	–	(63)
CMB	250	25	–	1	276	–	(12)	–	–	(12)
GB&M	1,055	18	–	–	1,073	–	(8)	–	–	(8)
GPB	–	–	–	–	–	–	–	–	–	–
Corporate Centre	339,590	693	–	–	340,283	(34)	(49)	–	–	(83)
Debt instruments measured at FVOCI at 31 Dec 2019	**354,649**	**1,014**	**–**	**1**	**355,664**	**(39)**	**(127)**	**–**	**–**	**(166)**

Summary of financial instruments to which the impairment requirements in IFRS 9 are applied – by global business[1] (continued)

	Gross carrying/nominal amount					Allowance for ECL				
	Stage 1	Stage 2	Stage 3	POCI	Total	Stage 1	Stage 2	Stage 3	POCI	Total
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
Loans and advances to customers at amortised cost	908,393	68,581	13,023	324	990,321	(1,276)	(2,108)	(5,047)	(194)	(8,625)
– RBWM	340,606	19,228	4,960	—	364,794	(544)	(1,250)	(1,129)	—	(2,923)
– CMB	299,523	32,109	5,732	298	337,662	(538)	(659)	(3,110)	(194)	(4,501)
– GB&M	228,035	16,327	1,683	25	246,070	(188)	(182)	(718)	—	(1,088)
– GPB	37,970	724	618	1	39,313	(5)	(3)	(89)	—	(97)
– Corporate Centre	2,259	193	30	—	2,482	(1)	(14)	(1)	—	(16)
Loans and advances to banks at amortised cost	71,873	307	—	—	72,180	(11)	(2)	—	—	(13)
– RBWM	5,801	5	—	—	5,806	(1)	—	—	—	(1)
– CMB	1,912	15	—	—	1,927	(1)	—	—	—	(1)
– GB&M	25,409	212	—	—	25,621	(7)	(2)	—	—	(9)
– GPB	46	—	—	—	46	—	—	—	—	—
– Corporate Centre	38,705	75	—	—	38,780	(2)	—	—	—	(2)
Other financial assets measured at amortised cost	581,118	1,673	126	—	582,917	(27)	(6)	(22)	—	(55)
– RBWM	49,142	184	32	—	49,358	(14)	(2)	(1)	—	(17)
– CMB	15,082	774	60	—	15,916	(7)	(3)	(21)	—	(31)
– GB&M	272,028	703	20	—	272,751	(1)	(1)	—	—	(2)
– GPB	924	1	2	—	927	—	—	—	—	—
– Corporate Centre	243,942	11	12	—	243,965	(5)	—	—	—	(5)
Total gross carrying amount on-balance sheet at 31 Dec 2018	1,561,384	70,561	13,149	324	1,645,418	(1,314)	(2,116)	(5,069)	(194)	(8,693)
Loans and other credit-related commitments	567,232	23,857	912	7	592,008	(143)	(139)	(43)	—	(325)
– RBWM	164,589	1,792	399	—	166,780	(6)	(1)	(1)	—	(8)
– CMB	112,969	10,129	308	5	123,411	(72)	(52)	(40)	—	(164)
– GB&M	251,676	10,892	194	2	262,764	(58)	(86)	(2)	—	(146)
– GPB	33,885	1,044	11	—	34,940	—	—	—	—	—
– Corporate Centre	4,113	—	—	—	4,113	(7)	—	—	—	(7)
Financial guarantees	20,834	2,384	297	3	23,518	(19)	(29)	(45)	—	(93)
– RBWM	54	3	3	—	60	—	—	—	—	—
– CMB	7,605	1,227	230	3	9,065	(10)	(11)	(39)	—	(60)
– GB&M	12,067	1,141	63	—	13,271	(8)	(18)	(5)	—	(31)
– GPB	1,053	13	—	—	1,066	(1)	—	—	—	(1)
– Corporate Centre	55	—	1	—	56	—	—	(1)	—	(1)
Total nominal amount off-balance sheet at 31 Dec 2018	588,066	26,241	1,209	10	615,526	(162)	(168)	(88)	—	(418)
RBWM	13,160	153	—	—	13,313	(5)	—	—	—	(5)
CMB	226	—	—	1	227	(2)	—	—	—	(2)
GB&M	1,994	—	—	—	1,994	(5)	—	—	—	(5)
GPB	—	—	—	—	—	—	—	—	—	—
Corporate Centre	326,795	770	7	4	327,576	(21)	(50)	(1)	—	(72)
Debt instruments measured at FVOCI at 31 Dec 2018	342,175	923	7	5	343,110	(33)	(50)	(1)	—	(84)

1 *During the period, the Group has re-presented the UK wholesale lending stage 1 and stage 2 amount. For further details, see page 86.*

Loans and advances to customers and banks metrics

	Gross carrying amount	*Of which: stage 3 and POCI*	Allowance for ECL	*Of which: stage 3 and POCI*	Change in ECL	Write-offs	Recoveries
	$m	*$m*	$m	*$m*	$m	$m	$m
First lien residential mortgages	322,178	*3,070*	(529)	*(422)*	(107)	(139)	54
Other personal lending	112,093	*1,781*	(2,605)	*(793)*	(1,114)	(1,206)	260
Personal lending	**434,271**	***4,851***	**(3,134)**	***(1,215)***	**(1,221)**	**(1,345)**	**314**
– agriculture, forestry and fishing	6,696	280	(182)	(140)	(15)	(6)	–
– mining and quarrying	14,435	*323*	(226)	*(134)*	(31)	(4)	–
– manufacturing	104,380	*1,717*	(1,210)	*(856)*	(392)	(332)	8
– electricity, gas, steam and air-conditioning supply	15,040	*175*	(80)	*(25)*	14	(54)	2
– water supply, sewerage, waste management and remediation	3,501	*30*	(28)	*(18)*	(4)	–	–
– construction	15,287	*884*	(564)	*(499)*	(171)	(191)	12
– wholesale and retail trade, repair of motor vehicles and motorcycles	94,681	*1,633*	(1,184)	*(936)*	(330)	(389)	13
– transportation and storage	25,580	*617*	(237)	*(158)*	(93)	(37)	–
– accommodation and food	24,656	*263*	(146)	*(63)*	(49)	(81)	–
– publishing, audiovisual and broadcasting	19,971	*162*	(87)	*(34)*	(17)	(31)	–
– real estate	130,752	*1,330*	(680)	*(475)*	(34)	(168)	6
– professional, scientific and technical activities	24,122	*350*	(209)	*(145)*	(47)	(10)	1
– administrative and support services	25,714	*527*	(270)	*(179)*	(80)	(22)	–
– public administration and defence, compulsory social security	2,377	–	(8)	–	–	–	–
– education	1,900	*16*	(18)	*(6)*	6	(3)	–
– health and care	4,465	*111*	(57)	*(28)*	(6)	(13)	1
– arts, entertainment and recreation	2,824	*30*	(25)	*(11)*	3	(4)	–
– other services	14,276	*192*	(199)	*(133)*	(79)	(102)	2
– activities of households	791	–	–	–	–	–	–
– extra-territorial organisations and bodies activities	2	–	–	–	2	–	1
– government	8,313	*7*	(14)	*(6)*	(8)	–	–
– asset-backed securities	736	–	(14)	–	–	–	–
Corporate and commercial	540,499	*8,647*	(5,438)	*(3,846)*	(1,331)	(1,447)	46
Non-bank financial institutions	70,705	*212*	(160)	*(90)*	(71)	(5)	1
Wholesale lending	**611,204**	***8,859***	**(5,598)**	***(3,936)***	**(1,402)**	**(1,452)**	**47**
Loans and advances to customers	1,045,475	*13,710*	(8,732)	*(5,151)*	(2,623)	(2,797)	361
Loans and advances to banks	69,219	–	(16)	–	(6)	–	–
At 31 Dec 2019	**1,114,694**	***13,710***	**(8,748)**	***(5,151)***	**(2,629)**	**(2,797)**	**361**

HSBC Holdings

(Audited)

Risk in HSBC Holdings is overseen by the HSBC Holdings Asset and Liability Management Committee ('Holdings ALCO'). The major risks faced by HSBC Holdings are credit risk, liquidity risk and market risk (in the form of interest rate risk and foreign exchange risk).

Credit risk in HSBC Holdings primarily arises from transactions with Group subsidiaries and its investments in those subsidiaries.

In HSBC Holdings, the maximum exposure to credit risk arises from two components:

- financial instruments on the balance sheet (see page 237); and
- financial guarantees and similar contracts, where the maximum exposure is the maximum that we would have to pay if the guarantees were called upon (see Note 32).

In the case of our derivative balances, we have amounts with a legally enforceable right of offset in the case of counterparty default that are not included in the carrying value. These offsets also include collateral received in cash and other financial assets. The total offset relating to our derivative balances was $0.1bn at 31 December 2019 (2018: $1.5bn).

The credit quality of loans and advances and financial investments, both of which consist of intra-Group lending and US Treasury bills and bonds, is assessed as 'strong', with 100% of the exposure being neither past due nor impaired (2018: 100%). For further details of credit quality classification, see page 85.

Capital and liquidity risk

Overview

Capital and liquidity risk is the risk of having insufficient capital, liquidity or funding resources to meet financial obligations and satisfy regulatory requirements, including pension risk.

Capital and liquidity risk arises from changes to the respective resources and risk profiles driven by customer behaviour, management decisions or the external environment.

Governance and structure

Capital and liquidity are the responsibility of the Group Management Board and directly addressed by the GRC. Capital and liquidity risks are managed through the Holdings ALCO and local Asset and Liability Management Committees ('ALCOs') and overseen by the RMM. The Global Head of Wholesale and Market Risk is the accountable risk steward.

Capital risk management

Overview

Capital risk is the risk that we fail to meet our regulatory capital requirements either at Group, subsidiary or branch level.

Key developments in 2019

In 2019, we carried out a restructuring of our capital risk management function, with the creation of a dedicated second line of defence that will provide independent oversight of capital management activities. The approach to capital risk management is evolving. This will operate across the Group focusing on both adequacy of capital and sufficiency of returns. Other developments in 2019 included:

- The Risk function was actively involved in the calibration of the capital risk appetite metrics, the review and challenge of the capital adequacy expressed through stress testing, and the internal capital adequacy assessment process ('ICAAP').
- The common equity tier 1 ('CET1') ratio was 14.7% at 31 December 2019 and the leverage ratio was 5.3%. Allocation of the Group's capital to business lines and legal entities is informed by return metrics and the performance of key capital ratios under plan and stress scenarios.
- We passed the PRA annual stress test exercise with sufficient capital to operate through a severe macroeconomic scenario.

For quantitative disclosures on capital ratios, own funds and RWAs, refer to pages 152 to 155 in the Capital section.

ICAAP and risk appetite

The objectives of our capital management policy are to maintain a strong capital base to support the risks inherent in our business and invest in accordance with our strategy, meeting both consolidated and local regulatory capital requirements at all times. Our capital management policy is underpinned by a capital management framework and our ICAAP. The framework incorporates key capital risk appetites for CET1, total capital, minimum required eligible liabilities ('MREL'), and double leverage. The ICAAP is an assessment of the Group's capital position, outlining both regulatory and internal capital resources and requirements resulting from HSBC's business model, strategy, risk profile and management, performance and planning, risks to capital, and the implications of stress testing. Our assessment of capital adequacy is driven by an assessment of risks. These risks include credit, market, operational, pensions, insurance, structural foreign exchange, residual risk and interest rate risk in the banking book. An ICAAP supports the determination of the consolidated and subsidiary capital risk appetite and target ratios as well as enables the assessment and determination of capital requirements by regulators.

HSBC Holdings is the provider of equity capital to its subsidiaries and also provides them with non-equity capital where necessary. These investments are substantially funded by HSBC Holdings' own capital issuance and profit retention.

HSBC Holdings seeks to maintain a prudent balance between the composition of its capital and its investment in subsidiaries, including management of double leverage. Double leverage reflects the extent to which equity investments in operating entities are funded by holding company debt. Where Group capital requirements are less than the aggregate of operating entity capital requirements, double leverage can be used to improve Group capital efficiency provided it is managed appropriately and prudently in accordance with risk appetite. Double leverage is a constraint on managing our capital position, given the complexity of the Group's subsidiary structure and the multiple regulatory regimes under which we operate. As a matter of long-standing policy, the holding company retains a substantial portfolio of high-quality liquid assets ('HQLA'), which at 31 December 2019 was in excess of $14bn to mitigate holding company cash flow risk arising from double leverage and to underpin the strength of support the holding company can offer its subsidiaries in times of stress. Further mitigation is provided by additional tier 1 ('AT1') securities issued in excess of the regulatory requirements of our subsidiaries.

Planning and performance

Capital and risk-weighted asset ('RWA') plans form part of the annual operating plan that is approved by the Board. Capital and RWA forecasts are submitted to the Group Management Board on a monthly basis, and capital and RWAs are monitored and managed against the plan. The responsibility for global capital allocation principles rests with the Group Chief Financial Officer supported by the Group Capital Management Meeting. This is a specialist forum addressing capital management, reporting into Holdings ALCO.

Through our internal governance processes, we seek to strengthen discipline over our investment and capital allocation decisions, and to ensure that returns on investment meet the Group's management objectives. Our strategy is to allocate capital to businesses and entities to support growth objectives where returns above internal hurdle levels have been identified and in order to meet their regulatory and economic capital needs. We evaluate and manage business returns by using a return on average tangible equity measure.

Risks to capital

Outside the stress testing framework, other risks may be identified that have the potential to affect our RWAs and/or capital position. Downside and Upside scenarios are assessed against our capital management objectives and mitigating actions are assigned as necessary. We closely monitor and consider future regulatory change. We continue to evaluate the impact upon our capital requirements of regulatory developments, including the amendments to the Capital Requirements Regulation, the Basel III reforms package and the UK's withdrawal from the EU.

We currently estimate our pre-mitigation RWAs could potentially rise in the range of 5% to 10% as at 1 January 2022 as a result of the regulatory changes. The primary drivers include changes in the market risk, operational risk and credit valuation adjustment methodologies, as well as the potential lack of equivalence for certain investments in funds. We plan to take action to substantially mitigate a significant proportion of the increase.

The Basel package introduces an output floor that will be introduced in 2022 with a five-year transitional provision. This floor ensures that at the end of the transitional period banks' total RWAs are no lower than 72.5% of those generated by the standardised approaches. We estimate that there will be an additional RWA impact as a result of the output floor from 2026.

There remains a significant degree of uncertainty in the impact due to the number of national discretions within Basel's reforms, the need for further supporting technical standards to be developed and the lack of clarity regarding their implementation following the UK's withdrawal from the EU. Furthermore, the impact does not take into consideration the possibility of offsets against Pillar 2, which may arise as the shortcomings within Pillar 1 are addressed.

Further details can be found in the 'Regulatory developments' section of the Group's Pillar 3 Disclosures at 31 December 2019.

Stress testing and recovery planning

The Group uses stress testing to evaluate the robustness of plans and risk portfolios as well as to meet the requirements for stress testing set by supervisors. Stress testing also informs the ICAAP and supports recovery planning in many jurisdictions. It is a critical methodology used to evaluate how much capital the Group requires in setting risk appetite for capital risk and to re-evaluate business plans where analysis shows returns and/or capital do not meet target.

Supervisory stress testing requirements are increasing in frequency and in the granularity with which the results are required. These exercises include the programmes of the Bank of England, the US Federal Reserve Board, the European Banking Authority, the European Central Bank and the Hong Kong Monetary Authority, and stress tests undertaken in other jurisdictions. The results of regulatory stress testing and our internal stress tests are used when assessing our internal capital requirements through the ICAAP. The outcome of stress testing exercises carried out by the PRA and other regulators feeds into the setting of regulatory minimum ratios and buffers.

The Group and subsidiaries have established recovery plans addressing the actions that management would consider taking in a stress scenario if the capital position deteriorates through the target ratio and threatens to breach risk appetite and regulatory minimum levels. The recovery plans set out a range of appropriate actions that could feasibly be executed in a stressed environment to recover the capital position. These include cost management, reducing dividends and raising additional capital.

Liquidity and funding risk management

Overview

Liquidity risk is the risk that we do not have sufficient financial resources to meet our obligations as they fall due. Liquidity risk arises from mismatches in the timing of cash flows.

Funding risk is the risk that we cannot raise funding or can only do so at excessive cost.

Key developments in 2019

We have amended the Group risk appetite statement to remove the depositor concentration and wholesale funding concentration metrics. Both these risks will be monitored and controlled at the operating entity level.

For the major operating entities, we have transferred second line of defence activities to a newly created team in the Risk function. This team provides independent review and challenge of first line business activities and approves the liquidity and funding risk management framework ('LFRF').

ILAAP and risk appetite

We maintain a comprehensive LFRF, which aims to enable us to withstand very severe liquidity stresses. The LFRF comprises policies, metrics and controls designed to ensure that Group and entity management have oversight of our liquidity and funding risks in order to manage them appropriately.

We manage liquidity and funding risk at an operating entity level to ensure that obligations can be met in the jurisdiction where they fall due, generally without reliance on other parts of the Group. Operating entities are required to meet internal minimum requirements and any applicable regulatory requirements at all times. These requirements are assessed through the internal liquidity adequacy assessment process ('ILAAP'), which is used to ensure that operating entities have robust strategies, policies, processes and systems for the identification, measurement, management and monitoring of liquidity risk over an appropriate set of time horizons, including intra-day, so as to ensure they maintain adequate levels of liquidity buffers. It informs the validation of risk tolerance and the setting of risk appetite. It also assesses the capability to manage liquidity and funding effectively in each major entity. These metrics are set and managed locally but are subject to robust global review and challenge to ensure consistency of approach and application of the LFRF across the Group.

Performance and measurement

Funding and liquidity plans form part of the annual operating plan that is approved by the Board. The critical Board-level appetite measures are the liquidity coverage ratio ('LCR') and net stable funding ratio ('NSFR'). An appropriate funding and liquidity profile is managed through a wider set of measures:

- a minimum LCR requirement;
- a minimum NSFR requirement or other appropriate metric;
- a legal entity depositor concentration limit;
- three-month and 12-month cumulative rolling term contractual maturity limits covering deposits from banks, deposits from non-bank financial institutions and securities issued;
- a minimum LCR requirement by currency;
- intra-day liquidity;
- the application of liquidity funds transfer pricing; and
- forward-looking funding assessments.

The LCR and NSFR metrics are to be supplemented by an internal liquidity metric in 2020.

Risks to liquidity and funding

Risks to liquidity and funding are assessed through forecasting, stress testing and scenario analysis, combined with ongoing assessments of risks in the business and external environment.

Stress testing, recovery and contingency planning

The Group uses stress testing to evaluate the robustness of plans and risk portfolios, inform the ILAAP and support recovery planning, as well as meeting the requirements for stress testing set by supervisors. It is a critical methodology used to evaluate how much funding and liquidity the Group requires in setting risk appetite.

All entities maintain contingency plans that can be enacted in the event of internal or external triggers, which threaten the liquidity or funding position. They also have established recovery plans addressing the actions that management would consider taking in a stress scenario if the position deteriorates and threatens to breach risk appetite and regulatory minimum levels. The recovery plans set out a range of appropriate actions, which could feasibly be executed in a stressed environment to recover the position.

Details of HSBC's liquidity and funding risk management framework ('LFRF') can be found in the Group's Pillar 3 Disclosures at 31 December 2019.

Liquidity and funding risk in 2019

Liquidity metrics

At 31 December 2019, all of the Group's material operating entities were above regulatory minimum levels.

Each entity maintains sufficient unencumbered liquid assets to comply with local and regulatory requirements. The liquidity value of these liquidity assets for each entity is shown in the following table along with the individual LCR levels on a European Commission ('EC') basis. This basis may differ from local LCR measures due to differences in the way non-EU regulators have implemented the Basel III standards.

Each entity maintains sufficient stable funding relative to the required stable funding assessed using the NSFR or other appropriate metric.

The Group liquidity and funding position at the end of 2019 is analysed in the following sections.

Operating entities' liquidity

	Footnotes	LCR %	HQLA $bn	Net outflows $bn	NSFR %
		At 31 December 2019			
HSBC UK Bank plc (ring-fenced bank)	1	**165**	**75**	**45**	**150**
HSBC Bank plc (non-ring-fenced bank)	2	**142**	**103**	**72**	**106**
The Hongkong and Shanghai Banking Corporation – Hong Kong branch	3	**163**	**109**	**67**	**128**
The Hongkong and Shanghai Banking Corporation – Singapore branch	3	**147**	**14**	**10**	**120**
Hang Seng Bank		**185**	**42**	**23**	**148**
HSBC Bank China		**180**	**21**	**11**	**151**
HSBC Bank USA		**125**	**73**	**59**	**122**
HSBC France	4	**152**	**44**	**29**	**117**
HSBC Middle East – UAE branch		**202**	**11**	**5**	**159**
HSBC Canada	4	**124**	**18**	**14**	**124**
HSBC Mexico		**208**	**9**	**4**	**136**
		At 31 December 2018			
HSBC UK Bank plc (ring-fenced bank)	1	143	59	41	144
HSBC Bank plc (non-ring-fenced bank)	2	147	117	80	113
The Hongkong and Shanghai Banking Corporation – Hong Kong branch	3	161	125	78	132
The Hongkong and Shanghai Banking Corporation – Singapore branch	3	149	12	8	123
Hang Seng Bank		202	38	19	152
HSBC Bank China		153	24	15	153
HSBC Bank USA		121	70	58	131
HSBC France	4	128	20	16	113
HSBC Middle East – UAE branch		182	7	4	132
HSBC Canada	4	115	16	14	126
HSBC Mexico		153	6	4	123

1 *HSBC UK Bank plc refers to the HSBC UK liquidity group, which comprises four legal entities: HSBC UK Bank plc (including the Dublin branch), Marks and Spencer Financial Services plc, HSBC Private Bank (UK) Ltd and HSBC Trust Company (UK) Limited, managed as a single operating entity, in line with the application of UK liquidity regulation as agreed with the PRA.*
2 *HSBC Bank plc includes oversea branches and SPEs consolidated by HSBC for financial statements purposes.*
3 *The Hongkong and Shanghai Banking Corporation – Hong Kong branch and The Hongkong and Shanghai Banking Corporation – Singapore branch represent the material activities of The Hongkong and Shanghai Banking Corporation. Each branch is monitored and controlled for liquidity and funding risk purposes as a stand-alone operating entity.*
4 *HSBC France and HSBC Canada represent the consolidated banking operations of the Group in France and Canada, respectively. HSBC France and HSBC Canada are each managed as single distinct operating entities for liquidity purposes.*

At 31 December 2019, all of the Group's principal operating entities were well above regulatory minimum levels.

The most significant movements in 2019 are explained below:

- HSBC UK Bank plc improved its liquidity ratio to 165%, mainly driven by increased customer surplus, wholesale funding and MREL issuance.
- The Hongkong and Shanghai Banking Corporation – Hong Kong branch remained highly liquid. The reduction in Hang Seng Bank reflected changes in the maturity of both customer lending and deposits.
- HSBC Bank China improved its LCR to 180%, mainly reflecting increased customer deposits and wholesale funding issuance.
- HSBC France increased significantly the liquidity position, reflecting management actions to address restructuring related to the UK's departure from the EU.

Liquid assets

At 31 December 2019, the Group had a total of $601bn of highly liquid unencumbered LCR eligible liquid assets (31 December 2018: $567bn) held in a range of asset classes and currencies. Of these, 90% were eligible as level 1 (31 December 2018: 89%).

The following tables reflect the composition of the liquidity pool by asset type and currency at 31 December 2019:

Liquidity pool by asset type

	Liquidity pool $bn	Cash $bn	Level 1[1] $bn	Level 2[1] $bn
Cash and balance at central bank	**158**	**158**	**–**	**–**
Central and local government bonds	**375**	**–**	**334**	**41**
Regional government PSE	**17**	**–**	**15**	**2**
International organisation and MDBs	**15**	**–**	**15**	**–**
Covered bonds	**12**	**–**	**3**	**9**
Other	**24**	**–**	**16**	**8**
Total at 31 Dec 2019	**601**	**158**	**383**	**60**
Total at 31 Dec 2018	567	165	338	64

1 *As defined in EU regulation, level 1 assets means 'assets of extremely high liquidity and credit quality', and level 2 assets means 'assets of high liquidity and credit quality'.*

Liquidity pool by currency

	$ $bn	£ $bn	€ $bn	HK$ $bn	Other $bn	Total $bn
Liquidity pool at 31 Dec 2019	**179**	**117**	**93**	**47**	**165**	**601**
Liquidity pool at 31 Dec 2018	164	105	81	57	160	567

Consolidated liquidity metrics

The Group consolidated LCR reflects the LCR of the Group, according to the guidelines under the EC Delegated Act. The Group LCR was 150% at 31 December 2019. The Group LCR was well above the regulatory minimum.

The methodology used to calculate the Group consolidated LCR is currently under review given that the Group's liquidity profile is set and managed based on factors relevant to the operating entities on a stand-alone basis.

	At		
	31 Dec 2019	30 Jun 2019	31 Dec 2018
	$bn	$bn	$bn
High-quality liquid assets (liquidity value)	**601**	533	567
Net outflows	**400**	391	369
Liquidity coverage ratio	**150%**	136%	154%

Sources of funding

Our primary sources of funding are customer current accounts and customer savings deposits payable on demand or at short notice. We issue wholesale securities (secured and unsecured) to supplement our customer deposits and change the currency mix, maturity profile or location of our liabilities and to meet the Group's minimum requirement for own funds and eligible liabilities.

The following 'Funding sources' and 'Funding uses' tables provide a consolidated view of how our balance sheet is funded, and should be read in light of the LFRF, which generally requires operating entities to manage liquidity and funding risk on a stand-alone basis.

The tables analyse our consolidated balance sheet according to the assets that primarily arise from operating activities and the sources of funding primarily supporting these activities. Assets and liabilities that do not arise from operating activities are presented at other balance sheet lines.

In 2019, the level of customer accounts continued to exceed the level of loans and advances to customers.

Loans and advances to banks continued to exceed deposits by banks, meaning the Group remained a net unsecured lender to the banking sector.

Funding sources

(Audited)

	2019	2018
	$m	$m
Customer accounts	**1,439,115**	1,362,643
Deposits by banks	**59,022**	56,331
Repurchase agreements – non-trading	**140,344**	165,884
Debt securities in issue	**104,555**	85,342
Cash collateral, margin and settlement accounts	**71,002**	54,066
Liabilities of disposal groups held for sale	**—**	313
Subordinated liabilities	**24,600**	22,437
Financial liabilities designated at fair value	**164,466**	148,505
Liabilities under insurance contracts	**97,439**	87,330
Trading liabilities	**83,170**	84,431
– repos	**558**	1,495
– stock lending	**9,702**	10,998
– other trading liabilities	**72,910**	71,938
Total equity	**192,668**	194,249
Other balance sheet liabilities	**338,771**	296,593
At 31 Dec	**2,715,152**	2,558,124

Funding uses

(Audited)

		2019	2018
	Footnotes	**$m**	$m
Loans and advances to customers		**1,036,743**	981,696
Loans and advances to banks		**69,203**	72,167
Reverse repurchase agreements – non-trading		**240,862**	242,804
Prepayments, accrued income and other assets	1	**63,891**	47,159
– cash collateral, margin and settlement accounts		**63,891**	47,159
Assets held for sale		**123**	735
Trading assets		**254,271**	238,130
– reverse repos		**13,659**	9,893
– stock borrowing		**7,691**	8,387
– other trading assets		**232,921**	219,850
Financial investments		**443,312**	407,433
Cash and balances with central banks		**154,099**	162,843
Other balance sheet assets		**452,648**	405,157
At 31 Dec		**2,715,152**	2,558,124

1 *Includes only those financial instruments that are subject to the impairment requirements of IFRS 9. 'Prepayments, accrued income and other assets' as presented within the consolidated balance sheet on page 231 includes both financial and non-financial assets.*

Wholesale term debt maturity profile

The maturity profile of our wholesale term debt obligations is set out in the following table.

The balances in the table are not directly comparable with those in the consolidated balance sheet because the table presents gross cash flows relating to principal payments and not the balance sheet carrying value, which include debt securities and subordinated liabilities measured at fair value.

Wholesale funding cash flows payable by HSBC under financial liabilities by remaining contractual maturities

	Due not more than 1 month	Due over 1 month but not more than 3 months	Due over 3 months but not more than 6 months	Due over 6 months but not more than 9 months	Due over 9 months but not more than 1 year	Due over 1 year but not more than 2 years	Due over 2 years but not more than 5 years	Due over 5 years	Total
	$m	$m	$m	$m	$m	$m	$m	$m	$m
Debt securities issued	**17,728**	**19,758**	**15,654**	**16,284**	**16,132**	**35,836**	**57,387**	**53,768**	**232,547**
– unsecured CDs and CP	**4,913**	**12,280**	**11,020**	**8,745**	**11,509**	**1,156**	**2,095**	**1,578**	**53,296**
– unsecured senior MTNs	**8,198**	**2,462**	**695**	**4,595**	**1,753**	**25,121**	**42,316**	**38,812**	**123,952**
– unsecured senior structured notes	**1,698**	**1,386**	**1,711**	**1,003**	**923**	**3,579**	**6,102**	**9,596**	**25,998**
– secured covered bonds	**—**	**—**	**—**	**—**	**1,139**	**749**	**3,661**	**1,159**	**6,708**
– secured asset-backed commercial paper	**1,933**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**1,933**
– secured ABS	**—**	**—**	**248**	**161**	**—**	**205**	**911**	**741**	**2,266**
– others	**986**	**3,630**	**1,980**	**1,780**	**808**	**5,026**	**2,302**	**1,882**	**18,394**
Subordinated liabilities	**1,523**	**—**	**22**	**2,000**	**—**	**754**	**2,424**	**26,809**	**33,532**
– subordinated debt securities	**1,500**	**—**	**22**	**2,000**	**—**	**754**	**2,424**	**24,587**	**31,287**
– preferred securities	**23**	**—**	**—**	**—**	**—**	**—**	**—**	**2,222**	**2,245**
At 31 Dec 2019	**19,251**	**19,758**	**15,676**	**18,284**	**16,132**	**36,590**	**59,811**	**80,577**	**266,079**
Debt securities issued	8,091	13,362	15,808	10,241	5,447	21,811	70,462	63,914	209,136
– unsecured CDs and CP	4,378	7,640	10,696	6,546	818	529	764	1,031	32,402
– unsecured senior MTNs	467	1,233	3,107	2,263	2,172	11,252	55,307	54,256	130,057
– unsecured senior structured notes	817	821	1,452	1,029	2,394	3,005	7,021	4,473	21,012
– secured covered bonds	—	—	205	—	—	1,190	3,469	1,137	6,001
– secured asset-backed commercial paper	2,094	—	—	—	—	—	—	—	2,094
– secured ABS	—	—	—	—	—	—	—	327	327
– others	335	3,668	348	403	63	5,835	3,901	2,690	17,243
Subordinated liabilities	—	95	2,007	—	—	2,021	1,383	31,131	36,637
– subordinated debt securities	—	95	2,007	—	—	2,021	1,383	28,934	34,440
– preferred securities	—	—	—	—	—	—	—	2,197	2,197
At 31 Dec 2018	8,091	13,457	17,815	10,241	5,447	23,832	71,845	95,045	245,773

Pension risk

Overview

Pension risk is the risk of increased costs to HSBC from offering post-employment benefit plans to its employees.

Pension risk arises from investments delivering an inadequate return, adverse changes in interest rates or inflation, or members living longer than expected. Pension risk also includes operational and reputational risk of sponsoring pension plans.

Key developments in 2019

There were no material changes to our global policies and practices for the management of pension risk in 2019.

Governance and structure

A global pension risk framework and accompanying global policies on the management of risks related to defined benefit and defined contribution plans are in place. Pension risk is managed by a network of local and regional pension risk forums. The Global Pensions Oversight Forum is responsible for the governance and oversight of all pension plans sponsored by HSBC around the world.

Key risk management processes

Our global pensions strategy is to move from defined benefit to defined contribution plans, where local law allows and it is considered competitive to do so.

In defined contribution pension plans, the contributions that HSBC is required to make are known, while the ultimate pension benefit will vary, typically with investment returns achieved by investment choices made by the employee. While the market risk to HSBC of defined contribution plans is low, the Group is still exposed to operational and reputational risk.

In defined benefit pension plans, the level of pension benefit is known. Therefore, the level of contributions required by HSBC will vary due to a number of risks, including:

- investments delivering a return below that required to provide the projected plan benefits;
- the prevailing economic environment leading to corporate failures, thus triggering write-downs in asset values (both equity and debt);
- a change in either interest rates or inflation expectations, causing an increase in the value of plan liabilities; and
- plan members living longer than expected (known as longevity risk).

Pension risk is assessed using an economic capital model that takes into account potential variations in these factors. The impact of these variations on both pension assets and pension liabilities is assessed using a one-in-200-year stress test. Scenario analysis and other stress tests are also used to support pension risk management. To fund the benefits associated with defined benefit plans, sponsoring Group companies, and in some instances employees, make regular contributions in accordance with advice from actuaries and in consultation with the plan's trustees where relevant. These contributions are normally set to ensure that there are sufficient funds to meet the cost of the accruing benefits for the future service of active members. However, higher contributions are required when plan assets are considered insufficient to cover the existing pension liabilities. Contribution rates are typically revised annually or once every three years, depending on the plan.

The defined benefit plans invest contributions in a range of investments designed to limit the risk of assets failing to meet a plan's liabilities. Any changes in expected returns from the investments may also change future contribution requirements. In pursuit of these long-term objectives, an overall target allocation of the defined benefit plan assets between asset classes is established. In addition, each permitted asset class has its own benchmarks, such as stock-market or property valuation indices or liability characteristics. The benchmarks are reviewed at least once every three to five years and more frequently if required by local legislation or circumstances. The process generally involves an extensive asset and liability review.

In addition, during 2019, some of the Group's pension plans performed longevity swap transactions. These arrangements provide long-term protection to the relevant plans against costs resulting from pensioners or their dependants living longer than initially expected. The most sizeable plan to do this was the HSBC Bank (UK) Pension Scheme, which performed longevity swap transactions with The Prudential Insurance Company of America, a subsidiary of Prudential Financial, Inc., and with Swiss Re. Together these cover approximately three-quarters of the plan's pensioner liabilities (50% with The Prudential Insurance Company of America and 25% with Swiss Re).

Market risk

Overview

Market risk is the risk that movements in market factors, such as foreign exchange rates, interest rates, credit spreads, equity prices and commodity prices, will reduce our income or the value of our portfolios. Exposure to market risk is separated into two portfolios: trading portfolios and non-trading portfolios.

Market risk management

Key developments in 2019

There were no material changes to our policies and practices for the management of market risk in 2019.

Governance and structure

The following diagram summarises the main business areas where trading and non-trading market risks reside, and the market risk measures used to monitor and limit exposures.

	Trading risk	Non-trading risk
Risk types	• Foreign exchange and commodities • Interest rates • Credit spreads • Equities	• Structural foreign exchange • Interest rates[1] • Credit spreads
Global business	GB&M and BSM[2]	GB&M, BSM[2], GPB, CMB and RBWM
Risk measure	Value at risk | Sensitivity | Stress testing	Value at risk | Sensitivity | Stress testing

1 *The interest rate risk on the fixed-rate securities issued by HSBC Holdings is not included in the Group value at risk. The management of this risk is described on page 142.*

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

Where appropriate, we apply similar risk management policies and measurement techniques to both trading and non-trading portfolios. Our objective is to manage and control market risk exposures to optimise return on risk while maintaining a market profile consistent with our established risk appetite.

Market risk is managed and controlled through limits approved by the Group Chief Risk Officer for HSBC Holdings. These limits are allocated across business lines and to the Group's legal entities. The majority of HSBC's total value at risk ('VaR') and almost all trading VaR reside in GB&M. Each major operating entity has an independent market risk management and control sub-function, which is responsible for measuring, monitoring and reporting market risk exposures against limits on a daily basis. Each operating entity is required to assess the market risks arising in its business and to transfer them either to its local GB&M unit for management, or to separate books managed under the supervision of the local ALCO. The Traded Risk function enforces the controls around trading in permissible instruments approved for each site as well as new product approval procedures. Traded Risk also restricts trading in the more complex derivative products to offices with appropriate levels of product expertise and robust control systems.

Key risk management processes

Monitoring and limiting market risk exposures

Our objective is to manage and control market risk exposures while maintaining a market profile consistent with our risk appetite.

We use a range of tools to monitor and limit market risk exposures including sensitivity analysis, VaR and stress testing.

Sensitivity analysis

Sensitivity analysis measures the impact of individual market factor movements on specific instruments or portfolios, including interest rates, foreign exchange rates and equity prices. We use sensitivity measures to monitor the market risk positions within each risk type. Granular sensitivity limits are set for trading desks with consideration of market liquidity, customer demand and capital constraints, among other factors.

Value at risk

(Audited)

VaR is a technique for estimating potential losses on risk positions as a result of movements in market rates and prices over a specified time horizon and to a given level of confidence. The use of VaR is integrated into market risk management and calculated for all trading positions regardless of how we capitalise them. In addition, we calculate VaR for non-trading portfolios to have a complete picture of risk. Where we do not calculate VaR explicitly, we use alternative tools as summarised in the 'Stress testing' section below.

Our models are predominantly based on historical simulation that incorporates the following features:

- historical market rates and prices, which are calculated with reference to foreign exchange rates, commodity prices, interest rates, equity prices and the associated volatilities;
- potential market movements that are calculated with reference to data from the past two years; and
- calculations to a 99% confidence level and using a one-day holding period.

The models also incorporate the effect of option features on the underlying exposures. The nature of the VaR models means that an increase in observed market volatility will lead to an increase in VaR without any changes in the underlying positions.

VaR model limitations

Although a valuable guide to risk, VaR is used with awareness of its limitations. For example:

- The use of historical data as a proxy for estimating future market moves may not encompass all potential market events, particularly those that are extreme in nature.
- The use of a one-day holding period for risk management purposes of trading and non-trading books assumes that this short period is sufficient to hedge or liquidate all positions.
- The use of a 99% confidence level by definition does not take into account losses that might occur beyond this level of confidence.

- VaR is calculated on the basis of exposures outstanding at the close of business and therefore does not reflect intra-day exposures.

Risk not in VaR framework

The risks not in VaR ('RNIV') framework captures and capitalises material market risks that are not adequately covered in the VaR model.

Risk factors are reviewed on a regular basis and are either incorporated directly in the VaR models, where possible, or quantified through either the VaR-based RNIV approach or a stress test approach within the RNIV framework. While VaR-based RNIVs are calculated by using historical scenarios, stress-type RNIVs are estimated on the basis of stress scenarios whose severity is calibrated to be in line with the capital adequacy requirements. The outcome of the VaR-based RNIV approach is included in the overall VaR calculation but excluded from the VaR measure used for regulatory back-testing. In addition, the stressed VaR measure also includes risk factors considered in the VaR-based RNIV approach.

Stress-type RNIVs include a gap risk exposure measure to capture risk on non-recourse margin loans, and a de-peg risk measure to capture risk to pegged and heavily managed currencies.

Stress testing

Stress testing is an important procedure that is integrated into our market risk management framework to evaluate the potential impact on portfolio values of more extreme, although plausible, events or movements in a set of financial variables. In such scenarios, losses can be much greater than those predicted by VaR modelling.

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

Market risk reverse stress tests are designed to identify vulnerabilities in our portfolios by looking for scenarios that lead to loss levels considered severe for the relevant portfolio. These scenarios may be quite local or idiosyncratic in nature, and complement the systematic top-down stress testing.

Stress testing and reverse stress testing provide senior management with insights regarding the 'tail risk' beyond VaR, for which our appetite is limited.

Trading portfolios

Trading portfolios comprise positions held for client servicing and market-making, with the intention of short-term resale and/or to hedge risks resulting from such positions.

Back-testing

We routinely validate the accuracy of our VaR models by back-testing the VaR metric against both actual and hypothetical profit and loss. Hypothetical profit and loss excludes non-modelled items such as fees, commissions and revenue of intra-day transactions.

The number of back-testing exceptions is used to gauge how well the models are performing. We consider enhanced internal monitoring of a VaR model if more than five profit exceptions or more than five loss exceptions occur in a 250-day period.

We back-test our VaR at set levels of our Group entity hierarchy.

Structural foreign exchange exposures

Structural foreign exchange exposures represent net investments in subsidiaries, branches and associates, the functional currencies of which are currencies other than the US dollar. An entity's functional currency is normally that of the primary economic environment in which the entity operates.

Exchange differences on structural exposures are recognised in 'Other comprehensive income'. We use the US dollar as our presentation currency in our consolidated financial statements because the US dollar and currencies linked to it form the major currency bloc in which we transact and fund our business. Therefore, our consolidated balance sheet is affected by exchange differences between the US dollar and all the non-US dollar functional currencies of underlying subsidiaries.

Our structural foreign exchange exposures are managed with the primary objective of ensuring, where practical, that our consolidated capital ratios and the capital ratios of individual banking subsidiaries are largely protected from the effect of changes in exchange rates. We hedge structural foreign exchange exposures only in limited circumstances.

For further details of our structural foreign exchange exposures, see page 139.

Interest rate risk in the banking book

Overview

Interest rate risk in the banking book is the risk of an adverse impact to earnings or capital due to changes in market interest rates. It is generated by our non-traded assets and liabilities, specifically loans, deposits and financial instruments that are not held for trading intent or that are held in order to hedge positions held with trading intent. This risk is monitored and controlled by the Asset, Liability and Capital Management ('ALCM') function. Interest rate risk in the banking book is transferred to and managed by Balance Sheet Management ('BSM'), and also monitored by the Wholesale Market Risk, Product Control and ALCM functions with reference to established risk appetites.

Governance and structure

The ALCM function monitors and controls non-traded interest rate risk. This includes reviewing and challenging the business prior to the release of new products and in respect of proposed behavioural assumptions used for hedging activities. The ALCM function is also responsible for maintaining and updating the transfer pricing framework, informing the ALCO of the Group's overall banking book interest rate risk exposure and managing the balance sheet in conjunction with BSM.

BSM manages the banking book interest rate positions transferred to it within the market risk limits approved by RMM. Effective governance of BSM is supported by the dual reporting lines it has to the Chief Executive Officer of GB&M and to the Group Treasurer, with Risk acting as a second line of defence. The global businesses can only transfer non-trading assets and liabilities to BSM provided BSM can economically hedge the risk it receives. Hedging is generally executed through interest rate derivatives or fixed-rate government bonds. Any interest rate risk that BSM cannot economically hedge is not transferred and will remain within the global business where the risks originate.

Measurement of interest rate risk in the banking book

The ALCM function uses a number of measures to monitor and control interest rate risk in the banking book, including:

- non-traded VaR;
- net interest income sensitivity; and
- economic value of equity ('EVE').

Non-traded VaR

Non-traded VaR uses the same models as those used in the trading book and excludes both HSBC Holdings and the elements of risk that are not transferred to BSM.

NII sensitivity

A principal part of our management of non-traded interest rate risk is to monitor the sensitivity of expected net interest income ('NII') under varying interest rate scenarios (i.e. simulation modelling), where all other economic variables are held constant. This monitoring is undertaken at an entity level by local ALCOs, where entities forecast both one-year and five-year NII sensitivities across a range of interest rate scenarios.

Projected NII sensitivity figures represent the effect of *pro forma* movements in projected yield curves based on a static balance sheet size and structure. The exception to this is where the size of the balances or repricing is deemed interest rate sensitive, for example, non-interest-bearing current account migration and fixed-rate loan early prepayment. These sensitivity calculations do not incorporate actions that would be taken by BSM or in the business units to mitigate the effect of interest rate movements.

The NII sensitivity calculations assume that interest rates of all maturities move by the same amount in the 'up-shock' scenario. Rates are not assumed to become negative in the 'down-shock' scenario unless the central bank rate is already negative. In these cases, rates are not assumed to go further negative, which may, in certain currencies, effectively result in non-parallel shock. In addition, the NII sensitivity calculations take account of the effect of anticipated differences in changes between interbank and internally determined interest rates, where the entity has discretion in terms of the timing and extent of rate changes.

Tables showing our calculations of NII sensitivity can be found on page 140.

Economic value of equity

Economic value of equity ('EVE') represents the present value of the future banking book cash flows that could be distributed to equity providers under a managed run-off scenario. This equates to the current book value of equity plus the present value of future NII in this scenario. EVE can be used to assess the economic capital required to support interest rate risk in the banking book. An EVE sensitivity is the extent to which the EVE value will change due to pre-specified movements in interest rates, where all other economic variables are held constant. Operating entities are required to monitor EVE sensitivity as a percentage of capital resources.

HSBC Holdings

As a financial services holding company, HSBC Holdings has limited market risk activities. Its activities predominantly involve maintaining sufficient capital resources to support the Group's diverse activities; allocating these capital resources across the Group's businesses; earning dividend and interest income on its investments in the businesses; payment of operating expenses; providing dividend payments to its equity shareholders and interest payments to providers of debt capital; and maintaining a supply of short-term liquid assets for deployment under extraordinary circumstances.

The main market risks to which HSBC Holdings is exposed are banking book interest rate risk and foreign currency risk. Exposure to these risks arises from short-term cash balances, funding positions held, loans to subsidiaries, investments in long-term financial assets and financial liabilities including debt capital issued. The objective of HSBC Holdings' market risk management strategy is to reduce exposure to these risks and minimise volatility in capital resources, cash flows and distributable reserves. Market risk for HSBC Holdings is monitored by Holdings ALCO in accordance with its risk appetite statement.

HSBC Holdings uses interest rate swaps and cross-currency interest rate swaps to manage the interest rate risk and foreign currency risk arising from its long-term debt issues.

Market risk in 2019

The performance of financial markets through the year reflected fluctuations in global trade tensions and changes in the policy stance of key central banks. With persistently low inflation and weak growth outlook, monetary policy turned accommodative in several major economies and emerging markets. The FRB cut its policy rate three times, reversing the tightening cycle started in 2018. At the same time, the ECB restarted its programme of government bond purchases in September. Yield curves inverted in a number of countries during the summer, while the stock of fixed income securities with negative yields reached record highs.

During the last quarter of the year, easing of US-China trade tensions and looser financial conditions contributed to a more positive market sentiment. Global stock markets reached historical record highs and volatility remained subdued. However, tensions around the UK's departure from the EU led to spikes in short-term sterling volatility. Search for yield contributed to further tightening of credit spreads on investment grade and high-yield debt, although spreads on corporate debt with the lowest ratings tended to widen.

The overall risk profile remained relatively stable in 2019, with the fixed income business continuing to be the key driver of trading VaR. The interest rates asset class was the major contributor to trading VaR, while the exposure to credit spread risks provided partial offsetting gains. The equity and foreign exchange components provided more limited contributions to the overall market risk in the trading book.

Trading portfolios

Value at risk of the trading portfolios

Trading VaR predominantly resides within Global Markets.

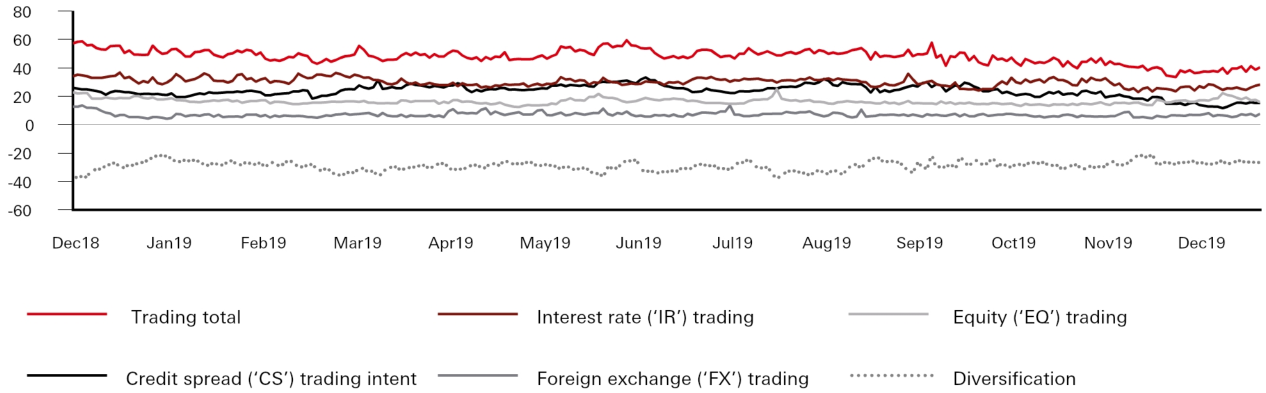
VaR for trading book activity at the end of 2019 was lower than at the end of 2018. The decrease was attributable primarily to lower contributions from:

- credit spread risks due to a reduction of exposures during the year and lower baseline credit spread levels;
- reduced equity correlation and interest rate volatility risks captured in the RNIV framework; and
- some offsetting gains provided by the flow rates activity.

The lower contribution of the above drivers of trading VaR was partly offset by reduced diversification benefits across asset classes.

The daily levels of total trading VaR during 2019 are set out in the graph below.

Daily VaR (trading portfolios), 99% 1 day ($m)



The Group trading VaR for the year is shown in the table below.

Trading VaR, 99% 1 day[1]

(Audited)

	Foreign exchange and commodity	Interest rate	Equity	Credit spread	Portfolio diversification[2]	Total[3]
	$m	$m	$m	$m	$m	$m
Balance at 31 Dec 2019	**7.7**	**28.2**	**15.7**	**15.2**	**(26.4)**	**40.3**
Average	**6.9**	**29.9**	**16.2**	**23.7**	**(29.0)**	**47.8**
Maximum	**13.5**	**36.5**	**24.9**	**33.2**		**59.3**
Minimum	**4.1**	**22.9**	**12.4**	**11.7**		**33.3**
Balance at 31 Dec 2018	12.6	33.9	22.6	25.9	(37.9)	57.1
Average	9.5	36.4	22.5	20.7	(34.3)	54.8
Maximum	21.8	49.9	33.8	35.2		71.2
Minimum	5.5	27.0	13.5	12.2		43.9

1 *Trading portfolios comprise positions arising from the market-making and warehousing of customer-derived positions.*
2 *Portfolio diversification is the market risk dispersion effect of holding a portfolio containing different risk types. It represents the reduction in unsystematic market risk that occurs when combining a number of different risk types – such as interest rate, equity and foreign exchange – together in one portfolio. It is measured as the difference between the sum of the VaR by individual risk type and the combined total VaR. A negative number represents the benefit of portfolio diversification. As the maximum and minimum occurs on different days for different risk types, it is not meaningful to calculate a portfolio diversification benefit for these measures.*
3 *The total VaR is non-additive across risk types due to diversification effects.*

Back-testing

In 2019, the Group experienced six profit back-testing exceptions and one loss back-testing exception against actual profit and loss. Some of these exceptions were driven by profits spread across a large number of desks or arose from new trades, which are outside trading VaR scope. The above exceptions comprised:

- a profit exception in early January, driven by gains across most asset classes, as interest rates rose and equity markets rebounded;
- a profit exception in late January, due mainly to gains from new transactions in the Rates business and lower equity volatilities;
- a profit exception in March, driven by increased volatility in some emerging markets currencies and interest rates;
- a loss exception in March, attributable to month-end valuation adjustments driven by portfolio and spread changes;
- two profit exceptions in early May, arising from new transactions and a number of relatively small gains spread across all asset classes; and
- a profit exception in December, due to gains from multiple desks and spread across all asset classes.

The Group also experienced one profit back-testing exception and one loss back-testing exception against hypothetical profit and loss:

- a loss exception in November driven primarily by the impact of the widening of the credit spread on a high-yield bond holding; and
- a profit exception in December, due to gains from multiple desks and spread across all asset classes.

Non-trading portfolios

Non-trading portfolios comprise positions that primarily arise from the interest rate management of our retail and commercial banking assets and liabilities, financial investments measured at fair value through other comprehensive income, debt instruments measured at amortised cost, and exposures arising from our insurance operations.

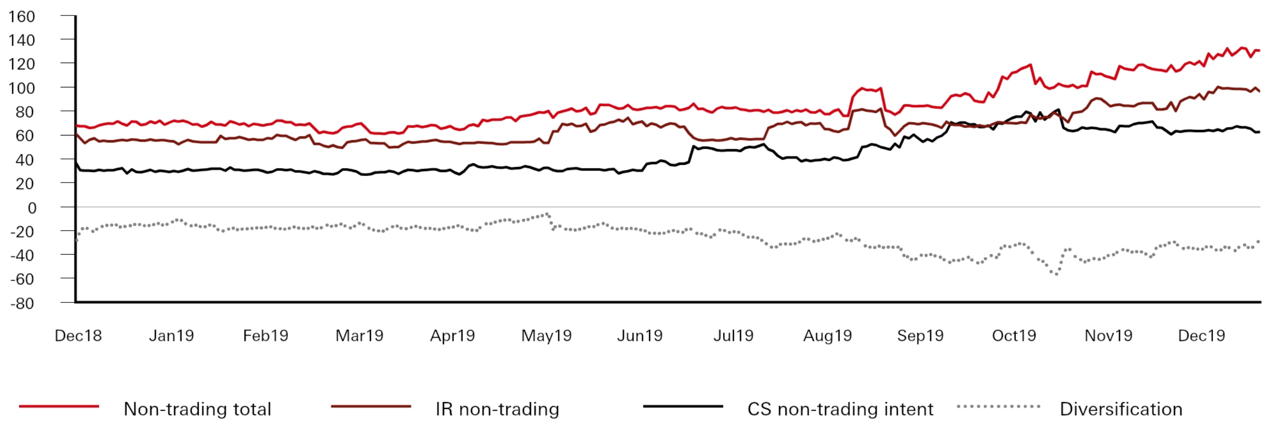
Value at risk of the non-trading portfolios

VaR for non-trading books at the end of 2019 was materially larger than in 2018. The increase was driven by an uplift in contributions from both interest rate and credit spread risks during the last quarter of the year. The larger contribution from interest rate risks was primarily due to increased inventories of highly-rated government securities and the effect of rising long-term interest rates on the duration of the agency mortgage-backed securities ('MBS') portfolio. Increase in credit spread risk contribution was also driven by the MBS portfolio, due mainly to US mortgage spreads widening in the second half of the year owing to geopolitical events, such as the US-China trade- and tariff-related tensions, and related concerns around weaker economic growth.

Non-trading VaR includes the interest rate risk in the banking book transferred to and managed by BSM and the non-trading financial instruments held by BSM. The management of interest rate risk in the banking book is described further in the 'Net interest income sensitivity' section.

The daily levels of total non-trading VaR over the last year are set out in the graph below.

Daily VaR (non-trading portfolios), 99% 1 day ($m)



The Group non-trading VaR for the year is shown in the table below.

Non-trading VaR, 99% 1 day

(Audited)

	Interest rate $m	Credit spread $m	Portfolio diversification[1] $m	Total[2] $m
Balance at 31 Dec 2019	**96.2**	**62.5**	**(28.2)**	**130.5**
Average	**65.9**	**44.2**	**(25.6)**	**84.5**
Maximum	**100.1**	**81.2**		**132.8**
Minimum	**49.2**	**26.6**		**60.9**
Balance at 31 Dec 2018	61.4	37.2	(30.6)	68
Average	96.8	48.3	(29.1)	116
Maximum	129.3	96		154.1
Minimum	59.9	27.6		68

1 *Portfolio diversification is the market risk dispersion effect of holding a portfolio containing different risk types. It represents the reduction in unsystematic market risk that occurs when combining a number of different risk types – such as interest rate, equity and foreign exchange – together in one portfolio. It is measured as the difference between the sum of the VaR by individual risk type and the combined total VaR. A negative number represents the benefit of portfolio diversification. As the maximum and minimum occurs on different days for different risk types, it is not meaningful to calculate a portfolio diversification benefit for these measures.*

2 *The total VaR is non-additive across risk types due to diversification effects.*

Non-trading VaR excludes equity risk on securities held at fair value, structural foreign exchange risk and interest rate risk on fixed-rate securities issued by HSBC Holdings. The following sections describe the scope of HSBC's management of market risks in non-trading books.

Market risk balance sheet linkages

The following balance sheet lines in the Group's consolidated position are subject to market risk:

Trading assets and liabilities

The Group's trading assets and liabilities are in almost all cases originated by GB&M. These assets and liabilities are treated as traded risk for the purposes of market risk management, other than a limited number of exceptions, primarily in Global Banking where the short-term acquisition and disposal of the assets are linked to other non-trading-related activities such as loan origination.

Derivative assets and liabilities

We undertake derivative activity for three primary purposes: to create risk management solutions for clients, to manage the portfolio risks arising from client business, and to manage and hedge our own risks. Most of our derivative exposures arise from sales and trading activities within GB&M. The assets and liabilities included in trading VaR give rise to a large proportion of the income included in net income from financial instruments held for trading or managed on a fair value basis. Adjustments to trading income such as valuation adjustments are not measured by the trading VaR model.

For information on the accounting policies applied to financial instruments at fair value, see Note 1 on the financial statements

Structural foreign exchange exposures

For our policies and procedures for managing structural foreign exchange exposures, see page 136 of the 'Risk management' section.

Structural foreign exchange exposures represent net investments in subsidiaries, branches and associates, the functional currencies of which are currencies other than the US dollar. Exchange differences on structural exposures are recognised in 'Other comprehensive income'.

Net structural foreign exchange exposures

	Footnotes	2019 $m	2018 $m
Currency of structural exposure			
Hong Kong dollars		**46,527**	41,477
Pound sterling	1	**33,383**	36,642
Chinese renminbi		**28,847**	27,554
Euros		**14,881**	20,964
Mexican pesos		**4,600**	4,363
Canadian dollars		**4,416**	3,815
Indian rupees		**4,375**	3,837
Saudi riyals		**4,280**	3,913
UAE dirhams		**4,105**	2,185
Malaysian ringgit		**2,695**	2,572
Singapore dollars		**2,256**	2,246
Taiwanese dollars		**1,957**	1,904
Australian dollars		**1,898**	1,823
Indonesian rupiah		**1,665**	1,792
Korean won		**1,245**	1,285
Swiss francs		**1,188**	987
Thai baht		**910**	856
Egyptian pound		**875**	697
Brazilian real		**271**	707
Others, each less than $700m		**6,758**	6,140
At 31 Dec		**167,132**	165,759

1 *At 31 December 2019, we had forward foreign exchange contracts of $10.5bn (2018: $5bn) in order to manage our sterling structural foreign exchange exposure.*

Shareholders' equity would decrease by $2,298m (2018: $2,743m) if euro and sterling foreign currency exchange rates weakened by 5% relative to the US dollar.

Net interest income sensitivity

The following tables set out the assessed impact to a hypothetical base case projection of our NII (excluding insurance) under the following scenarios:

- an immediate shock of 25 basis points ('bps') to the current market-implied path of interest rates across all currencies on 1 January 2020 (effects over one year and five years); and
- an immediate shock of 100bps to the current market-implied path of interest rates across all currencies on 1 January 2020 (effects over one year and five years).

The sensitivities shown represent our assessment of the change to a hypothetical base case NII, assuming a static balance sheet and no management actions from BSM. They incorporate the effect of interest rate behaviouralisation, managed rate product pricing assumptions and customer behaviour, including prepayment of mortgages or customer migration from non-interest-bearing to interest-bearing deposit accounts under the specific interest rate scenarios. Market uncertainty and our competitors' behaviours also need to be factored in when analysing these results. The scenarios represent interest rate shocks to the current market implied path of rates.

The NII sensitivities shown are indicative and based on simplified scenarios. Immediate interest rate rises of 25bps and 100bps would increase projected NII for the 12 months to 31 December 2020 by $853m and $2,798m, respectively. Conversely, falls of 25bps and 100bps would decrease projected NII for the 12 months to 31 December 2020 by $849m and $3,311m, respectively.

The sensitivity of NII for 12 months increased by $20m in the plus 100bps parallel shock and decreased by $143m in the minus 100bps parallel shock, comparing December 2020 with December 2019. These changes were driven by movements in the sterling amounts primarily due to changes in balance sheet composition given by liquidity management.

The change in NII sensitivity for five years is also driven by the factors above.

The structural sensitivity arising from the four global businesses, excluding Global Markets, is positive in a rising rate environment and negative in a falling rate environment. Both BSM and Global Markets have NII sensitivity profiles that offset this to some degree. The tables do not include BSM management actions or changes in Global Markets' net trading income that may further limit the offset.

The limitations of this analysis are discussed within the 'Market risk management' section on page 135.

NII sensitivity to an instantaneous change in yield curves (12 months)

	Currency					
	$ $m	HK$ $m	£ $m	€ $m	Other $m	Total $m
Change in Jan 2020 to Dec 2020 (based on balance sheet at 31 December 2019)						
+25bps parallel	**59**	**198**	**278**	**116**	**202**	**853**
-25bps parallel	**(91)**	**(255)**	**(332)**	**11**	**(182)**	**(849)**
+100bps parallel	**(16)**	**504**	**1,123**	**441**	**746**	**2,798**
-100bps parallel	**(490)**	**(1,023)**	**(1,049)**	**(23)**	**(726)**	**(3,311)**
Change in Jan 2019 to Dec 2019 (based on balance sheet at 31 December 2018)						
+25bps parallel	70	232	198	115	213	828
-25bps parallel	(160)	(301)	(244)	8	(187)	(884)
+100bps parallel	147	773	777	408	673	2,778
-100bps parallel	(523)	(1,046)	(1,122)	9	(772)	(3,454)

The net interest income sensitivities arising from the scenarios presented in the tables above are not directly comparable. This is due to timing differences relating to interest rate changes and the repricing of assets and liabilities.

NII sensitivity to an instantaneous change in yield curves (5 years)

	Year 1 $m	Year 2 $m	Year 3 $m	Year 4 $m	Year 5 $m	Total $m
Change in Jan 2020 to Dec 2020 (based on balance sheet at 31 December 2019)						
+25bps parallel	**853**	**1,158**	**1,348**	**1,449**	**1,523**	**6,331**
-25bps parallel	**(849)**	**(1,205)**	**(1,402)**	**(1,562)**	**(1,649)**	**(6,667)**
+100bps parallel	**2,798**	**4,255**	**4,915**	**5,155**	**5,454**	**22,577**
-100bps parallel	**(3,311)**	**(4,621)**	**(5,289)**	**(5,766)**	**(6,164)**	**(25,151)**
Change in Jan 2019 to Dec 2019 (based on balance sheet at 31 December 2018)						
+25bps parallel	828	1,155	1,416	1,529	1,428	6,356
-25bps parallel	(884)	(1,127)	(1,206)	(1,296)	(1,597)	(6,110)
+100bps parallel	2,778	3,863	4,542	4,968	5,096	21,247
-100bps parallel	(3,454)	(4,632)	(5,276)	(5,691)	(6,187)	(25,240)

Sensitivity of capital and reserves

Financial assets at fair value through other comprehensive income reserves are included as part of CET1 capital. We measure the potential downside risk to the CET1 ratio due to interest rate and credit spread risk in this portfolio using the portfolio's stressed VaR, with a 99% confidence level and an assumed holding period of one quarter. At December 2019, the stressed VaR of the portfolio was $3.2bn (2018: $2.9bn).

We monitor the sensitivity of reported cash flow hedging reserves to interest rate movements on a yearly basis by assessing the expected reduction in valuation of cash flow hedges due to parallel movements of plus or minus 100bps in all yield curves. These particular exposures form only a part of our overall interest rate exposure.

The following table describes the sensitivity of our cash flow hedge reported reserves to the stipulated movements in yield curves at year end. The sensitivities are indicative and based on simplified scenarios.

Sensitivity of cash flow hedging reported reserves to interest rate movements

	$m
At 31 Dec 2019	
+100 basis point parallel move in all yield curves	**(702)**
As a percentage of total shareholders' equity	**(0.38)%**
-100 basis point parallel move in all yield curves	**732**
As a percentage of total shareholders' equity	**0.4%**
At 31 Dec 2018	
+100 basis point parallel move in all yield curves	(492)
As a percentage of total shareholders' equity	(0.26)%
-100 basis point parallel move in all yield curves	550
As a percentage of total shareholders' equity	0.3%

Third-party assets in Balance Sheet Management

For our BSM governance framework, see page 136.

Third-party assets in BSM increased by 1.6% during 2019. 'Reverse repurchase agreements' increased by $7bn, reflecting in part the management of cash and commercial surplus in North America and Asia respectively. 'Financial Investments' increased by $18bn, driven by an increase in investments predominantly across Europe and Middle East. 'Cash and balances at central banks' comparatively decreased by $16bn.

Third-party assets in Balance Sheet Management

	2019 $m	2018 $m
Cash and balances at central banks	**129,114**	144,802
Trading assets	**268**	601
Loans and advances:		
– to banks	**24,466**	25,257
– to customers	**310**	964
Reverse repurchase agreements	**29,868**	22,899
Financial investments	**351,842**	333,622
Other	**7,655**	6,880
At 31 Dec	**543,523**	535,025

Defined benefit pension schemes

Market risk arises within our defined benefit pension schemes to the extent that the obligations of the schemes are not fully matched by assets with determinable cash flows.

For details of our defined benefit schemes, including asset allocation, see Note 5 on the financial statements, and for pension risk management, see page 134.

Additional market risk measures applicable only to the parent company

HSBC Holdings monitors and manages foreign exchange risk and interest rate risk. In order to manage interest rate risk, HSBC Holdings uses the projected sensitivity of its NII to future changes in yield curves and the interest rate gap repricing tables.

Foreign exchange risk

HSBC Holdings' foreign exchange exposures derive almost entirely from the execution of structural foreign exchange hedges on behalf of the Group as its business-as-usual foreign exchange exposures are managed within tight risk limits. At 31 December 2019, HSBC Holdings had forward foreign exchange contracts of $10.5bn (2018: $5bn) to manage the Group's sterling structural foreign exchange exposure.

Sensitivity of net interest income

HSBC Holdings monitors NII sensitivity over a five-year time horizon, reflecting the longer-term perspective on interest rate risk management appropriate to a financial services holding company. These sensitivities assume that any issuance where HSBC Holdings has an option to reimburse at a future call date is called at this date. The table below sets out the effect on HSBC Holdings' future NII over a five-year time horizon of incremental 25bps parallel falls or rises in all yield curves at the beginning of each quarter during the 12 months from 1 January 2020.

The NII sensitivities shown are indicative and based on simplified scenarios. Immediate interest rate rises of 25bps and 100bps would decrease projected NII for the 12 months to 31 December 2020 by $21m and $96m, respectively. Conversely, falls of 25bps and 100bps would increase projected NII for the 12 months to 31 December 2020 by $23m and $99m, respectively.

NII sensitivity to an instantaneous change in yield curves (12 months)

	$	HK$	£	€	Other	Total
	$m	$m	$m	$m	$m	$m
Change in Jan 2020 to Dec 2020 (based on balance sheet at 31 December 2019)						
+25bps	**(30)**	**—**	**7**	**2**	**—**	**(21)**
-25bps	**30**	**—**	**(7)**	**—**	**—**	**23**
+100bps	**(120)**	**—**	**30**	**(6)**	**—**	**(96)**
-100bps	**120**	**—**	**(21)**	**—**	**—**	**99**
Change in Jan 2019 to Dec 2019 (based on balance sheet at 31 December 2018)						
+25bps	(10)	—	8	(5)	—	(7)
-25bps	10	—	(8)	8	—	10
+100bps	(38)	—	31	(22)	—	(29)
-100bps	38	—	(28)	33	—	43

NII sensitivity to an instantaneous change in yield curves (5 years)

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
	$m	$m	$m	$m	$m	$m
Change in Jan 2020 to Dec 2020 (based on balance sheet at 31 December 2019)						
+25bps	**(21)**	**(14)**	**(13)**	**(14)**	**(17)**	**(79)**
-25bps	**23**	**12**	**8**	**9**	**13**	**65**
+100bps	**(96)**	**(64)**	**(53)**	**(54)**	**(72)**	**(339)**
-100bps	**99**	**61**	**41**	**38**	**43**	**282**
Change in Jan 2019 to Dec 2019 (based on balance sheet at 31 December 2018)					—	
+25bps	(7)	(9)	(9)	(4)	(8)	(37)
-25bps	10	12	11	11	11	55
+100bps	(29)	(36)	(36)	(16)	(32)	(149)
-100bps	43	47	47	29	42	208

The interest rate sensitivities in the preceding table are indicative and based on simplified scenarios. The figures represent hypothetical movements in NII based on our projected yield curve scenarios, HSBC Holdings' current interest rate risk profile and assumed changes to that profile during the next five years.

The sensitivities represent our assessment of the change to a hypothetical base case based on a static balance sheet assumption, and do not take into account the effect of actions that could be taken to mitigate this interest rate risk.

Interest rate repricing gap table

The interest rate risk on the fixed-rate securities issued by HSBC Holdings is not included within the Group VaR, but is managed on a repricing gap basis. The following interest rate repricing gap table analyses the full-term structure of interest rate mismatches within HSBC Holdings' balance sheet where debt issuances are reflected based on either the next reprice date if floating rate or the maturity/call date (whichever is first) if fixed rate.

Repricing gap analysis of HSBC Holdings

	Footnotes	Total	Up to 1 year	From over 1 to 5 years	From over 5 to 10 years	More than 10 years	Non-interest bearing
		$m	$m	$m	$m	$m	$m
Cash at bank and in hand:							
– balances with HSBC undertakings		**2,382**	**2,382**	**—**	**—**	**—**	**—**
Derivatives		**2,002**	**—**	**—**	**—**	**—**	**2,002**
Loans and advances to HSBC undertakings		**72,182**	**19,976**	**21,084**	**24,739**	**2,000**	**4,383**
Financial investments in HSBC undertakings		**16,106**	**13,054**	**3,006**	**—**	**—**	**46**
Investments in subsidiaries		**163,948**	**5,035**	**5,118**	**3,924**	**—**	**149,871**
Other assets		**1,095**	**102**	**—**	**—**	**—**	**993**
Total assets		**257,715**	**40,549**	**29,208**	**28,663**	**2,000**	**157,295**
Amounts owed to HSBC undertakings		**(464)**	**(464)**	**—**	**—**	**—**	**—**
Financial liabilities designated at fair values		**(30,303)**	**—**	**(14,628)**	**(14,698)**	**(750)**	**(227)**
Derivatives		**(2,021)**	**—**	**—**	**—**	**—**	**(2,021)**
Debt securities in issue		**(56,844)**	**(15,446)**	**(22,336)**	**(15,154)**	**(2,000)**	**(1,908)**
Other liabilities		**(2,203)**	**—**	**—**	**—**	**—**	**(2,203)**
Subordinated liabilities		**(18,361)**	**—**	**(2,000)**	**(2,543)**	**(11,284)**	**(2,534)**
Total equity		**(147,519)**	**(2,950)**	**(10,707)**	**(9,975)**	**—**	**(123,887)**
Total liabilities and equity		**(257,715)**	**(18,860)**	**(49,671)**	**(42,370)**	**(14,034)**	**(132,780)**
Off-balance sheet items attracting interest rate sensitivity			**(30,363)**	**16,789**	**6,796**	**6,469**	**309**
Net interest rate risk gap at 31 Dec 2019			**(8,674)**	**(3,674)**	**(6,911)**	**(5,565)**	**24,824**
Cumulative interest rate gap			**(8,674)**	**(12,348)**	**(19,259)**	**(24,824)**	**—**
Cash at bank and in hand:							
– balances with HSBC undertakings		3,509	3,509	—	—	—	—
Derivatives		707	—	—	—	—	707
Loans and advances to HSBC undertakings		79,657	39,316	16,717	18,382	2,000	3,242
Financial investments in HSBC undertakings		—	—	—	—	—	—
Investments in subsidiaries		160,231	4,703	2,136	379		153,013
Other assets		1,077	—	—	—	—	1,077
Total assets		245,181	47,528	18,853	18,761	2,000	158,039
Amounts owed to HSBC undertakings		(949)	—	—	—	—	(949)
Financial liabilities designated at fair values		(25,049)	(1,920)	(11,871)	(9,299)	(750)	(1,208)
Derivatives		(2,159)	—	—	—	—	(2,159)
Debt securities in issue		(50,800)	(14,879)	(16,753)	(18,156)	(2,900)	1,888
Other liabilities		(1,156)	—	—	—	—	(1,156)
Subordinated liabilities		(17,715)	(1,646)	—	(4,476)	(10,317)	(1,277)
Total equity		(147,353)	(1,450)	(9,861)	(10,777)	(1,372)	(123,893)
Total liabilities and equity		(245,181)	(19,895)	(38,485)	(42,708)	(15,339)	(128,754)
Off-balance sheet items attracting interest rate sensitivity			(30,713)	10,544	12,718	6,410	1,041
Net interest rate risk gap at 31 Dec 2018	1		(3,080)	(9,088)	(11,229)	(6,929)	30,326
Cumulative interest rate gap			(3,080)	(12,168)	(23,397)	(30,326)	

1 *Investments in subsidiaries and equity have been allocated based on call dates for any callable bonds. The prior year figures have been amended to reflect this.*

Resilience risk

Overview

Resilience risk is the risk that we are unable to provide critical services to our customers, affiliates and counterparties as a result of sustained and significant operational disruption.

Resilience risk arises from failures or inadequacies in processes, people, systems or external events.

Resilience risk management

Key developments in 2019

In May 2019, in line with the increasing threat landscape that we face, we formed a new Resilience Risk sub-function. The function seeks to take a holistic view of the increasing geopolitical, environmental and technological risks to ensure the continued provision of critical services to our customers. These threats include those to our physical buildings, data centres and branches, cyber-attacks impacting our critical systems and data as well as threats posed by our reliance on third parties.

We have carried out a number of initiatives to develop and embed the new sub-function:

- We recruited and consolidated the following previously independent risk functions: Information and Cyber Security; Protective Security; Business Continuity and Incident Management; Building Availability and Workspace Safety; Third Party; Systems and Data Integrity; and Transaction Processing.
- We aligned with the operational risk management framework and the agreed non-financial risk responsibilities.
- We developed a new risk taxonomy with control library changes, simplifying and removing duplication that existed in the previously independent risk functions, which helped to strengthen our overall management of operational risks.
- We focused on the establishment of preventative measures, which include deepening an understanding of resilience risk, and creating clearly defined resilience risk oversight services and end-to-end strategic change programme support.
- We focused on detailed responsive methods, which include robust business continuity plans, back-up plans, alternative delivery channels and tested recovery options.
- We invested in IT resilience by designing and implementing IT systems that continue to be available to use in the face of adverse conditions.

- We have sought to ensure we understand the root cause of IT failures and learn lessons both from our own experiences and those of others.

We prioritise our efforts on areas of material risk and strategic growth by being present in higher risk profile countries. However, we are also supporting chief risk officers and our colleagues in the Operational Risk function in countries where we have no physical presence, with assessing and understanding their risk profile.

Governance and structure

Resilience Risk provides oversight, advice, guidance and challenge to our global businesses and global functions to strengthen our ability to prevent, adapt, and learn from resilience-related threats when – and not if – something goes wrong.

The Resilience Risk target operating model was published in November 2019. It is helping us to provide a globally consistent view across resilience risks, strengthening our risk management oversight while operating effectively as part of a simplified non-financial risk structure. We view resilience risk through six risk lenses: strategic change and emerging threats; third-party risk; information and data resilience; payments and processing resilience; systems and cyber resilience; and protective security risk.

The Resilience Risk structure simplifies interactions with our key stakeholders by providing a single channel of contact for all areas across Resilience Risk. The Resilience Risk manager interfacing with the stakeholders will be supported by experts in the wider Resilience Risk organisation to deliver clear, consistent and credible responses to the business.

A strategic change and emerging threat team within Resilience Risk provides increased oversight and robust challenge around high-priority programmes and change programmes. They consider how emerging threats, requirements and opportunities arise from the use of new technologies, and how they could impact our risk profile.

The Resilience Risk Management Meeting oversees resilience risk and has accountability to the RMM. The Resilience Risk management meeting is supported by its sub-committees that provide oversight over each of the respective Resilience Risk sub-teams.

The Resilience Risk Global Governance Meeting aims to ensure that resilience risk is managed within its defined risk appetite. It is jointly chaired by the Global Head of Operational Resilience and the Group Chief Information Officer. The Resilience Risk Global Governance Meeting has accountability into the Non-Financial Risk Management Board and escalates issues to the Group Risk Committee.

Key risk management processes

Operational resilience is our ability to adapt operations to continue functioning when an operational disturbance occurs. We measure resilience in terms of the maximum disruption period or the impact tolerance that we are willing to accept for a business service. Resilience risk cannot be managed down to zero, so we concentrate on material risk and critical business services and strategic change programmes that have the highest potential to threaten our ability to provide continued service to our customers.

The Resilience Risk team oversees the identification, management and control of resilience risks. To support our oversight, a variety of changes have been made to the risk taxonomy and control library to simplify and strengthen the risk management of Resilience Risk. The risk taxonomy and control library was developed by looking at a number of frameworks and control libraries, including National Institute for Standards and Technology, Control Objectives for Information and related Technology and Standard of Good Practice.

Continuity of business operations

Every department within the organisation undertakes business continuity management. This incorporates the development of a plan that includes a business impact analysis, which assesses risk when business disruption occurs.

We maintain a number of dedicated work area recovery sites globally. Regular testing of these facilities is carried out with representation from each business and support function to help ensure business continuity plans remain accurate, relevant and fit for purpose. Where possible, we ensured that our critical business systems are not co-located with business systems users, thereby reducing concentration risk.

Regulatory compliance risk

Overview

Regulatory compliance risk is the risk that we fail to observe the letter and spirit of all relevant laws, codes, rules, regulations and standards of good market practice, which as a consequence incur fines and penalties and suffer damage to our business.

Regulatory compliance risk arises from the risks associated with breaching our duty to our customers and other counterparties, inappropriate market conduct and breaching other regulatory requirements.

Regulatory compliance risk management

Key developments in 2019

There were no material changes to the policies and practices for the management of regulatory compliance risk in 2019, except for the initiatives that we undertook to raise our standards in relation to the conduct of our business, as described below under 'Conduct of business'.

Governance and structure

The Regulatory Compliance sub-function provides independent, objective oversight and challenge, and promotes a compliance-orientated culture that supports the business in delivering fair outcomes for customers, maintaining the integrity of financial markets and achieving our strategic objectives. Regulatory Compliance is part of the Compliance function, which is headed by the Group Chief Compliance Officer. Regulatory Compliance is structured as a global sub-function with regional and country Regulatory Compliance teams, which support and advise each global business and global function.

Key risk management processes

We regularly review our policies and procedures. Global policies and procedures require the prompt identification and escalation of any actual or potential regulatory breach to Regulatory Compliance. Reportable events are escalated to the RMM and the GRC, as appropriate. Matters relating to the Group's regulatory conduct of business are reported to the GRC.

Conduct of business

In 2019, we continued to promote and encourage good conduct through our people's behaviour and decision making in order to deliver fair outcomes for our customers, and to maintain financial market integrity. During 2019:

- We developed and implemented a set of principles to govern the ethical management and use of data and artificial intelligence ('AI'), which includes support of digital products and services. This was complemented with training of our people to use data appropriately.
- We continued to focus on the needs of vulnerable customers in our product and process design. In specific markets, we provided awareness and training initiatives, and we also deployed staff with specialist knowledge of conditions such as dementia. Financial inclusion initiatives progressed in specific markets, combating financial abuse and developing financial education schemes for older customers.
- We further defined roles and responsibilities for our people as part of the enterprise risk management framework across the Group to consider the customer in decision making and action.
- We delivered our fifth annual global mandatory training course on conduct, and reinforced the importance of conduct by highlighting examples of good conduct.

- We continued the expansion of recognition programmes across business areas for our people when they deliver exceptional service, when working directly with customers or in supporting roles.

The Board continues to maintain oversight of conduct matters through the GRC.

Further details can be found under the 'Our conduct' section of www.hsbc.com/our-approach/risk-and-responsibility.

Financial crime and fraud risk

Overview

Financial crime and fraud risk is the risk that we knowingly or unknowingly help parties to commit or to further potentially illegal activity, including both internal and external fraud. Financial crime and fraud risk arises from day-to-day banking operations.

Financial crime and fraud risk management

Key developments in 2019

In 2019, we continued to increase our efforts to strengthen our ability to combat financial crime. We integrated into our day-to-day operations the majority of the financial crime risk core capabilities delivered through the Global Standards programme, which we set up in 2013 to enhance our risk management policies, processes and systems. We have begun several initiatives to define the next phase of financial crime risk management, including:

- We continued to strengthen our anti-fraud capabilities, focusing upon threats posed by new and existing technologies, and delivered a comprehensive fraud training programme to our people.
- We continued to invest in the use of AI and advanced analytics techniques to develop a financial crime risk management framework for the future.
- We launched advanced anti-money laundering ('AML') and sanctions automation systems to detect and disrupt financial crime in international trade. These systems are designed to strengthen our ability to fight financial crime through the detection of suspicious activity and possible criminal networks.

Governance and structure

Since establishing a global framework of financial crime risk management committees in the first quarter of 2018, we have continued to strengthen and review the effectiveness of our governance framework to manage financial crime risk. Formal governance committees are held across all countries, territories, regions and lines of business, and are chaired by the respective CEOs. They help to enable compliance with the letter and the spirit of all applicable financial crime compliance laws and regulations, as well as our own standards, values and policies relating to financial crime risks.

In 2019, at a Group level, the Financial System Vulnerabilities Committee ('FSVC') reported to the Board on matters relating to financial crime. The committee, which was attended by the Group Chief Compliance Officer, received regular reports on actions being taken to address issues and vulnerabilities, and updates on the ongoing work to strengthen financial crime controls in relation to money laundering and sanctions. In order to simplify our governance framework and processes, and as a reflection of the growing maturity of our financial crime and fraud risk management, responsibility for the oversight of financial crime risk transferred from the FSVC to the GRC, with the final meeting of the FSVC taking place on 15 January 2020. For more details on the work of the FSVC, see page 182.

Key risk management processes

We continued to deliver a programme to further enhance the policies and controls around identifying and managing the risks of bribery and corruption across our business. Our transformation programme continued to focus on our anti-fraud and anti-tax evasion capabilities. Further enhancements have been made to our governance and policy frameworks, and to the management information reporting process, which demonstrates the effectiveness of our financial crime controls. We are investing in the next generation of capabilities to fight financial crime by applying advanced analytics and AI. We remain committed to enhancing our risk assessment capabilities and to delivering more proactive risk management.

Working in partnership with the public sector and other financial institutions is vital to managing financial crime risk. We are a strong proponent of public-private partnerships and participate in information-sharing initiatives around the world to gain a better understanding of these risks so that they can be mitigated more effectively.

Skilled Person/Independent Consultant

Following expiration in December 2017 of the anti-money laundering deferred prosecution agreement entered into with the US Department of Justice ('DoJ'), the then-Monitor has continued to work in his capacity as a Skilled Person under Section 166 of the Financial Services and Markets Act under the Direction issued by the UK Financial Conduct Authority ('FCA') in 2013. He has also continued to work in his capacity as an Independent Consultant under a cease-and-desist order issued by the US Federal Reserve Board ('FRB').

The Skilled Person has assessed HSBC's progress towards being able to effectively manage its financial crime risk on a business-as-usual basis. The Skilled Person issued several reports in 2019. The Skilled Person has noted that HSBC continues to make material progress towards its financial crime risk target end state in terms of key systems, processes and people. Nonetheless, the Skilled Person has identified some areas that require further work before HSBC reaches a business-as-usual state. Reflective of HSBC's significant progress in strengthening its financial crime risk management capabilities, HSBC's engagement with the current Skilled Person will be terminated and a new Skilled Person with a narrower mandate will be appointed to assess the remaining areas that require further work in order for HSBC to transition fully to business-as-usual financial crime risk management. The FCA also intends to take steps to maintain global oversight of HSBC's management of financial crime risk.

The Independent Consultant completed his sixth annual assessment, which was primarily focused on HSBC's sanctions programme. The Independent Consultant concluded that HSBC continues to make significant strides toward establishing an effective sanctions compliance programme, commending HSBC's material progress since the fifth annual assessment in 2018. However, he has determined that certain areas within HSBC's sanctions compliance programme require further work. A seventh annual assessment will take place in the first quarter of 2020. The Independent Consultant will continue to carry out an annual Office of Foreign Assets Control compliance review, at the FRB's discretion.

Throughout 2019, the FSVC received regular reports on HSBC's relationship with the Skilled Person and Independent Consultant. The FSVC received regular updates on the Skilled Person's and Independent Consultant's reviews and received the Skilled Person's country and quarterly reports and the Independent Consultant's sixth annual assessment report. Given our general progress in strengthening our financial crime systems and controls, and in order to simplify our governance framework and processes, responsibilities of the FSVC transferred recently to the Group Risk Committee, and the final meeting of the FSVC was held on 15 January 2020.

Model risk

Overview

Model risk is the potential for adverse consequences from business decisions informed by models, which can be exacerbated by errors in methodology, design or the way they are used. Model risk arises in both financial and non-financial contexts whenever business decision making includes reliance on models.

Key developments in 2019

In 2019, we carried out a number of initiatives to further develop and embed the Model Risk Management sub-function, including:

- We appointed regional heads of Model Risk Management in all of our key geographies, and a Global Head of Model Risk Governance.
- We refined the model risk policy to enable a more risk-based approach to model risk management.
- We conducted a full review of model governance arrangements overseeing model risk across the Group, resulting in a range of enhancements to the underlying structure to improve effectiveness and increase business engagement.
- We designed a new target operating model for Model Risk Management, referring to internal and industry best practice.
- We enhanced the calculation methodology within our Group risk appetite for model risk.

Governance and structure

We placed greater focus on our model risk activities during 2019, and to reflect this, we created the role of Chief Model Risk Officer, reporting to the Group Chief Risk Officer. This has been filled on an interim basis while we seek a permanent role holder. Model Risk Management is structured as a sub-function within Global Risk Strategy. Regional Model Risk Management teams support and advise all areas of the Group.

Key risk management processes

We use a variety of modelling approaches, including regression, simulation, sampling, machine learning and judgemental scorecards for a range of business applications, in activities such as customer selection, product pricing, financial crime transaction monitoring, creditworthiness evaluation and financial reporting. Global responsibility for managing model risk is delegated from the RMM to the Global Model Risk Committee, which is chaired by the Group Chief Risk Officer. This committee regularly reviews our model risk management policies and procedures, and requires the first line of defence to demonstrate comprehensive and effective controls based on a library of model risk controls provided by Model Risk Management.

Model Risk Management also reports on model risk to senior management on a regular basis through the use of the risk map, risk appetite metrics and top and emerging risks.

We regularly review the effectiveness of these processes, including the model oversight committee structure, to help ensure appropriate understanding and ownership of model risk is embedded in the businesses and functions.

Insurance manufacturing operations risk

Overview

Insurance risk is the risk that, over time, the cost of insurance policies written, including claims and benefits, may exceed the total amount of premiums and investment income received. The cost of claims and benefits can be influenced by many factors, including mortality and morbidity experience, as well as lapse and surrender rates.

Insurance manufacturing operations risk management

Key developments in 2019

There were no material changes to our policies and practices for the management of risks arising in our insurance manufacturing operations in 2019.

Governance and structure

(Audited)

Insurance risks are managed to a defined risk appetite, which is aligned to the Group's risk appetite and risk management framework, including its three lines of defence model. For details of the Group's governance framework, see page 74. The Global Insurance Risk Management Meeting oversees the control framework globally and is accountable to the RBWM Risk Management Meeting on risk matters relating to the insurance business.

The monitoring of the risks within our insurance operations is carried out by insurance risk teams. Specific risk functions, including Wholesale Credit and Market Risk, Operational Risk, Resilience Risk, and Compliance, support Insurance Risk teams in their respective areas of expertise.

Stress and scenario testing

(Audited)

Stress testing forms a key part of the risk management framework for the insurance business. We participate in local and Group-wide regulatory stress tests, including the Bank of England stress test of the banking system, the Hong Kong Monetary Authority stress test, the European Insurance and Occupational Pensions Authority stress test, and individual country insurance regulatory stress tests.

These have highlighted that a key risk scenario for the insurance business is a prolonged low interest rate environment. In order to mitigate the impact of this scenario, the insurance operations have taken a number of actions, including repricing some products to reflect lower interest rates, launching less capital intensive products, investing in more capital efficient assets and developing investment strategies to optimise the expected returns against the cost of economic capital.

Key risk management processes

Market risk

(Audited)

All our insurance manufacturing subsidiaries have market risk mandates that specify the investment instruments in which they are permitted to invest and the maximum quantum of market risk that they may retain. They manage market risk by using, among others, some or all of the techniques listed below, depending on the nature of the contracts written:

- We are able to adjust bonus rates to manage the liabilities to policyholders for products with discretionary participating features ('DPF'). The effect is that a significant portion of the market risk is borne by the policyholder.
- We use asset and liability matching where asset portfolios are structured to support projected liability cash flows. The Group manages its assets using an approach that considers asset quality, diversification, cash flow matching, liquidity, volatility and target investment return. It is not always possible to match asset and liability durations due to uncertainty over the receipt of all future premiums, the timing of claims and because the forecast payment dates of liabilities may exceed the duration of the longest dated investments available. We use models to assess the effect of a range of future scenarios on the values of financial assets and associated liabilities, and ALCOs employ the outcomes in determining how best to structure asset holdings to support liabilities.
- We use derivatives to protect against adverse market movements to better match liability cash flows.
- For new products with investment guarantees, we consider the cost when determining the level of premiums or the price structure.
- We periodically review products identified as higher risk, such as those that contain investment guarantees and embedded optionality features linked to savings and investment products, for active management.
- We design new products to mitigate market risk, such as changing the investment return sharing portion between policyholders and the shareholder.
- We exit, to the extent possible, investment portfolios whose risk is considered unacceptable.
- We reprice premiums charged on new contracts to policyholders.

Credit risk

(Audited)

Our insurance manufacturing subsidiaries are responsible for the credit risk, quality and performance of their investment portfolios. Our assessment of the creditworthiness of issuers and counterparties is based primarily upon internationally recognised credit ratings and other publicly available information.

Investment credit exposures are monitored against limits by our insurance manufacturing subsidiaries and are aggregated and reported to the Group Insurance Credit Risk and Group Credit Risk functions. Stress testing is performed on investment credit exposures using credit spread sensitivities and default probabilities.

We use a number of tools to manage and monitor credit risk. These include a credit report containing a watch-list of investments with current credit concerns, primarily investments that may be at risk of future impairment or where high concentrations to counterparties are present in the investment portfolio. Sensitivities to credit spread risk are assessed and monitored regularly.

Liquidity risk

(Audited)

Risk is managed by cash flow matching and maintaining sufficient cash resources, investing in high credit-quality investments with deep and liquid markets, monitoring investment concentrations and restricting them where appropriate, and establishing committed contingency borrowing facilities.

Insurance manufacturing subsidiaries complete quarterly liquidity risk reports and an annual review of the liquidity risks to which they are exposed.

Insurance risk

HSBC Insurance primarily uses the following techniques to manage and mitigate insurance risk:

- a formalised product approval process covering product design, pricing and overall proposition management (for example, management of lapses by introducing surrender charges);
- underwriting policy;
- claims management processes; and
- reinsurance which cedes risks above our acceptable thresholds to an external reinsurer thereby limiting our exposure.

Insurance manufacturing operations risk in 2019

The majority of the risk in our insurance business derives from manufacturing activities and can be categorised as financial risk or insurance risk. Financial risks include market risk, credit risk and liquidity risk. Insurance risk is the risk, other than financial risk, of loss transferred from the holder of the insurance contract to HSBC, the issuer.

HSBC's bancassurance model

We operate an integrated bancassurance model that provides insurance products principally for customers with whom we have a banking relationship.

The insurance contracts we sell relate to the underlying needs of our banking customers, which we can identify from our point-of-sale contacts and customer knowledge. For the products we manufacture, the majority of sales are of savings, universal life and credit and term life contracts.

We choose to manufacture these insurance products in HSBC subsidiaries based on an assessment of operational scale and risk appetite. Manufacturing insurance allows us to retain the risks and rewards associated with writing insurance contracts by keeping part of the underwriting profit and investment income within the Group.

We have life insurance manufacturing subsidiaries in eight countries and territories, which are Hong Kong, France, Singapore, the UK, mainland China, Malta, Mexico and Argentina. We also have a life insurance manufacturing associate in India.

Where we do not have the risk appetite or operational scale to be an effective insurance manufacturer, we engage with a small number of leading external insurance companies in order to provide insurance products to our customers through our banking network and direct channels. These arrangements are generally structured with our exclusive strategic partners and earn the Group a combination of commissions, fees and a share of profits. We distribute insurance products in all of our geographical regions.

Insurance products are sold worldwide through branches, direct channels and third-party distributors.

Measurement

(Audited)

The risk profile of our insurance manufacturing businesses is measured using an economic capital approach. Assets and liabilities are measured on a market value basis, and a capital requirement is defined to ensure that there is a less than one-in-200 chance of insolvency over a one-year time horizon, given the risks to which the businesses are exposed. The methodology for the economic capital calculation is largely aligned to the pan-European Solvency II insurance capital regulations. The economic capital coverage ratio (economic net asset value divided by the economic capital requirement) is a key risk appetite measure.

Each of the businesses operates to appetite limits of 135% or higher. In addition to economic capital, the regulatory solvency ratio is also a metric used to manage risk appetite on an entity basis.

The following tables show the composition of assets and liabilities by contract type and by geographical region.

Balance sheet of insurance manufacturing subsidiaries by type of contract

(Audited)

	Footnotes	With DPF	Unit-linked	Other contracts[1]	Shareholder assets and liabilities	Total
		$m	$m	$m	$m	$m
Financial assets		**73,929**	**7,333**	**17,514**	**8,269**	**107,045**
– trading assets		**—**	**—**	**—**	**—**	**—**
– financial assets designated and otherwise mandatorily measured at fair value through profit or loss		**21,652**	**7,119**	**3,081**	**2,426**	**34,278**
– derivatives		**202**	**(6)**	**9**	**3**	**208**
– financial investments at amortised cost		**35,299**	**18**	**13,436**	**4,076**	**52,829**
– financial investments at fair value through other comprehensive income		**12,447**	**—**	**445**	**1,136**	**14,028**
– other financial assets	2	**4,329**	**202**	**543**	**628**	**5,702**
Reinsurance assets		**2,208**	**72**	**1,563**	**1**	**3,844**
PVIF	3	**—**	**—**	**—**	**8,945**	**8,945**
Other assets and investment properties		**2,495**	**2**	**211**	**602**	**3,310**
Total assets		**78,632**	**7,407**	**19,288**	**17,817**	**123,144**
Liabilities under investment contracts designated at fair value		**—**	**2,011**	**3,881**	**—**	**5,892**
Liabilities under insurance contracts		**77,147**	**6,151**	**14,141**	**—**	**97,439**
Deferred tax	4	**197**	**23**	**6**	**1,297**	**1,523**
Other liabilities		**—**	**—**	**—**	**4,410**	**4,410**
Total liabilities		**77,344**	**8,185**	**18,028**	**5,707**	**109,264**
Total equity		**—**	**—**	**—**	**13,879**	**13,879**
Total liabilities and equity at 31 Dec 2019		**77,344**	**8,185**	**18,028**	**19,586**	**123,143**

Balance sheet of insurance manufacturing subsidiaries by type of contract (continued)

(Audited)

	Footnotes	With DPF	Unit-linked	Other contracts[1]	Shareholder assets and liabilities	Total
		$m	$m	$m	$m	$m
Financial assets		66,735	7,337	15,552	7,120	96,744
– trading assets		—	—	—	—	—
– financial assets designated and otherwise mandatorily measured at fair value through profit or loss		17,855	7,099	3,024	1,264	29,242
– derivatives		200	—	33	4	237
– financial investments at amortised cost		33,575	70	11,597	4,171	49,413
– financial investments at fair value through other comprehensive income		11,499	—	450	1,385	13,334
– other financial assets	2	3,606	168	448	296	4,518
Reinsurance assets		1,255	69	1,368	—	2,692
PVIF	3	—	—	—	7,149	7,149
Other assets and investment properties		2,670	2	235	453	3,360
Total assets		70,660	7,408	17,155	14,722	109,945
Liabilities under investment contracts designated at fair value		—	1,574	3,884	—	5,458
Liabilities under insurance contracts		69,269	5,789	12,272	—	87,330
Deferred tax	4	179	21	15	1,051	1,266
Other liabilities		—	—	—	3,659	3,659
Total liabilities		69,448	7,384	16,171	4,710	97,713
Total equity		—	—	—	12,232	12,232
Total liabilities and equity at 31 Dec 2018		69,448	7,384	16,171	16,942	109,945

1 'Other Contracts' includes term insurance, credit life insurance, universal life insurance and investment contracts not included in the 'Unit-linked' or 'With DPF' columns.
2 Comprise mainly loans and advances to banks, cash and inter-company balances with other non-insurance legal entities.
3 Present value of in-force long-term insurance business.
4 'Deferred tax' includes the deferred tax liabilities arising on recognition of PVIF.

Balance sheet of insurance manufacturing subsidiaries by geographical region[1]

(Audited)

	Footnotes	Europe $m	Asia $m	Latin America $m	Total $m
Financial assets		31,613	74,237	1,195	107,045
– trading assets		—	—	—	—
– financial assets designated and otherwise mandatorily measured at fair value through profit or loss		15,490	18,562	226	34,278
– derivatives		84	124	—	208
– financial investments – at amortised cost		100	52,186	543	52,829
– financial investments – at fair value through other comprehensive income		13,071	582	375	14,028
– other financial assets	2	2,868	2,783	51	5,702
Reinsurance assets		237	3,604	3	3,844
PVIF	3	945	7,841	159	8,945
Other assets and investment properties		1,085	2,176	49	3,310
Total assets		33,880	87,858	1,406	123,144
Liabilities under investment contracts designated at fair value		1,139	4,753	—	5,892
Liabilities under insurance contracts		28,437	67,884	1,118	97,439
Deferred tax	4	229	1,275	19	1,523
Other liabilities		2,212	2,172	26	4,410
Total liabilities		32,017	76,084	1,163	109,264
Total equity		1,862	11,774	243	13,879
Total liabilities and equity at 31 Dec 2019		33,879	87,858	1,406	123,143

Balance sheet of insurance manufacturing subsidiaries by geographical region[1] (continued)

	Footnotes	Europe $m	Asia $m	Latin America $m	Total $m
Financial assets		28,631	66,793	1,320	96,744
– trading assets		—	—	—	—
– financial assets designated and otherwise mandatorily measured at fair value through profit or loss		13,142	15,744	326	29,242
– derivatives		121	116	—	237
– financial investments – at amortised cost		296	48,595	522	49,413
– financial investments – at fair value through other comprehensive income		12,453	440	441	13,334
– other financial assets	2	2,619	1,868	31	4,518
Reinsurance assets		249	2,438	5	2,692
PVIF	3	832	6,195	122	7,149
Other assets and investment properties		1,053	2,280	27	3,360
Total assets		30,765	77,706	1,474	109,945
Liabilities under investment contracts designated at fair value		780	4,678	—	5,458
Liabilities under insurance contracts		26,375	59,829	1,126	87,330
Deferred tax	4	209	1,050	7	1,266
Other liabilities		1,690	1,911	58	3,659
Total liabilities		29,054	67,468	1,191	97,713
Total equity		1,711	10,238	283	12,232
Total liabilities and equity at 31 Dec 2018		30,765	77,706	1,474	109,945

1 *HSBC has no insurance manufacturing subsidiaries in Middle East and North Africa or North America.*
2 *Comprise mainly loans and advances to banks, cash and inter-company balances with other non-insurance legal entities.*
3 *Present value of in-force long-term insurance business.*
4 *'Deferred tax' includes the deferred tax liabilities arising on recognition of PVIF.*

Key risk types

The key risks for the insurance operations are market risks, in particular interest rate and equity, and credit risks, followed by insurance underwriting risk and operational risks. Liquidity risk, while significant for the bank, is minor for our insurance operations.

Market risk

(Audited)

Description and exposure

Market risk is the risk of changes in market factors affecting HSBC's capital or profit. Market factors include interest rates, equity and growth assets and foreign exchange rates.

Our exposure varies depending on the type of contract issued. Our most significant life insurance products are contracts with discretionary participating features ('DPF') issued in France and Hong Kong. These products typically include some form of capital guarantee or guaranteed return on the sums invested by the policyholders, to which discretionary bonuses are added if allowed by the overall performance of the funds. These funds are primarily invested in bonds, with a proportion allocated to other asset classes to provide customers with the potential for enhanced returns.

DPF products expose HSBC to the risk of variation in asset returns, which will impact our participation in the investment performance.

In addition, in some scenarios the asset returns can become insufficient to cover the policyholders' financial guarantees, in which case the shortfall has to be met by HSBC. Amounts are held against the cost of such guarantees, calculated by stochastic modelling.

Where local rules require, these reserves are held as part of liabilities under insurance contracts. Any remainder is accounted for as a deduction from the present value of in-force ('PVIF') long-term insurance business on the relevant product. The following table shows the total reserve held for the cost of guarantees, the range of investment returns on assets supporting these products and the implied investment return that would enable the business to meet the guarantees.

The cost of guarantees increased to $693m (2018: $669m) primarily due to the reduction in swap rates in France and Hong Kong, partly offset by the impact of modelling changes in Hong Kong.

For unit-linked contracts, market risk is substantially borne by the policyholder, but some market risk exposure typically remains, as fees earned are related to the market value of the linked assets.

Financial return guarantees

(Audited)

		2019			2018		
		Investment returns implied by guarantee	**Long-term investment returns on relevant portfolios**	**Cost of guarantees**	Investment returns implied by guarantee	Long-term investment returns on relevant portfolios	Cost of guarantees
	Footnotes	**%**	**%**	**$m**	%	%	$m
Capital		**0.0**	**1.3 - 3.9**	**110**	0.0	2.2-3.0	100
Nominal annual return		**0.1 - 2.0**	**3.0-4.5**	**118**	0.1-2.0	3.6-3.7	78
Nominal annual return	*1*	**2.0 - 4.0**	**2.4 - 4.5**	**355**	2.1-4.0	2.7-4.6	420
Nominal annual return		**4.1 - 5.0**	**2.3 - 4.1**	**110**	4.1-5.0	2.7-4.1	71
At 31 Dec				**693**			669

1 *A block of contracts in France with guaranteed nominal annual returns in the range 1.25%–3.72% is reported entirely in the 2.0%–4.0% category in line with the average guaranteed return of 2.6% offered to policyholders by these contracts.*

Sensitivities

Changes in financial market factors, from the economic assumptions in place at the start of the year, had a positive impact on reported profit before tax of $450m (2018: $326m negative). The following table illustrates the effects of selected interest rate, equity price and foreign exchange rate scenarios on our profit for the year and the total equity of our insurance manufacturing subsidiaries.

Where appropriate, the effects of the sensitivity tests on profit after tax and equity incorporate the impact of the stress on the PVIF. Due in part to the impact of the cost of guarantees and hedging strategies, which may be in place, the relationship between the profit and total equity and the risk factors is non-linear. Therefore, the results disclosed should not be extrapolated to measure sensitivities to different levels of stress. For the same reason, the impact of the stress is not necessarily symmetrical on the upside and downside. The sensitivities are stated before allowance for management actions, which may mitigate the effect of changes in the market environment. The sensitivities presented allow for adverse changes in policyholder behaviour that may arise in response to changes in market rates. The differences between the impacts on profit after tax and equity are driven by the changes in value of the bonds measured at fair value through other comprehensive income, which are only accounted for in equity.

Sensitivity of HSBC's insurance manufacturing subsidiaries to market risk factors

(Audited)

	2019		2018	
	Effect on profit after tax	**Effect on total equity**	Effect on profit after tax	Effect on total equity
	$m	**$m**	$m	$m
+100 basis point parallel shift in yield curves	**43**	**(37)**	9	(61)
-100 basis point parallel shift in yield curves	**(221)**	**(138)**	(28)	46
10% increase in equity prices	**270**	**270**	213	213
10% decrease in equity prices	**(276)**	**(276)**	(202)	(202)
10% increase in US dollar exchange rate compared with all currencies	**41**	**41**	36	36
10% decrease in US dollar exchange rate compared with all currencies	**(41)**	**(41)**	(36)	(36)

Credit risk

(Audited)

Description and exposure

Credit risk is the risk of financial loss if a customer or counterparty fails to meet their obligation under a contract. It arises in two main areas for our insurance manufacturers:

- risk associated with credit spread volatility and default by debt security counterparties after investing premiums to generate a return for policyholders and shareholders; and
- risk of default by reinsurance counterparties and non-reimbursement for claims made after ceding insurance risk.

The amounts outstanding at the balance sheet date in respect of these items are shown in the table on page 148.

The credit quality of the reinsurers' share of liabilities under insurance contracts is assessed as 'satisfactory' or higher (as defined on page 85), with 100% of the exposure being neither past due nor impaired (2018: 100%).

Credit risk on assets supporting unit-linked liabilities is predominantly borne by the policyholder. Therefore, our exposure is primarily related to liabilities under non-linked insurance and investment contracts and shareholders' funds. The credit quality of insurance financial assets is included in the table on page 100. The risk associated with credit spread volatility is to a large extent mitigated by holding debt securities to maturity, and sharing a degree of credit spread experience with policyholders.

Capital and liquidity risk

(Audited)

Description and exposure

Liquidity risk is the risk that an insurance operation, though solvent, either does not have sufficient financial resources available to meet its obligations when they fall due, or can secure them only at excessive cost.

The following table shows the expected undiscounted cash flows for insurance liabilities at 31 December 2019. The liquidity risk exposure is wholly borne by the policyholder in the case of unit-linked business and is shared with the policyholder for non-linked insurance.

The profile of the expected maturity of insurance contracts at 31 December 2019 remained comparable with 2018.

The remaining contractual maturity of investment contract liabilities is included in Note 29 on page 298.

Expected maturity of insurance contract liabilities

(Audited)

	Expected cash flows (undiscounted)				
	Within 1 year	1-5 years	5-15 years	Over 15 years	Total
	$m	$m	$m	$m	$m
Unit-linked	**1,296**	**3,153**	**2,654**	**1,955**	**9,058**
With DPF and Other contracts	**7,907**	**26,906**	**50,576**	**71,731**	**157,120**
At 31 Dec 2019	**9,203**	**30,059**	**53,230**	**73,686**	**166,178**
Unit-linked	1,119	2,932	2,684	1,962	8,697
With DPF and Other contracts	7,459	27,497	46,217	55,989	137,162
At 31 Dec 2018	8,578	30,429	48,901	57,951	145,859

Insurance risk

Description and exposure

Insurance risk is the risk of loss through adverse experience, in either timing or amount, of insurance underwriting parameters (non-economic assumptions). These parameters include mortality, morbidity, longevity, lapses and unit costs.

The principal risk we face is that, over time, the cost of the contract, including claims and benefits, may exceed the total amount of premiums and investment income received.

The tables on pages 148 and 149 analyse our life insurance risk exposures by type of contract and by geographical region.

The insurance risk profile and related exposures remain largely consistent with those observed at 31 December 2018.

Sensitivities

(Audited)

The following table shows the sensitivity of profit and total equity to reasonably possible changes in non-economic assumptions across all our insurance manufacturing subsidiaries.

Mortality and morbidity risk is typically associated with life insurance contracts. The effect on profit of an increase in mortality or morbidity depends on the type of business being written. Our largest exposures to mortality and morbidity risk exist in Hong Kong and Singapore.

Sensitivity to lapse rates depends on the type of contracts being written. For a portfolio of term assurance, an increase in lapse rates typically has a negative effect on profit due to the loss of future income on the lapsed policies. However, some contract lapses have a positive effect on profit due to the existence of policy surrender charges. We are most sensitive to a change in lapse rates on unit-linked and universal life contracts in Hong Kong and Singapore, and DPF contracts in France.

Expense rate risk is the exposure to a change in the cost of administering insurance contracts. To the extent that increased expenses cannot be passed on to policyholders, an increase in expense rates will have a negative effect on our profits.

Sensitivity analysis

(Audited)

	2019	2018
	$m	$m
Effect on profit after tax and total equity at 31 Dec		
10% increase in mortality and/or morbidity rates	**(88)**	(77)
10% decrease in mortality and/or morbidity rates	**88**	82
10% increase in lapse rates	**(99)**	(95)
10% decrease in lapse rates	**114**	107
10% increase in expense rates	**(106)**	(92)
10% decrease in expense rates	**105**	93

Capital

Capital overview

Capital ratios[1]

	At	
	31 Dec 2019	31 Dec 2018
	%	%
Transitional basis		
Common equity tier 1 ratio	**14.7**	14.0
Tier 1 ratio	**17.6**	17.0
Total capital ratio	**20.4**	20.0
End point basis		
Common equity tier 1 ratio	**14.7**	14.0
Tier 1 ratio	**17.2**	16.6
Total capital ratio	**18.9**	19.4

Total regulatory capital and risk-weighted assets[1]

	At	
	31 Dec 2019	31 Dec 2018
	$m	$m
Transitional basis		
Common equity tier 1 capital	**123,966**	121,022
Additional tier 1 capital	**24,393**	26,120
Tier 2 capital	**23,791**	26,096
Total regulatory capital	**172,150**	173,238
Risk-weighted assets	**843,395**	865,318
End point basis		
Common equity tier 1 capital	**123,966**	121,022
Additional tier 1 capital	**20,870**	22,525
Tier 2 capital	**14,473**	24,511
Total regulatory capital	**159,309**	168,058
Risk-weighted assets	**843,395**	865,318

RWAs by risk types

	RWAs	Capital required[2]
	$bn	$bn
Credit risk	**676.6**	**54.2**
Counterparty credit risk	**44.1**	**3.5**
Market risk	**29.9**	**2.4**
Operational risk	**92.8**	**7.4**
At 31 Dec 2019	**843.4**	**67.5**

1 *Capital figures and ratios at 31 December 2019 are calculated in accordance with the revised Capital Requirements Regulation, as implemented ('CRR II'). Prior period capital figures are reported under the Capital Requirements Regulation and Directive ('CRD IV'). Unless otherwise stated, all figures are calculated using the EU's regulatory transitional arrangements for IFRS 9 'Financial Instruments' in article 473a of the Capital Requirements Regulation.*

2 *'Capital required' represents the minimum total capital charge set at 8% of risk-weighted assets by article 92 of the Capital Requirements Regulation.*

Capital management

(Audited)

Our objective in the management of Group capital is to maintain appropriate levels to support our business strategy, and meet our regulatory and stress testing-related requirements.

Approach and policy

Our approach to capital management is driven by our strategic and organisational requirements, taking into account the regulatory, economic and commercial environment. We aim to maintain a strong capital base to support the risks inherent in our business and invest in accordance with our strategy, meeting both consolidated and local regulatory capital requirements at all times.

Our policy on capital management is underpinned by a capital management framework and our internal capital adequacy assessment process ('ICAAP'), which helps enable us to manage our capital in a consistent manner. The framework incorporates a number of different capital measures calculated on an economic capital and regulatory capital basis. The ICAAP is an assessment of the Group's capital position, outlining both regulatory and internal capital resources and requirements with HSBC's business model, strategy, performance and planning, risks to capital, and the implications of stress testing to capital.

Our assessment of capital adequacy is aligned to our assessment of risks. These risks include credit, market, operational, pensions, insurance, structural foreign exchange, residual risk and interest rate risk in the banking book.

For further details, please refer to our *Pillar 3 Disclosures at 31 December 2019.*

Own funds

Own funds disclosure

(Audited)

Ref*		At 31 Dec 2019 $m	At 31 Dec 2018 $m
	Common equity tier 1 ('CET1') capital: instruments and reserves		
1	Capital instruments and the related share premium accounts	**22,873**	22,384
	– ordinary shares	**22,873**	22,384
2	Retained earnings	**127,188**	121,180
3	Accumulated other comprehensive income (and other reserves)	**1,735**	3,368
5	Minority interests (amount allowed in consolidated CET1)	**4,865**	4,854
5a	Independently reviewed interim net profits net of any foreseeable charge or dividend	**(3,381)**	3,697
6	**Common equity tier 1 capital before regulatory adjustments**	**153,280**	155,483
28	Total regulatory adjustments to common equity tier 1	**(29,314)**	(34,461)
29	**Common equity tier 1 capital**	**123,966**	121,022
36	Additional tier 1 capital before regulatory adjustments	**24,453**	26,180
43	Total regulatory adjustments to additional tier 1 capital	**(60)**	(60)
44	**Additional tier 1 capital**	**24,393**	26,120
45	**Tier 1 capital**	**148,359**	147,142
51	Tier 2 capital before regulatory adjustments	**25,192**	26,729
57	Total regulatory adjustments to tier 2 capital	**(1,401)**	(633)
58	**Tier 2 capital**	**23,791**	26,096
59	**Total capital**	**172,150**	173,238

* *The references identify the lines prescribed in the European Banking Authority ('EBA') template, which are applicable and where there is a value.*

Throughout 2019, we complied with the PRA's regulatory capital adequacy requirements, including those relating to stress testing.

At 31 December 2019, our common equity tier 1 ('CET1') ratio increased to 14.7% from 14.0% at 31 December 2018.

CET1 capital increased during the year by $2.9bn, mainly as a result of:

- capital generation of $6.0bn through profits;
- a fall in the deduction for goodwill and other intangible assets of $4.9bn. This was primarily due to $7.3bn of goodwill impairment, partly offset by an increase in internally generated software;
- a $1.5bn increase in FVOCI reserve; and
- favourable foreign currency translation differences of $1.0bn.

These increases were partly offset by:

- dividends and scrip of $9.0bn;
- share buy-backs of $1.0bn; and
- an increase in the deduction for excess expected loss $0.7bn.

Our Pillar 2A requirement at 31 December 2019, as per the PRA's Individual Capital Requirement based on a point-in-time assessment, was 3.0% of RWAs, of which 1.7% was met by CET1.

Risk-weighted assets

Risk-weighted assets ('RWAs') decreased by $21.9bn during the year. The $26.9bn decrease (excluding foreign currency translation differences) comprised the movements described by the following comments.

Asset size

The $9.0bn rise in RWAs due to asset size movements was the result of lending growth largely in CMB, RBWM and GB&M, partly offset by reductions due to active portfolio management in GB&M and CMB. In CMB, a $9.5bn RWA increase arose from growth of $14.4bn principally in Asia and Europe, which was partly offset by active portfolio management measures totalling $4.9bn, largely in Europe. In RBWM, the $7.5bn RWA increase was the result of lending growth, whereas the fall of $1.6bn in GB&M resulted from management actions of $12.3bn, mainly in Europe, Asia and North America, which offset growth of $10.7bn. A $4.0bn decrease in Corporate Centre was primarily due to disposals from the legacy portfolio, and a $2.4bn fall in market risk levels mainly resulted from reduced exposures.

Asset quality

The $3.7bn growth as a result of changes in asset quality included a $3.3bn increase in CMB RWAs, most notably in Asia, and a $0.6bn increase in GB&M RWAs, predominantly in Europe. These movements were primarily due to changes in portfolio mix.

Model updates

The $7.7bn reduction in RWAs from model updates included a $4.8bn fall in GB&M and CMB RWAs, largely due to global corporate model updates, and a $2.3bn decrease in GPB RWAs, reflecting changes to Private Banking models in Asia and North America. The $0.6bn decrease in RBWM RWAs was mainly due to updates to UK retail models.

Methodology and policy

The $32.2bn fall in RWAs due to methodology and policy changes was primarily due to management initiatives of $25.9bn, largely in CMB and GB&M. These included risk parameter refinements and securitisation transactions.

A change to our best estimate of expected loss on corporate exposures further reduced RWAs by $6.3bn, primarily in CMB's UK portfolio. The $3.7bn decrease in market risk RWAs derived mainly from increased diversification benefits following regulatory approval to expand the scope of consolidation. In addition, an approved change to operational risk methodology caused a $0.9bn fall in RWAs across all global businesses.

These decreases were partly offset by a $4.5bn increase in tangible fixed assets within Corporate Centre as a result of implementing IFRS 16 'Leases', recognising right-of-use assets in relation to leases previously classified as 'operating leases'.

RWAs by global business

	RBWM	CMB	GB&M	GPB	Corporate Centre	Total
	$bn	$bn	$bn	$bn	$bn	$bn
Credit risk	**103.8**	**290.8**	**161.1**	**11.0**	**109.9**	**676.6**
Counterparty credit risk	**—**	**—**	**42.7**	**0.2**	**1.2**	**44.1**
Market risk	**—**	**—**	**23.6**	**—**	**6.3**	**29.9**
Operational risk	**30.2**	**25.9**	**30.8**	**2.8**	**3.1**	**92.8**
At 31 Dec 2019	**134.0**	**316.7**	**258.2**	**14.0**	**120.5**	**843.4**
Credit risk	99.6	296.9	172.0	13.8	108.8	691.1
Counterparty credit risk	—	—	45.1	0.2	2.0	47.3
Market risk	—	—	32.4	—	3.4	35.8
Operational risk	27.3	24.3	31.5	2.8	5.2	91.1
At 31 Dec 2018	126.9	321.2	281.0	16.8	119.4	865.3

RWAs by geographical region

	Footnotes	Europe	Asia	MENA	North America	Latin America	Total
		$bn	$bn	$bn	$bn	$bn	$bn
Credit risk		**208.3**	**292.0**	**48.0**	**98.4**	**29.9**	**676.6**
Counterparty credit risk		**25.1**	**8.7**	**1.3**	**7.3**	**1.7**	**44.1**
Market risk	1	**23.1**	**20.5**	**2.0**	**4.4**	**1.8**	**29.9**
Operational risk		**24.5**	**45.2**	**6.2**	**11.9**	**5.0**	**92.8**
At 31 Dec 2019		**281.0**	**366.4**	**57.5**	**122.0**	**38.4**	**843.4**
Credit risk		219.5	291.9	47.0	103.1	29.6	691.1
Counterparty credit risk		27.3	9.2	1.0	8.3	1.5	47.3
Market risk	1	24.0	23.3	1.9	8.5	1.4	35.8
Operational risk		27.3	39.5	6.8	11.7	5.8	91.1
At 31 Dec 2018		298.1	363.9	56.7	131.6	38.3	865.3

1 RWAs are non-additive across geographical regions due to market risk diversification effects within the Group.

RWA movement by global business by key driver

	Credit risk, counterparty credit risk and operational risk						
	RBWM	CMB	GB&M	GPB	Corporate Centre	Market risk	Total RWAs
	$bn	$bn	$bn	$bn	$bn	$bn	$bn
RWAs at 1 Jan 2019	**126.9**	**321.2**	**248.6**	**16.8**	**116.0**	**35.8**	**865.3**
Asset size	**7.5**	**9.5**	**(1.6)**	**—**	**(4.0)**	**(2.4)**	**9.0**
Asset quality	**—**	**3.3**	**0.6**	**(0.3)**	**(0.1)**	**0.2**	**3.7**
Model updates	**(0.6)**	**(1.9)**	**(2.9)**	**(2.3)**	**—**	**—**	**(7.7)**
Methodology and policy	**(0.6)**	**(18.3)**	**(11.0)**	**(0.3)**	**1.7**	**(3.7)**	**(32.2)**
Acquisitions and disposals	**—**	**—**	**—**	**—**	**0.3**	**—**	**0.3**
Foreign exchange movements	**0.8**	**2.9**	**0.9**	**0.1**	**0.3**	**—**	**5.0**
Total RWA movement	**7.1**	**(4.5)**	**(14.0)**	**(2.8)**	**(1.8)**	**(5.9)**	**(21.9)**
RWAs at 31 Dec 2019	**134.0**	**316.7**	**234.6**	**14.0**	**114.2**	**29.9**	**843.4**

RWA movement by geographical region by key driver

	Credit risk, counterparty credit risk and operational risk						
	Europe	Asia	MENA	North America	Latin America	Market risk	Total RWAs
	$bn	$bn	$bn	$bn	$bn	$bn	$bn
RWAs at 1 Jan 2019	**274.1**	**340.6**	**54.8**	**123.1**	**36.9**	**35.8**	**865.3**
Asset size	**(2.0)**	**14.9**	**1.4**	**(3.8)**	**0.9**	**(2.4)**	**9.0**
Asset quality	**1.9**	**1.6**	**—**	**(0.5)**	**0.5**	**0.2**	**3.7**
Model updates	**(2.9)**	**(2.4)**	**(0.1)**	**(2.3)**	**—**	**—**	**(7.7)**
Methodology and policy	**(17.3)**	**(9.6)**	**(1.0)**	**(0.2)**	**(0.4)**	**(3.7)**	**(32.2)**
Acquisitions and disposals	**—**	**—**	**0.3**	**—**	**—**	**—**	**0.3**
Foreign exchange movements	**4.1**	**0.8**	**0.1**	**1.3**	**(1.3)**	**—**	**5.0**
Total RWA movement	**(16.2)**	**5.3**	**0.7**	**(5.5)**	**(0.3)**	**(5.9)**	**(21.9)**
RWAs at 31 Dec 2019	**257.9**	**345.9**	**55.5**	**117.6**	**36.6**	**29.9**	**843.4**

Leverage ratio

Ref*		Footnotes	At 31 Dec 2019 $bn	At 31 Dec 2018 $bn
20	Tier 1 capital		**144.8**	143.5
21	Total leverage ratio exposure		**2,726.5**	2,614.9
			%	%
22	**Leverage ratio**		**5.3**	5.5
EU-23	Choice of transitional arrangements for the definition of the capital measure		**Fully phased-in**	Fully phased-in
	UK leverage ratio exposure – quarterly average	1	**2,535.4**	2,464.4
			%	%
	UK leverage ratio – quarterly average	1	**5.8**	5.8
	UK leverage ratio – quarter end	1	**5.7**	6.0

* *The references identify the lines prescribed in the EBA template.*

1 *UK leverage ratio denotes the Group's leverage ratio calculated under the PRA's UK leverage framework and excludes qualifying central bank balances from the calculation of exposure.*

Our leverage ratio calculated in accordance with the Capital Requirements Regulation was 5.3% at 31 December 2019, down from 5.5% at 31 December 2018. The increase in exposure was primarily due to growth in customer lending and financial investments.

At 31 December 2019, our UK minimum leverage ratio requirement of 3.25% under the PRA's UK leverage framework was supplemented by an additional leverage ratio buffer of 0.7% and a countercyclical leverage ratio buffer of 0.2%. These additional buffers translated into capital values of $17.7bn, and $5.4bn respectively. We exceeded these leverage requirements.

Pillar 3 disclosure requirements

Pillar 3 of the Basel regulatory framework is related to market discipline and aims to make financial services firms more transparent by requiring publication of wide-ranging information on their risks, capital and management. Our *Pillar 3 Disclosures at 31 December 2019* is published on our website, www.hsbc.com/investors.