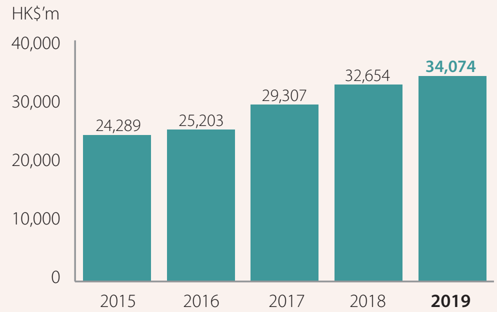
Management Discussion and Analysis

Following the completion of the acquisition of Bank of China Limited, Vientiane Branch ("BOC Vientiane Branch") on 21 January 2019, the Group has applied the merger accounting method for the combination of entity under common control in the preparation of its financial statements. The comparative information for 2018 has been restated accordingly. The above transaction is referred to as the "acquisition" in this Management Discussion and Analysis.

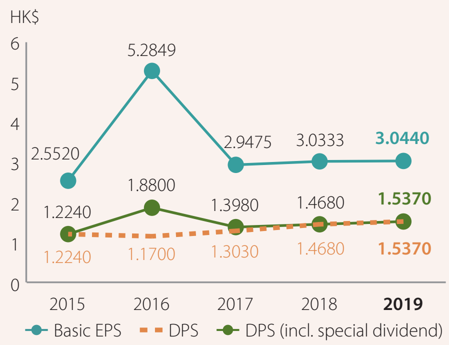
Financial Performance and Conditions at a Glance

The following table is a summary of the Group's key financial results for 2019 and the previous four years. The average value of liquidity coverage ratio and net stable funding ratio for 2019 are reported on a quarterly basis.

Profit For The Year[1]



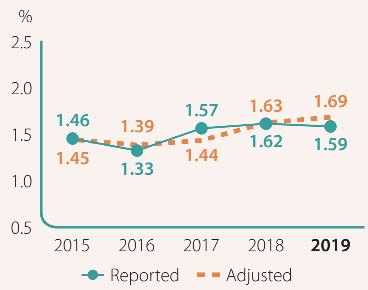
Basic earnings Per Share ("Basic EPS")[1] and Dividend Per Share ("DPS")



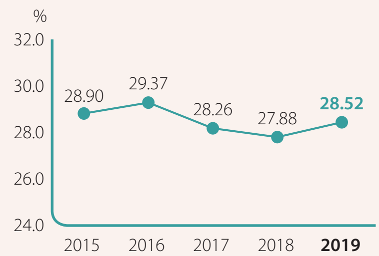
Profit for the year

- Profit for the year increased by 4.3% year-on-year to HK$34,074 million. Return on average shareholders' equity[2] ("ROE") and return on average total assets[2] ("ROA") stood at 11.51% and 1.15% respectively. Basic EPS was HK$3.0440. DPS was HK$1.5370.

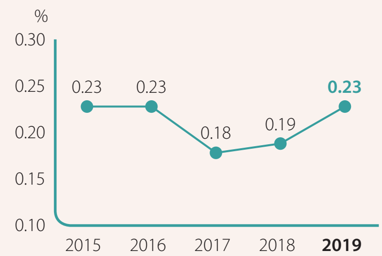
Net Interest Margin ("NIM")[1,4]



Cost to Income Ratio[1]



Classified or Impaired Loan Ratio[1,3]



as at 31 December

Steady improvement in adjusted net interest margin ("NIM") through proactive asset and liability management

- NIM was 1.59%. If the funding income or cost of foreign currency swap contracts[4] were included, NIM would have been 1.69%, up 6 basis points year-on-year, as a result of the Group capturing opportunities from rising market interest rates and proactively managing its assets and liabilities.

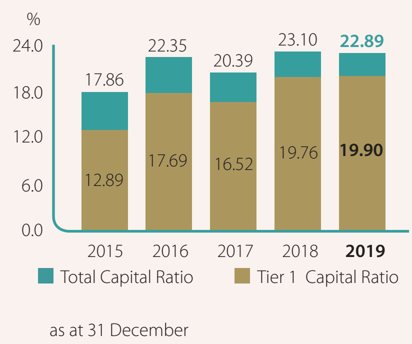
Maintaining high operational efficiency through flexible resource allocation

- The Group's cost to income ratio was 28.52%, maintaining its cost efficiency at a solid level relative to industry peers.

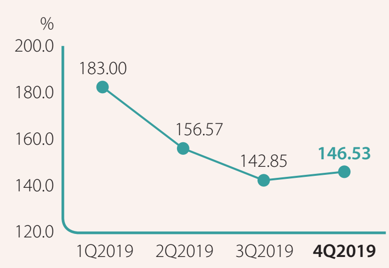
Maintaining benign asset quality through prudent risk management

- The Group's classified or impaired loan ratio was 0.23%, well below the market average.

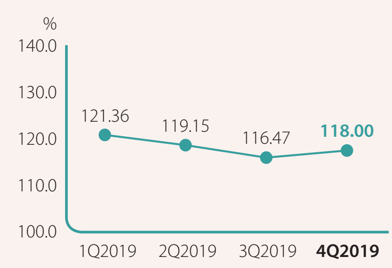
Capital Ratio



Average Value of Liquidity Coverage Ratio



Quarter-end Value of Net Stable Funding Ratio



Strong capital position to support stable business growth

- Total capital ratio was 22.89%. Tier 1 capital ratio was 19.90%, up 0.14 percentage points from that at the prior year-end.

Sound liquidity position

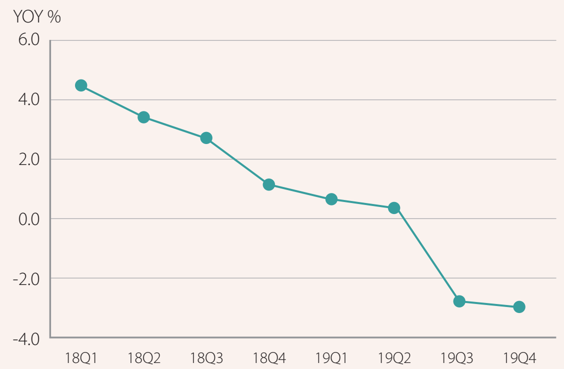
- The average value of liquidity coverage ratio and the quarter-end value of net stable funding ratio exceeded regulatory requirements in each quarter of 2019.

1. The Group has applied the merger accounting method for the combination of entity under common control in the preparation of its financial statements in 2019. The comparative information for 2018 has been restated accordingly. However, financial information prior to 2018 has not been restated as the difference before and after restatement is insignificant.
2. Return on average shareholders' equity and return on average total assets as defined in "Financial Highlights".
3. Classified or impaired advances to customers represent advances which are either classified as "substandard", "doubtful" or "loss" under the Group's classification of loan quality, or classified as Stage 3.
4. Foreign exchange swap contracts are normally used for the Group's liquidity management and funding activities. In foreign exchange swap contracts, the Group exchanges one currency (original currency) for another (swapped currency) at the spot exchange rate (spot transaction) and commits to reverse the spot transaction by exchanging the same currency pair at a future maturity date at a predetermined rate (forward transaction). In this way, surplus funds in the original currency are swapped into another currency for liquidity and funding purposes with minimal foreign exchange risk. The exchange difference (funding income or cost) between the spot and forward contracts is recognised as a foreign exchange gain or loss (as included in "net trading gain"), while the corresponding interest differential between the surplus funds in the original currency and swapped currency is reflected in net interest income.

Economic Background and Operating Environment

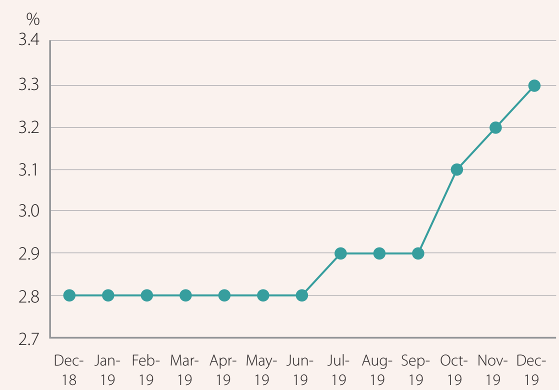
In 2019, the global economy exhibited slower growth amid a more cautious outlook. There were increased uncertainties in the external environment, including ongoing China-US trade friction and the unpredictable progress of Brexit. The US economy maintained moderate growth momentum, despite the weakening of its investment and trade performance. At the same time, the US Federal Reserve shifted towards a more dovish monetary policy stance. The Eurozone economy continued to record modest growth with sluggish inflation amid rising political tensions in certain countries, while the European Central Bank shifted to a more accommodative monetary policy. The Chinese government strengthened policy support to ensure a reasonable growth rate, with the Mainland economy achieving year-on-year economic growth of 6.1%. The economic fundamentals of the Southeast Asia region remained solid, with continued robust momentum in foreign direct investment.

Hong Kong Real GDP Growth Rate



Source: HKSAR Census and Statistics Department

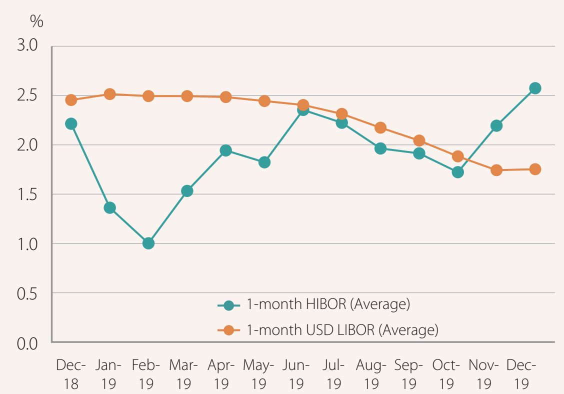
Hong Kong Unemployment Rate



Source: HKSAR Census and Statistics Department

Hong Kong's economy was subdued, owing to both domestic and external headwinds. The slowing global economy and China-US trade friction took a toll on its external trade performance, while social unrest in Hong Kong itself posed challenges to the local tourism and retail sectors. Domestic consumption and investment demand weakened, while the unemployment rate started to rise. Hong Kong's economy has entered a technical recession, with GDP shrinking by 1.2% year-on-year in 2019. However, the HKSAR government announced several rounds of relief measures that, coupled with the accommodative shifts in the monetary stance of the world's major central banks, partially alleviated the downward pressures on Hong Kong's economy.

HIBOR and USD LIBOR



Source: Bloomberg

In 2019, Hong Kong dollar interbank rates remained volatile and stayed on an upward trend year-on-year. The average 1-month HIBOR rose from 1.34% in 2018 to 1.89% in 2019. The average 1-month LIBOR rose from 2.02% to 2.22% over the same period. The USD yield curve inverted at some points during the year, but subsequently returned to normal after the US Federal Reserve made three rate cuts totalling 75 basis points in the second half of 2019.

Hong Kong's stock market experienced relatively high volatility during the year. In the first half of 2019, global financial markets received a boost from the US Federal Reserve's move to a more dovish monetary stance. However, the Hong Kong stock market experienced a correction from the beginning of May onwards, against a backdrop of heightened China-US trade friction and the outbreak of social unrest in Hong Kong. It gradually rebounded later in the year, after market sentiment was boosted by the improving outlook for China-US phase-one trade agreement negotiations. As at the end of 2019, the Hang Seng Index was up 9.1% compared with the end of 2018. However, the average daily trading volume of the stock market declined compared to the previous year.

Private residential property prices declined from peak levels during the year, but nevertheless recorded an increase of 5.3% from the end of 2018. In October 2019, the HKSAR government's Policy Address raised the cap on the value of properties eligible for a mortgage loan of maximum coverage of 90% loan-to-value ratio under the Mortgage Insurance Programme, which once stimulated property prices and transaction volumes. Total annual transaction numbers for residential properties increased by 4.5% from 2018. Meanwhile, the HKMA maintained prudent supervisory measures on mortgage loans, which helped banks to maintain sound asset quality in their mortgage businesses.

Despite these challenges in the macro environment, the banking industry continues to enjoy enormous development opportunities. During the year, the Chinese government introduced and implemented a series of financial opening and RMB internationalisation measures, including the removal of shareholding limits on financial institutions for foreign investors, total assets requirements, and investment quotas for Qualified Foreign Institutional Investors ("QFII") and Renminbi Qualified Foreign Institutional Investors ("RQFII"), as well as taking steps to deepen and refine mutual market access. All of these measures enhanced the connections between the Hong Kong and the Mainland stock markets. At the same time, Morgan Stanley Capital International Index ("MSCI") carried out a phased increase in the weighting of China's A shares in the MSCI index and Chinese onshore bonds were added to the Bloomberg Barclays Global Aggregate Index, contributing to the steady development of Hong Kong's offshore RMB business. 16 new measures related to the Guangdong-Hong Kong-Macao Greater Bay Area were announced in November 2019, with a view to supporting the livelihood and business startup needs of Hong Kong people living in mainland cities within the Greater Bay Area by meeting their demands for all types of cross-border financial services. Enactment of the Free Trade Agreement ("FTA") signed between Hong Kong and ASEAN not only provided business opportunities and encouraged trade investments, but also accelerated related industry development and optimised the layout of the industry chain in the region.

Consolidated Financial Review

The comparative information for 2018 has been restated following the Group's application of the merger accounting method in the preparation of its financial statements as a result of the acquisition made in 2019.

Financial Highlights

HK$'m, except percentages	2019	(Restated) 2018	Change (%)
Net operating income before impairment allowances	**58,444**	54,535	7.2
Operating expenses	**(16,667)**	(15,206)	9.6
Operating profit before impairment allowances	**41,777**	39,329	6.2
Operating profit after impairment allowances	**39,755**	38,087	4.4
Profit before taxation	**40,088**	39,081	2.6
Profit for the year	**34,074**	32,654	4.3
Profit attributable to equity holders of the Company	**32,184**	32,070	0.4

In 2019, the Group's profit for the year amounted to HK$34,074 million, an increase of HK$1,420 million or 4.3% year-on-year. Profit attributable to equity holders was HK$32,184 million, an increase of HK$114 million or 0.4% year-on-year. Net operating income before impairment allowances was HK$58,444 million, an increase of HK$3,909 million or 7.2% year-on-year. Net interest income rose, having benefited from rising market interest rates and the proactive management of the Group's assets and liabilities. The net trading gain of the banking business increased, while a higher net gain was recorded from the disposal of certain debt securities. This income growth was partially offset by a drop in net fee and commission income, owing to lower commission income from securities brokerage and funds distribution amid weakened investor sentiment. Operating expenses increased as a result of the Group's ongoing investment in supporting its long-term business expansion while maintaining cautious cost control. Net charge of impairment allowances increased year-on-year while the net gain from fair-value adjustments on investment properties decreased on a year-on-year basis.

Second Half Performance

In the second half of 2019, the Group's net operating income before impairment allowances increased by HK$106 million or 0.4%, compared to the first half of 2019. This was primarily attributable to an increase in net interest income and to the net trading gain of the banking business, which was partially offset by a decrease in net fee and commission income and a net gain from the disposal of debt securities. Moreover, operating expenses and net charge of impairment allowances increased from the first half of the year, while a net loss was recorded from fair-value adjustments on investment properties. As a result, the Group's profit after taxation decreased by HK$2,478 million or 13.6% on a half-on-half basis.

Income Statement Analysis

The comparative information of the following income statement analysis has been restated to conform to the current year's presentation.

Net Interest Income and Net Interest Margin

HK$'m, except percentages	2019	(Restated) 2018	Change (%)
Interest income	**67,784**	61,865	9.6
Interest expense	**(27,261)**	(22,364)	21.9
Net interest income	**40,523**	39,501	2.6
Average interest-earning assets	**2,551,288**	2,437,652	4.7
Net interest spread	**1.37%**	1.44%	
Net interest margin	**1.59%**	1.62%	
Net interest margin (adjusted)*	**1.69%**	1.63%	

* Including the funding income or cost of foreign currency swap contracts.

Net interest income amounted to HK$40,523 million in 2019. If the funding income or cost of foreign currency swap contracts# were included, net interest income would have increased by 8.4% year-on-year. The increase was mainly driven by improvement in net interest margin and growth in average interest-earning assets.

Average interest-earning assets expanded by HK$113,636 million or 4.7% year-on-year. The increase in deposits from customers led to an increase in advances to customers, debt securities investments and other debt instruments.

Net interest margin was 1.59%. If the funding income or cost of foreign currency swap contracts were included, net interest margin would have been 1.69%, up 6 basis points year-on-year. Market interest rates rose year-on-year, which led to an increase in the average yield of advances to customers, net funding income of foreign currency swap contracts and contribution from net free funds. During the year, the Group proactively managed its deposit pricing and structure, keeping the growth of deposit costs under control amid intensified market competition.

\# Foreign exchange swap contracts are normally used for the Group's liquidity management and funding activities. In foreign exchange swap contracts, the Group exchanges one currency (original currency) for another (swapped currency) at the spot exchange rate (spot transaction) and commits to reverse the spot transaction by exchanging the same currency pair at a future maturity date at a predetermined rate (forward transaction). In this way, surplus funds in the original currency are swapped into another currency for liquidity and funding purposes with minimal foreign exchange risk. The exchange difference (funding income or cost) between the spot and forward contracts is recognised as a foreign exchange gain or loss (as included in "net trading gain"), while the corresponding interest differential between the surplus funds in the original currency and swapped currency is reflected in net interest income.

The table below summarises the average balances and average interest rates of individual categories of assets and liabilities:

	2019		(Restated) 2018	
ASSETS	Average balance HK$'m	Average yield %	Average balance HK$'m	Average yield %
Balances and placements with banks and other financial institutions	**341,707**	**1.82**	416,376	1.90
Debt securities investments and other debt instruments	**864,637**	**2.36**	783,911	2.39
Advances to customers	**1,322,845**	**3.06**	1,219,803	2.86
Other interest-earning assets	**22,099**	**2.58**	17,562	2.13
Total interest-earning assets	**2,551,288**	**2.66**	2,437,652	2.54
Non interest-earning assets	**419,912**	**–**	379,499	–
Total assets	**2,971,200**	**2.28**	2,817,151	2.20

LIABILITIES	Average balance HK$'m	Average rate %	Average balance HK$'m	Average rate %
Deposits and balances from banks and other financial institutions	**191,461**	**1.18**	226,237	1.10
Current, savings and time deposits	**1,865,178**	**1.26**	1,726,241	1.03
Subordinated liabilities	**13,093**	**5.49**	18,237	5.44
Other interest-bearing liabilities	**39,505**	**1.74**	55,080	1.95
Total interest-bearing liabilities	**2,109,237**	**1.29**	2,025,795	1.10
Shareholders' funds* and other non interest-bearing deposits and liabilities	**861,963**	**–**	791,356	–
Total liabilities	**2,971,200**	**0.92**	2,817,151	0.79

* Shareholders' funds represent capital and reserves attributable to the equity holders of the Company.

Second Half Performance

If the funding income or cost of foreign currency swap contracts were included, the Group's net interest income would have increased by 4.1% compared with the first half of 2019, mainly driven by the growth in average interest-earning assets. Net interest margin remained at 1.69%. The average yield of advances to customers and debt securities investments and other debt instruments decreased in the second half of the year amid declining market interest rates. The aforementioned negative impact was partially offset by a simultaneous drop in deposit costs.

Net Fee and Commission Income

HK$'m, except percentages	2019	(Restated) 2018	Change (%)
Credit card business	**2,975**	3,441	(13.5)
Loan commissions	**2,675**	2,613	2.4
Securities brokerage	**2,113**	2,769	(23.7)
Insurance	**2,111**	1,546	36.5
Funds distribution	**901**	929	(3.0)
Payment services	**716**	681	5.1
Bills commissions	**700**	739	(5.3)
Trust and custody services	**651**	633	2.8
Currency exchange	**599**	590	1.5
Safe deposit box	**294**	285	3.2
Others	**1,267**	1,292	(1.9)
Fee and commission income	**15,002**	15,518	(3.3)
Fee and commission expense	**(4,083)**	(4,206)	(2.9)
Net fee and commission income	**10,919**	11,312	(3.5)

In 2019, net fee and commission income amounted to HK$10,919 million, down HK$393 million or 3.5% year-on-year. This was mainly due to decreases in commission income from securities brokerage and funds distribution of 23.7% and 3.0% respectively, amid subdued investor sentiment which led to decreases in transaction volume in the stock and fund market. Commission income from the Group's credit card business was down 13.5%, due to a weakening in retail sales in Hong Kong. Bills commissions also decreased by 5.3%, as a result of a year-on-year decline in Hong Kong's total volume of exports and imports. The Group seized market opportunities and continued to optimise its sales channels and customer services, which led to steady growth in a number of areas. Commission income from insurance business increased by 36.5%, owing to an uptick in sales volumes driven by the Group's continuous efforts to promote product and service innovation in insurance during the year and thus effectively facilitate customers' financial planning needs. Commission income from payment services was up 5.1%, as the Group accelerated the development of its cash pooling and cash management businesses. Assets under management ("AUM") relating to the Group's trust and custody business continued to grow, with related income increasing by 2.8%. Meanwhile, loan commissions increased, and income from currency exchange and safe deposit box also rose. Fee and commission expenses were down 2.9% year-on-year, mainly due to lower credit card business and securities brokerage related expenses.

Second Half Performance

Compared with the first half of 2019, net fee and commission income decreased by HK$1,173 million or 19.4%. The half-on-half decrease was primarily due to slackening economic growth and weakened investor and consumer sentiment in the second half of the year. Commission income from securities brokerage, insurance, funds distribution, loans, credit card business and currency exchange decreased, while that of payment services, trust and custody services and safe deposit box increased. The decrease in fee and commission expenses resulted from lower credit card business and securities brokerage related expenses.

Net Trading Gain

HK$'m, except percentages	2019	(Restated) 2018	Change (%)
Foreign exchange and foreign exchange products	**4,931**	2,716	81.6
Interest rate instruments and items under fair value hedge	**(578)**	50	N/A
Commodities	**366**	184	98.9
Equity and credit derivative instruments	**81**	140	(42.1)
Total net trading gain	**4,800**	3,090	55.3

Net trading gain amounted to HK$4,800 million, an increase of HK$1,710 million or 55.3% year-on-year. Net trading gain from foreign exchange and foreign exchange products increased by HK$2,215 million, which was primarily attributable to an increase in net gain from foreign currency swap contracts. Interest rate instruments and items under fair value hedge recorded a net trading loss, as compared with a net trading gain in the same period last year. This was primarily due to mark-to-market changes to certain debt securities investments and interest rate instruments caused by market interest rate movements. Net trading gain from commodities increased, mainly due to a higher gain from bullion transactions. Net trading gain from equity and credit derivative instruments decreased, with the decline in income from equity-linked products. If the funding income or cost of foreign currency swap contracts were excluded, net trading gain would have decreased by 21.0% year-on-year.

Second Half Performance

Compared with the first half of 2019, net trading gain increased by HK$1,142 million or 62.4%, mainly reflecting the mark-to-market changes of certain foreign exchange products and interest rate instruments. If the funding income or cost of foreign currency swap contracts were excluded, net trading gain would have increased by 158.9% from the first half of the year.

Net Gain/(Loss) on Other Financial Instruments at Fair Value through Profit or Loss

HK$'m, except percentages	2019	(Restated) 2018	Change (%)
Net gain/(loss) on other financial instruments at fair value through profit or loss	**3,243**	(1,282)	N/A

The Group recorded a net gain of HK$3,243 million on other financial instruments at fair value through profit or loss in 2019, compared to a net loss of HK$1,282 million in 2018. The change was mainly attributable to the mark-to-market gain (as compared with a mark-to-market loss in 2018) of BOC Life's debt securities investments, caused by market interest rate movements, together with a net gain (as compared with a net loss in 2018) in its equity securities and bond fund investments. The mark-to-market changes of the debt securities investments mentioned above were offset by changes in BOC Life's policy reserves, as reflected in changes in net insurance benefits and claims as well as movements in liabilities, which were also attributable to market interest rate movements.

Second Half Performance

A net gain of HK$1,028 million was recorded in the second half of the year, which was HK$1,187 million lower than the net gain recorded in the first half. This change was mainly attributable to the lower mark-to-market gain of BOC Life's debt securities investments, together with a decreased gain from its equity securities and bond fund investments, in the second half of the year.

Operating Expenses

HK$'m, except percentages	2019	(Restated) 2018	Change (%)
Staff costs	**9,364**	8,642	8.4
Premises and equipment expenses (excluding depreciation)	**1,542**	1,862	(17.2)
Depreciation	**2,881**	2,066	39.4
Other operating expenses	**2,880**	2,636	9.3
Total operating expenses	**16,667**	15,206	9.6

	At 31 December 2019	(Restated) At 31 December 2018	Change (%)
Staff headcount measured in full-time equivalents*	**14,668**	14,084	4.1

* The comparative information of staff headcounts measured in full-time equivalents as at 31 December 2018 has been restated to enable analysis on a comparable basis.

Total operating expenses amounted to HK$16,667 million, an increase of HK$1,461 million or 9.6% year-on-year, owing to the Group's ongoing investment in human resources management, the enhancement of its fintech service innovations and its support of key businesses and projects, all undertaken with the aim of further enhancing the Group's overall service competitiveness. The cost to income ratio was 28.52%, with the Group maintaining cost efficiency at a solid level relative to industry peers.

Staff costs increased by 8.4% year-on-year, mainly due to annual salary increment and increased headcount. The Group also launched a series of initiatives related to employee remuneration and benefits, resulting in an increase in related expenses.

Premises and equipment expenses decreased by 17.2%. From 1 January 2019 onwards, the Group adopted Hong Kong Financial Reporting Standard 16 ("HKFRS 16"), "Leases". Under this new standard, leases for use of premises are accounted for as a right-of-use asset, with related rental expenses recognised as the depreciation of the right-of-use asset. As a result, rental expenses dropped. This decline was partially offset by increased investments in information technology.

Depreciation increased by 39.4%, mainly due to the adoption of HKFRS 16, and increased depreciation charges on premises and information technology infrastructure.

Other operating expenses rose by 9.3%, mainly due to an increase in business promotional expenses related to the credit card and payment businesses, as well as a rise in advertising and communication expenses.

Second Half Performance

Compared with the first half of 2019, total operating expenses increased by HK$1,611 million or 21.4%, mainly due to higher staff costs and expenses resulting from increased investments in digital transformation and information technology, as well as business promotions.

Net Charge of Impairment Allowances on Advances and Other Accounts

HK$'m, except percentages	2019	(Restated) 2018	Change (%)
Stage 1	**(701)**	162	N/A
Stage 2	**21**	(336)	N/A
Stage 3	**(1,172)**	(1,009)	16.2
Total net charge of impairment allowances on advances and other accounts	**(1,852)**	(1,183)	56.6

Total Loan Impairment Allowances as a Percentage of Advances to Customers

	At 31 December 2019	(Restated) At 31 December 2018
Total loan impairment allowances as a percentage of advances to customers	**0.50%**	0.43%

In 2019, the Group's net charge of impairment allowances on advances and other accounts amounted to HK$1,852 million, an increase of HK$669 million or 56.6% year-on-year. Impairment allowances at Stage 1 recorded a net charge of HK$701 million, mainly driven by loan growth and the impact of changes to the parameter values of the expected credit loss model to account for changes in macroeconomic outlook during the year, as compared to a net reversal in the previous year due to the upgrading of certain customers. Impairment allowances at Stage 2 recorded a net reversal of HK$21 million, as compared to a net charge of HK$336 million last year, mainly reflecting the impact of changes in the internal rating of certain customers. Impairment allowances at Stage 3 amounted to HK$1,172 million, an increase of HK$163 million year-on-year, owing to new impairment allowances being made in response to the downgrading of certain corporate advances. As at 31 December 2019, the Group's total loan impairment allowances as a percentage of advances to customers was 0.50%.

Second Half Performance

Compared with the first half of 2019, the Group's net charge of impairment allowances on advances and other accounts increased by HK$418 million. This increase mainly related to the downgrading of certain customers and the impact of changes to the parameter values of the expected credit loss model to take into account changes in macroeconomic outlook in the second half of the year.

Analysis of Assets and Liabilities

The table below summarises the Group's asset composition. The comparative figures as of 31 December 2018 have been restated to conform to the current year's presentation. Please refer to Note 24 to the Financial Statements for the contract/notional amounts and fair values of the Group's derivative financial instruments. Please refer to Note 42 to the Financial Statements for the contractual amounts of each significant class of contingent liability and commitment and the aggregate credit risk-weighted amounts of the Group.

Asset Composition

	At 31 December 2019		(Restated) At 31 December 2018		
HK$'m, except percentages	Amount	% of total	Amount	% of total	Change (%)
Cash and balances and placements with banks and other financial institutions	**366,829**	**12.1**	433,299	14.7	(15.3)
Hong Kong SAR Government certificates of indebtedness	**163,840**	**5.4**	156,300	5.3	4.8
Securities investments and other debt instruments[1]	**886,846**	**29.3**	899,967	30.4	(1.5)
Advances and other accounts	**1,412,961**	**46.7**	1,282,994	43.4	10.1
Fixed assets and investment properties	**71,712**	**2.4**	69,119	2.3	3.8
Other assets[2]	**123,868**	**4.1**	114,325	3.9	8.3
Total assets	**3,026,056**	**100.0**	2,956,004	100.0	2.4

1. Securities investments and other debt instruments comprise investment in securities and financial assets at fair value through profit or loss.
2. Other assets comprise derivative financial instruments, interests in associates and joint ventures, current tax assets and deferred tax assets.

In accordance with the principle of balanced and sustainable development, the Group continued to optimise the management of its assets and liabilities. The total assets of the Group amounted to HK$3,026,056 million, an increase of HK$70,052 million or 2.4% compared with the end of 2018. Cash and balances and placements with banks and other financial institutions decreased by HK$66,470 million or 15.3%, mainly due to a decrease in balances with banks. Securities investments and other debt instruments decreased by HK$13,121 million or 1.5%. Advances and other accounts rose by HK$129,967 million or 10.1%, with advances to customers growing by HK$128,648 million or 10.2% and trade bills increasing by HK$3,366 million or 19.4%.

Advances to Customers

HK$'m, except percentages	At 31 December 2019 Amount	At 31 December 2019 % of total	(Restated) At 31 December 2018 Amount	(Restated) At 31 December 2018 % of total	Change (%)
Loans for use in Hong Kong	**924,734**	**66.3**	841,720	66.4	9.9
Industrial, commercial and financial	**515,548**	**37.0**	492,712	38.9	4.6
Individuals	**409,186**	**29.3**	349,008	27.5	17.2
Trade finance	**75,764**	**5.4**	65,437	5.2	15.8
Loans for use outside Hong Kong	**395,385**	**28.3**	360,078	28.4	9.8
Total advances to customers	**1,395,883**	**100.0**	1,267,235	100.0	10.2

In 2019, the Group actively developed its local and cross-border businesses. It seized opportunities arising from the loan needs of large corporates, high-quality commercial clients and SME customers in Hong Kong. It expanded and optimised the digital business processes of its mortgage business and enhanced the service quality of its mortgage centres. It strengthened collaboration with BOC entities in the Mainland so as to build an integrated marketing and service system. At the same time, the Group strengthened collaborative marketing with its Southeast Asian entities in order to acquire high-quality local clients, and successfully participated in a number of major financing projects in Southeast Asia. Advances to customers grew by HK$128,648 million, or 10.2%, to HK$1,395,883 million in 2019.

Loans for use in Hong Kong grew by HK$83,014 million or 9.9%:

- Lending to the industrial, commercial and financial sectors increased by HK$22,836 million or 4.6%, reflecting growth in property development, financial concerns and information technology, as well as wholesale and retail trade.

- Lending to individuals increased by HK$60,178 million, or 17.2%. Residential mortgage loans (excluding those under government-sponsored home purchasing schemes) grew by 13.7% while other individual loans increased by 24.4%, mainly driven by an increase in loans for property refinancing.

Trade financing increased by HK$10,327 million or 15.8%. Loans for use outside Hong Kong grew by HK$35,307 million or 9.8%, mainly driven by growth in loans for use in the Mainland and Southeast Asia.

Loan Quality

HK$'m, except percentages	At 31 December 2019	(Restated) At 31 December 2018
Advances to customers	**1,395,883**	1,267,235
Classified or impaired loan ratio	**0.23%**	0.19%
Total impairment allowances	**7,035**	5,419
Total impairment allowances as a percentage of advances to customers	**0.50%**	0.43%
Residential mortgage loans[1] – delinquency and rescheduled loan ratio[2]	**0.01%**	0.01%
Card advances – delinquency ratio[2]	**0.27%**	0.19%

	2019	2018
Card advances – charge-off ratio[3]	**1.40%**	1.40%

1. Residential mortgage loans exclude those under the Home Ownership Scheme and other government-sponsored home purchasing schemes.
2. The delinquency ratio is the ratio of the total amount of overdue advances (more than three months) to total outstanding advances.
3. The charge-off ratio is the ratio of total write-offs made during the year to average card receivables during the year.

In 2019, the Group proactively strengthened its management measures for various types of risks and continuously enhanced its regional risk management so as to maintain benign asset quality. As at 31 December 2019, classified or impaired loans amounted to HK$3,217 million, up HK$834 million from the end of last year, while the classified or impaired loan ratio was 0.23%, up 0.04 percentage points from the end of last year.

The credit quality of the Group's residential mortgage loans and card advances remained stable. The combined delinquency and rescheduled loan ratio of residential mortgage loans was 0.01% as at 31 December 2019. The charge-off ratio of card advances remained stable at 1.40%.

Deposits from Customers

HK$'m, except percentages	At 31 December 2019 Amount	At 31 December 2019 % of total	(Restated) At 31 December 2018 Amount	(Restated) At 31 December 2018 % of total	Change (%)
Demand deposits and current accounts	**207,013**	**10.3**	207,812	11.0	(0.4)
Savings deposits	**900,009**	**44.8**	854,117	45.0	5.4
Time, call and notice deposits	**902,251**	**44.9**	833,867	43.9	8.2
	2,009,273	**100.0**	1,895,796	99.9	6.0
Structured deposits	**–**	**–**	2,199	0.1	(100.0)
Total deposits from customers	**2,009,273**	**100.0**	1,897,995	100.0	5.9

In 2019, the Group continued to step up efforts to expand its mid- to high-end customer base and strengthened cooperation with clients in relation to e-channel payment solutions, in a bid to enlarge the scale of its deposits. At the same time, the Group optimised its deposit structure. The Group was able to support growth in deposits by expanding its employee payroll service offering, including payroll, wealth management and integrated payment service solutions, and leveraging its role as the main receiving bank for IPOs as well as its cash management and settlement businesses. At the end of 2019, total deposits from customers amounted to HK$2,009,273 million, an increase of HK$111,278 million or 5.9% from the end of the previous year. Demand deposits and current accounts decreased by 0.4%. Savings deposits increased by 5.4%. Time, call and notice deposits were up 8.2%.

Capital and Reserves Attributable to Equity Holders of the Company

HK$'m, except percentages	At 31 December 2019	(Restated) At 31 December 2018	Change (%)
Share capital	**52,864**	52,864	–
Premises revaluation reserve	**39,458**	38,527	2.4
Reserve for fair value changes	**69**	(4,116)	N/A
Reserve for own credit risk	**(33)**	5	N/A
Regulatory reserve	**11,077**	10,496	5.5
Translation reserve	**(581)**	(832)	30.2
Merger reserve	**–**	350	(100.0)
Retained earnings	**175,929**	160,242	9.8
Reserves	**225,919**	204,672	10.4
Capital and reserves attributable to equity holders of the Company	**278,783**	257,536	8.3

Capital and reserves attributable to equity holders of the Company amounted to HK$278,783 million as at 31 December 2019, an increase of HK$21,247 million or 8.3% from the end of 2018. Retained earnings rose by 9.8% from the end of last year, mainly reflecting the profit achieved in 2019 after the distribution of dividends. The premises revaluation reserve increased by 2.4%, reflecting an increase in the valuation of the Group's premises in 2019. The reserve for fair value changes moved from a deficit to a surplus, mainly driven by market interest rate movements. The regulatory reserve increased by 5.5%, mainly driven by growth in advances to customers. The merger reserve as at 31 December 2018 arose, owing to the Group's application of the merger accounting method in relation to its combination with BOC Vientiane Branch.

Capital Ratio

HK$'m, except percentages	At 31 December 2019	At 31 December 2018
Consolidated capital after deductions		
Common Equity Tier 1 capital	**195,039**	180,202
Additional Tier 1 capital	**23,476**	23,476
Tier 1 capital	**218,515**	203,678
Tier 2 capital	**32,855**	34,393
Total capital	**251,370**	238,071
Total risk-weighted assets	**1,098,018**	1,030,815
Common Equity Tier 1 capital ratio	**17.76%**	17.48%
Tier 1 capital ratio	**19.90%**	19.76%
Total capital ratio	**22.89%**	23.10%

As at 31 December 2019, the Group's Common Equity Tier 1 ("CET1") capital and Tier 1 capital increased by 8.2% and 7.3% respectively, which was primarily attributable to the profits net of dividends recorded for 2019. The Group remains committed to balancing growth in risk-weighted assets ("RWAs") with enhancement in returns. Total RWAs increased by 6.5% in 2019, mainly driven by loan growth. The CET1 capital ratio was 17.76% and Tier 1 capital ratio was 19.90%, up 0.28 and 0.14 percentage points respectively from the end of 2018. Total capital ratio was 22.89%. The Group has established a long-term capital plan to continuously review its capital structure and manage the growth of its RWAs, with the aim of maintaining an appropriate capital level to meet regulatory requirements, support the long-term business development of the Group and realise returns to its equity holders.

Liquidity Coverage Ratio and Net Stable Funding Ratio

	2019	2018
Average value of liquidity coverage ratio		
First quarter	**183.00%**	134.33%
Second quarter	**156.57%**	146.39%
Third quarter	**142.85%**	141.44%
Fourth quarter	**146.53%**	160.23%

	2019	2018
Quarter-end value of net stable funding ratio		
First quarter	**121.36%**	118.98%
Second quarter	**119.15%**	118.82%
Third quarter	**116.47%**	122.24%
Fourth quarter	**118.00%**	124.41%

The Group's liquidity position remained sound, with the average value of its liquidity coverage ratio and the quarter-end value of its net stable funding ratio exceeding the regulatory requirement for all four quarters of 2019.

Business Review

In 2019, the Group remained committed to its strategy of building a top-class, full-service and internationalised regional bank. It actively responded to changes in the market environment and seized market opportunities to steadily push forward its business priorities, with its major financial indicators remaining at solid levels. Striving to be customer-centric at all times, it continued to develop the local market in Hong Kong and accelerated innovation-led transformation. The Group was actively involved in developing business opportunities in the Guangdong-Hong Kong-Macao Greater Bay Area, and endeavoured to consolidate its leading market position for major businesses in the area by optimising its integrated business systems. It deepened the integration of its Southeast Asian entities and enhanced regional synergies and development quality. It expedited its digital and innovation-driven development and enhanced the application of fintech in its products and services. Moreover, the Group remained dedicated to cultivating its bank culture to ensure balanced and sustainable development.

Business Segment Performance

Profit before Taxation by Business Segment

HK$'m, except percentages	2019	% of total	2018	(Restated) % of total	Change (%)
Personal Banking	**11,234**	**28.0**	10,261	26.2	9.5
Corporate Banking	**15,309**	**38.2**	14,426	36.9	6.1
Treasury	**12,064**	**30.1**	11,553	29.6	4.4
Insurance	**701**	**1.8**	937	2.4	(25.2)
Others	**780**	**1.9**	1,904	4.9	(59.0)
Total profit before taxation	**40,088**	**100.0**	39,081	100.0	2.6

Note: For additional segmental information, see Note 46 to the Financial Statements.

Personal Banking

Financial Results

Personal banking achieved a profit before tax of HK$11,234 million in 2019, an increase of HK$973 million or 9.5% year-on-year. Net operating income rose, mainly driven by an increase in net interest income, which more than offset the impact from the increase in operating expenses and the net charge of impairment allowances.

Net interest income increased by 16.8%, mainly driven by the growth in the average balance of deposits and loans along with an improvement in the deposit spread. The increase was, however, partially set off by the narrowing loan spread. Net fee and commission income increased by 2.6%, as insurance commission income increased in line with a higher business volume. However, commission income from securities brokerage and funds distribution decreased amid the weakened investor sentiment in the market, partially offsetting the above-mentioned income growth. Operating expenses were up 11.3%, mainly due to an increase in staff costs and depreciation of the right-of-use asset. The net charge of impairment allowances amounted to HK$351 million, an increase of HK$228 million year-on-year, mainly reflected the impact of loan growth and changes to the parameter values of the expected credit loss model to account for changes in macroeconomic outlook.

Business operations

Striving to be customer-oriented and continuously refining customer structure

The Group continued to adopt a customer-centric strategy during the year. As part of its efforts to promote financial inclusion, BOCHK removed service fees for its personal integrated banking services and general banking accounts, effective from 1 August 2019. Based on careful observation of customers' preferences and behaviours, it promoted a holistic wealth planning service and offered an all-round asset allocation analysis and portfolio solution to mid- to high-end customers. It strengthened its big data analysis capabilities, developed its digital marketing team and implemented a big data platform powered by machine learning to comprehensively enhance its data productivity and decision-making intelligence. In order to meet mid- to high-end customers' needs, the Group offered exclusive value-added services, including hosting the Wealth Management Expo 2019, thus enhancing its brand recognition.

The Group's private banking business maintained steady growth. Through its transformation into a regional bank, the Group was able to serve high-net-worth clients from Hong Kong, the Mainland and Southeast Asia. In line with the development of green finance and environmental, social and governance standards, the Group enriched its exclusive private banking products and services and strengthened its talent pool and teams so as to better serve regional high-net-worth clients and family offices. In addition, it reinforced its customer-centric approach by developing its digital capabilities with the aim of enhancing its customisation systems and improving customer management and investment portfolio analysis. As at the end of 2019, the AUM of the Group's private banking business had increased by 24.3% compared to the end of 2018.

Promoting integrated development and collaboration in the Greater Bay Area and expanding featured cross-border services

The Group actively pushed forward integrated development and collaboration in the Guangdong-Hong Kong-Macao Greater Bay Area by focusing on the financial services needs of residents in Guangdong, Hong Kong and Macao, including account opening, payment services and financing. In 2019, BOCHK became the first bank in Hong Kong to launch a mainland personal account opening attestation service, allowing Hong Kong residents to open mainland personal accounts without having to travel to the Mainland, and continued to refine its cross-border RMB remittance packages. As at the end of 2019, there were over 90,000 related applications. The BoC Pay mobile application's cross-border retail payment function was enhanced to allow Hong Kong residents to make payments more easily across the Greater Bay Area. With the launch of BOCHK WeChat public account and through continuous improvement to the cross-border functions of this account, the Group strived to offer its cross-border customers a market-leading platform for accessing banking services and related information. As at the end of 2019, the total number of cross-border mid- to high-end customers had increased by 26.8% from the end of the previous year. During the year, BOCHK received the Outstanding GBA Financial Business – Innovative Cross-border Financial Services Award, jointly organised by Metro Finance and Hong Kong Ta Kung Wen Wei Media Group, and was honoured with the Sing Tao Service Awards 2019 – Greater Bay Area Banking Service Award by *Sing Tao Daily*.

Steadily advancing regional development in Southeast Asia

The Group continued to enhance the development of its personal banking business in the Southeast Asia region, successfully expanding its personal banking service network to Thailand, Malaysia, Vietnam, the Philippines, Indonesia, Cambodia, Laos and Brunei. Based on the characteristics of different countries, the Group continued to refine its business organisation structure and managed its regional products in a systematic and orderly manner. It strengthened "mobile first" digital infrastructure support to its Southeast Asian entities with the launch of a new regional version of mobile banking in BOC Thailand, BOC Malaysia, Ho Chi Minh City Branch, Manila Branch, Phnom Penh Branch and Vientiane Branch, thus unifying its mobile banking brand across the region. The Group continued to enhance its wealth management services and officially launched Wealth Management in BOC Malaysia, offering new funds and bonds. Jakarta Branch became the first bank to distribute RMB insurance products in its local market. The Group also strengthened collaboration with its Southeast Asian entities and launched a cross-border attestation service allowing customers to open BOCHK personal accounts with BOC Malaysia, Jakarta Branch and Manila Branch.

Promoting digital product transformation so as to accelerate customer migration to online transactions

The Group strived to promote fintech innovation and pushed forward the digitalisation of its business processes and the digital integration of high-frequency customer transactions. During the year, it utilised open Application Programme Interface ("API") to extend cross-platform cooperation and launched a developers' portal, opening up access to more than 90 open APIs. The Group strengthened cooperation with third party service providers, online real estate agency platforms, external economic and financial applications as well as product comparison websites so as to expand its cross-platform functions, including property purchase planning, securities and foreign exchange trading services and online loan application. The Group's credit card business continued to introduce new payment methods in order to make inroads into the small amount and high frequency cash payment market. It enriched the application scenarios of BoC Pay in order to meet customer need for high-frequency payments and further expanded its service coverage to non-BOCHK customers, thus allowing more customers in Hong Kong to enjoy convenient digital payments. To meet the rapid growth in customer demand for online transactions, the Group adopted the concept of "mobile first" and enhanced both the design and functionality of its mobile banking platform to upgrade investment, insurance, payment, credit cards and remittance-related services. As at the end of 2019, the number of mobile banking registered customers and active customers grew by 35.7% and 36.9% respectively compared to the end of the previous year. During the year, BOCHK received a number of awards from *The Asian Banker*, including being recognised as Best Retail Bank in Hong Kong for the third time in its International Excellence in Retail Financial Services Awards, and winning Best Data Analytics Initiative, Application or Programme, Best Blockchain Initiative, Application or Programme and Digital Wallet of the Year in Hong Kong in *The Asian Banker*'s Excellence in Retail Financial Services Awards – Hong Kong, and was awarded Mobile Banking Initiative of the Year – Hong Kong by *Asian Banking & Finance*, in recognition of its performance in the personal banking industry.

Optimising products and services and consolidating competitive advantages

The Group devoted great efforts to acquiring deposits and optimising deposit tenors. Striving to become its customers' main bank, it grew its current account and savings deposit businesses via payroll services, wealth management and integrated payment solutions, with large-scale marketing campaigns targeted at the employee payroll services of well-known large corporations, mainland enterprises, social welfare organisations, schools and small retail enterprises. Regarding its loan business, the Group strengthened its mortgage business for new residential properties and Home Ownership Scheme flats in the primary market, accelerated the development of its digital mortgage business processes and enhanced the service quality and network coverage of its mortgage centres. As a result of these initiatives, the Group captured its top market position in terms of the total number of new residential mortgage loans and maintained the largest market share in the reverse mortgage market. In its fee and commission business, the Group enriched its range of investment products with a focus on retirement planning and protection. To address the overseas investment demands of mid- to high-end customers and cross-border customers, it promoted its US stock trading service by further enhancing the US stocks online investment customer journey in its online and mobile banking. In addition, to support the deferred annuity policy and Voluntary Health Insurance Scheme promoted by the HKSAR government, the Group enhanced innovation in its insurance products and services portfolio by integrating the concepts of retirement planning and health protection. The structural transformation of annuity and whole life insurance allowed the Group to further fulfil customers' financial planning needs, thus contributing to solid growth in insurance fee income.

Corporate Banking

Financial Results

Corporate Banking achieved a profit before tax of HK$15,309 million, an increase of HK$883 million or 6.1% year-on-year. Net operating income rose, mainly driven by the increase in net interest income, which more than offset the impact from the increase in operating expenses and the net charge of impairment allowances.

Net interest income increased by 12.7%, mainly attributable to the growth in the average balance of loans and deposits, coupled with improvement in the deposit spread. Net fee and commission income increased by 1.7%, with higher loan commissions, which was partially offset by decreases in commission income from bills and insurance. Net trading gain decreased by 3.4%, owing to a drop in currency exchange income from customer transactions. Operating expenses were up 6.7%, mainly due to an increase in staff costs and depreciation of the right-of-use asset. The net charge of impairment allowances amounted to HK$1,385 million, an increase of HK$601 million year-on-year, owing to impairment allowances being made in response to the downgrading of certain corporate advances. There was a lower base in the same period last year when there was an improvement in the internal rating of certain corporate advances, resulting in a reversal of impairment allowances.

Business operations

Expanding the core customer base and providing bespoke services

The Group remained committed to achieving high-quality development by meeting the demands of key customer groups for integrated financial solutions, including BOC's global strategic clients and large corporates from Hong Kong, Southeast Asia and other overseas countries. It devoted efforts to optimising its business structure and enhancing its service capabilities. By continuously improving its regional and comprehensive service capacities, the Group was able to support a number of high-quality projects. It also enhanced cooperation with clients in e-payment platforms in order to provide bespoke cash management and funding-pool management, leading to stable growth in deposits and loans. It remained the top mandated arranger in the Hong Kong and Macao syndicated loan market and successfully underwrote a number of bond issues with significant market influence. By keeping up with market changes, the Group actively promoted the advancement of green finance, including the underwriting of green bonds and loans. The Group retained its market leadership as an IPO main receiving bank in terms of the number of main board listing projects. In addition, it maintained good business relationships with the world's major central banks and sovereign wealth funds so as to provide them with comprehensive financial services. At the same time, the Group promoted technological innovation and digital transformation. With the aim of deepening scenario-based applications and integrating into the market ecology, it strengthened cooperation with the HKSAR government, colleges, universities and various institutions, and promoted e-payment and payment collection projects so as to provide more convenient payment channels, thus enhancing the brand image of the Group's payment services.

Proactively implementing a series of measures to support the development of its commercial and SME customer base

The Group continued to improve its services to local commercial customers in Hong Kong by providing e-payment services, integrated payment and settlement solutions, and treasury products and services. Acting in concert with the HKSAR government's policy to promote the launch of measures to support local SMEs, it introduced the Special SME Loan Scheme which features an express approval process, in order to alleviate pressure on SMEs' operations and working capital. The Group also collaborated extensively with HKMC Insurance Limited to launch the "90% Guarantee product" under the SME Financing Guarantee Scheme, which aims to increase access to financing for smaller-sized enterprises, businesses with relatively little operating experience as well as professionals seeking to set up their own practices. The Group optimised services for start-up enterprises by launching the "Business Lite" account service. This service simplifies account opening requirements and waives monthly charges and the minimum deposit balance requirement, with the aim of facilitating easier account opening for start-up enterprises and overseas enterprises investing in Hong Kong. In addition, the Group promoted BoC Bill, an integrated payment collection service, offering various common types of online and offline payment tools, and optimising functions to cater for different payment scenarios related to transportation, livelihood, public utilities payment and charity donations, to help merchants better cope with their daily operations, and became the first Chinese bank to connect to the MTR payment system. The Group joined hands with the Federation of Hong Kong Industries to organise the BOCHK Corporate Environmental Leadership Awards Programme for the fifth consecutive year, with the aim of encouraging commercial customers operating in Hong Kong and the Pan-Pearl River Delta region to promote green operations, recognise environmental pioneers and pursue sustainable growth. During the year, BOCHK received the SME Banking Services Award at the Financial Services Awards of Excellence 2019, as well as Guangdong-Hong Kong-Macao Greater Bay Area Commercial Banking Services and Business Financial Services awards at the SME Partner Awards of Excellence 2019, both organised by *Hong Kong Economic Journal*. BOCHK also won the Best SME's Partner Gold Award 2019 from Hong Kong General Chamber of Small and Medium Business.

Promoting business development in Southeast Asia and the Greater Bay Area and giving full play to its synergistic advantages

The Group accelerated the improvement of its regional management capabilities, established a regional relationship manager system with a focus on high-value customers, and continued to promote the integrated management of customer development and project marketing in order to drive the collaborative development of its Southeast Asian entities. It continued to acquire major "Belt and Road" related projects, Chinese "Going Global" enterprises, large corporates and family-owned enterprises in Southeast Asia and successfully participated in a number of major infrastructure projects in the region. It further integrated competitively proven products and services from Hong Kong into its Southeast Asian entities' local franchises, to help them expand into the local mainstream markets and establish business cooperation with global and regional large corporates. During the year, the Group actively supported official thematic activities to promote economic and trade cooperation by assisting and participating in the arrangement of diplomatic activities such as the Belt and Road Forum for International Cooperation and the China International Import Expo, organised by the Chinese government. This had the effect of enhancing BOCHK's brand image and business development in Southeast Asia. In order to capture the enormous business opportunities arising from the development of the Guangdong-Hong Kong-Macao Greater Bay Area, the Group continued to strengthen its collaboration with BOC's entities in the Greater Bay Area. It established an integrated marketing and services system and increased support for key regions and target customers, with a view to providing a full range of financial services to support the mutual access of infrastructures within the Greater Bay Area and boosting the development of corporates within the area's technological innovation sector.

Constantly enhancing products and services to fully improve customer experience

The Group continuously upgraded its integrated service capabilities in Hong Kong, the Greater Bay Area and Southeast Asia so as to provide customers with various scenario-based integrated service solutions. It also accelerated the regional development of its key businesses, including cash pooling, treasury centre, cash management and trade finance. Dedicated to its customer-centric philosophy, the Group bolstered the development of online and digitalised services and launched the Global Transaction Banking Platform, so as to enhance customer experience and improve customer satisfaction. During the year, the Group established "eTrade Connect", a brand-new trade finance platform in Hong Kong which connects to the trade finance platform of the People's Bank of China, in a bid to encourage fintech innovation and diversification in the development of cross-border financial products. In recognition of its excellent and highly professional services, BOCHK was named Best Transaction Bank in Hong Kong for the second time and Best Cash Management Bank in Hong Kong for the fifth time by *The Asian Banker*. BOCHK was also awarded Hong Kong Domestic Trade Finance Bank of the Year and Hong Kong Domestic Cash Management Bank of the Year (for the sixth consecutive year) by *Asian Banking & Finance*.

Continuously developing custody and trustee businesses and launching issuer services

The Group's custody business captured opportunities from the Chinese government's respective mutual market access policies, "Going Global" enterprises and the development of the Greater Bay Area. It effectively responded to market challenges and constantly strengthened its cooperation with local and overseas institutions. By devising customised service solutions, it helped clients to resolve operational pain points in both over-the-counter and exchange-traded securities investments. Both total assets under custody and the asset size of Bond Connect reached new peaks. For the second consecutive year, BOCHK was awarded Bond Connect Top Custodian by the Bond Connect Company Limited. As at the end of 2019, the Group's total assets under custody amounted to HK$1,266.9 billion, an increase of 15.3% from the prior year-end. During the year, the Group also demonstrated its commitment to broadening its service range by launching a brand-new product platform, offering corporate trust and agency services to debt securities issuers. This new platform received a satisfactory market response and provided issuance, lodgment and payment services for a number of central bank notes.

As at the end of 2019, the AUM of MPF assets of BOCI-Prudential Trustee Limited ("BOCI-Prudential Trustee") had recorded a steady increase of 18.0% from the end of the previous year. In support of the initiative promoted by the HKSAR government, BOCI-Prudential Trustee launched the Tax Deductible Voluntary Contributions scheme as scheduled, and made innovative technological improvements to its MPF services, with (i) launch of a brand new website design and AI chatbot service to improve customer experience, (ii) incorporation of facial and fingerprint recognition features in its MPF App to safeguard the security of online MPF accounts, and (iii) introduction of "BOCPT My Choice e-Onboarding", a new application to streamline the MPF application process. In an effort to open up new business opportunities with large multinational asset management firms, BOCI-Prudential Trustee optimised the business processes and system functionalities of its unit trust fund business. Meanwhile, it constantly stepped up efforts to promote product innovation. It was among the first batch of fund administration service providers to introduce money market fund products that feature faster payment of redemption proceeds. BOCI-Prudential Trustee partnered with a number of overseas electronic fund settlement platforms to enhance its transfer agency capability, thus improving the efficiency and competitiveness of its unit trust fund service. In 2019, BOCI-Prudential Trustee received numerous accolades, including multiple awards at The 2019 MPF Awards, organised by MPF Ratings, an independent rating agency. It was awarded the Excellent Trustee & Management Services Award at the Financial Services Awards of Excellence 2019, organised by *Hong Kong Economic Journal*; the Best Group Over 3 Years – Overall, the Best Group Over 3 Years – Bond and a Fund Award at the Lipper Hong Kong Fund Awards 2019, organised by *Refinitiv*; as well as a number of fund awards at the Top Fund Awards 2019 organised by *Bloomberg Businessweek* and the Fund of the Year Awards 2019 organised by *Benchmark*.

TREASURY

Financial Results

Treasury recorded a profit before tax of HK$12,064 million, an increase of HK$511 million or 4.4% year-on-year. The growth was driven by an increase in net trading gain and net gain on other financial assets, which more than offset the decrease in net interest income.

Net interest income decreased by 21.9%, which was mainly attributable to the rise in funding costs. Net trading gain grew by HK$2,358 million, mainly attributable to an increase in net gain from foreign currency swap contracts, which was partially offset by the mark-to-market changes of certain debt securities investments and interest rate instruments caused by market interest rate movements. Net gain on other financial assets increased by HK$750 million, as a higher net gain was recorded from the disposal of certain debt securities.

Business Operations

Continuously enhancing trading and service capabilities

The Group deepened its research on market developments and actively responded to market changes. It closely monitored customer demand and optimised its business structure. By strengthening its team building and sharpening its service capabilities, the Group was able to grow its treasury business for customers. During the year, it enhanced business innovation and actively explored future developments in market ecology. It increased investment in systems and continued to enhance system functionalities in order to steadily improve its electronic trading capabilities. The Group also optimised internal control and conducted stringent control of business risks. In recognition of its treasury business performance, BOCHK was named Best Currency Swap Member and received the Opening Contribution Award from the China Foreign Exchange Trade System. It also received the Outstanding International Member Award from Shanghai Gold Exchange and was named Hong Kong Domestic Foreign Exchange Bank of the Year by *Asian Banking & Finance*. It was awarded Top Sellside Firms in Secondary Market – Government bonds – HKD, Top Arrangers – Investors' Choice for Primary Issues – Government bonds – HKD and Top Sellside Firms in Secondary Market – Corporate bonds – HKD by *The Asset*, 2019 Best Certificates of Deposit and Bond Issuance Dealer by China Development Bank Hong Kong Branch and Key Business Partner in FIC Market at the 6th Annual RMB Fixed Income & Currency Conference, organised by HKEX.

Consolidating advantages in banknotes business

The Group fully leveraged its strong franchise in banknotes business to ensure smooth and adequate supply, winning customers' trust and consolidating its competitive advantages and market position. It actively expanded its wholesale banknotes business globally, achieving satisfactory results in Southeast Asia through steady improvements in client base and business scale. By strengthening its cooperation with mainland financial institutions, the Group further improved the footprint of its foreign currency banknotes business in the Mainland. Meanwhile, it continued to strengthen its risk management and improve business processes, leading to continuous improvements in its overall business capabilities.

Leveraging its strong franchise in RMB Clearing Business to expand the depth and breadth of its cross-border business development

In April 2019, in order to aid the continuous improvement of the cross-border settlement business of Bond Connect, the Hong Kong Renminbi Clearing Bank upgraded its cross-border settlement function to support cross-border fund settlement for the negotiable certificate of deposit primary market under Bond Connect. This expanded the depth and breadth of the cross-border bond business and reinforced the leading position of BOCHK in the offshore RMB market. BOCHK received the Prize for Innovative Business Promotion (Bond Connect Business) 2018 from the Shanghai Clearing House in recognition of its contribution towards the cross-border settlement business of Bond Connect. During the year, Manila Branch was appointed as the RMB Clearing Bank of the Philippines. BOC Thailand assisted a Thai asset management company to become a Qualified Foreign Institutional Investor in RMB. Ho Chi Minh City Branch facilitated the first cross-border RMB entrusted settlement transaction in a non-border area of Vietnam, signifying a major breakthrough for Vietnamese RMB usage. Jakarta Branch cooperated with an Indonesian life insurance company to initiate and launch RMB insurance products in the local market. In addition, the Group completed BOCHK's first RMB settlement transaction in Myanmar.

Strengthening the Southeast Asia treasury business and advancing regional development

The Group actively pushed forward its regional development strategy and accelerated the implementation of a series of management tasks, achieving satisfactory progress. By continuously improving talent development in the treasury business, the Group enhanced its Southeast Asian entities' capabilities in dealing, marketing, products and risk management in order to solidify their business foundation and establish integrated regional service capabilities for its financial markets business. To support its Southeast Asian entities in acquiring target clients, the Group increased its efforts in market research and business development analysis, and actively captured market opportunities through its diversified range of products, distribution channels and professionalism. As a result, it successfully participated in a number of key projects in the region. Meanwhile, the Group's treasury business expanded further, with BOC Thailand completing its first RMB/Baht foreign exchange forward transaction, BOC Malaysia completing its first interest rate swap transaction, Ho Chi Minh City Branch completing its largest EUR/USD spot transaction since its establishment, and Manila Branch completing its first direct exchange between the RMB and Peso.

Capturing market opportunities and maintaining a proactive but risk-aware investment strategy

In response to market volatility, the Group continued to take a cautious approach to managing its banking book investments by closely monitoring market changes. It planned ahead and actively sought investment opportunities to enhance return while remaining alert to risk. During the year, the Group adjusted its investment portfolio in order to respond to changes in interest rates and achieve solid returns.

Achieving steady growth in asset management business and proactive expansion in product offerings

In 2019, BOCHK Asset Management Limited ("BOCHK AM") actively captured market opportunities and achieved further expansion on many fronts. As a result, both the investment performance of its products and its own profitability reached historic highs. As at the end of 2019, its AUM had grown more than 20% compared to the previous year-end. During the year, BOCHK AM promoted innovation in fund products and launched new public funds, including the BOCHK All Weather Belt and Road Bond Fund and the BOCHK All Weather Greater Bay Area Strategy Fund. The latter is the first bond fund in Hong Kong to adopt a Greater Bay Area investment theme and the first public fund in the world to provide a Macau Pataca currency share class. As a result, it was awarded Most Innovative New Fund Award – Hong Kong 2019 by *International Finance*. BOCHK AM also launched private bond funds with fixed maturities so as to meet client needs. It deepened business relationships with existing clients and further strengthened its sales network. It also continued to collaborate with BOC's entities in the Mainland and the Group's Southeast Asian entities to expand its cross-border and Southeast Asian businesses. In addition, BOCHK AM set up a wholly-owned subsidiary company in Qianhai, Shenzhen in 2019. This company is registered with the Asset Management Association of China as a private equity and venture capital fund manager.

Insurance

Financial Results

In 2019, the Group's insurance segment achieved a gross premium of HK$25,366 million, up 21.5% year-on-year. The standard new premium was HK$13,806 million, an increase of 49.4% year-on-year. The value of new business was HK$1,280 million, an increase of 10.2% year-on-year. Profit before tax was HK$701 million, down 25.2% year-on-year, which was mainly attributable to the increase in insurance reserve caused by the drop in market interest rates. This decrease was, however, partially offset by increased fair value gain on invested assets and higher net interest income.

Business Operations

Advancing product innovation and strengthening service support

In support of the tax deductible Voluntary Health Insurance Scheme ("VHIS") and Qualified Deferred Annuity Policy promoted by the HKSAR government, BOC Life joined the first batch of insurers in introducing relevant products to the market in April 2019, including the BOC Life Standard VHIS, BOC Life Deferred Annuity (Fixed Term) and BOC Life Deferred Annuity (Lifetime), with a view to offering products with protections that better meet customers' needs. During the year, the iTarget 3 Years Savings Insurance Plan was simultaneously launched on BOCHK's mobile and internet banking platforms for the first time, while the iProtect 10 Years Insurance Plan was launched on BOCHK's mobile banking platform. Both of these products provide customers with a simple and convenient application service, and received encouraging responses from the market. In addition, BOC Life launched Forever Glorious ULife Plan II and Luminous Prime ULife Plan to improve service support for high-end customers, thus enhancing the value of new business and long-term profitability.

Introducing proactive applications of insurtech to improve customer experience

In 2019, BOC Life launched a Live Chat service that enables customers to be redirected to customer service ambassadors via its official Facebook page, WeChat Official Account and corporate website, as well as introducing a Digital Sales Assistant in its customer service centre, thus allowing customers to make enquiries easily and simply. The addition of policy binding and policy information functions to the WeChat Official Account further strengthened BOC Life's customer service support and communications. BOC Life also launched a smart self-service kiosk service during the year, with the inaugural Life Insurance Self-Service Counter kiosk installed at the BOCHK China Hong Kong City Branch in Tsim Sha Tsui, thus fostering interactions with visitors from the Greater Bay Area.

Maintaining market leadership in life insurance and winning recognition for high-quality services

The Group maintained its leading position in Hong Kong's life insurance business and remained the market leader in the RMB insurance business. In recognition of its service quality and professional image, BOC Life received a number of local and regional awards, including the Outstanding Insurance Business – Annuity Award (Hong Kong China) in the 2019 RMB Business Outstanding Awards, jointly organised by Metro Finance and Hong Kong Ta Kung Wen Wei Media Group; the GBA Insurance Award 2019 (HK Region): Outstanding Customer Services Award (Life Insurance) from Metro Finance; the Award for Innovative Management in Financial Industries: Gold Stevie® Winner and Award for Innovation in Human Resources Management, Planning & Practice: Gold Stevie® Winner presented by the Asia-Pacific Stevie® Awards; the Financial Services Awards of Excellence 2019 – Life Insurance from the *Hong Kong Economic Journal*; the Customer Service Excellence Award: Customer Service Counter Team – Merit Award from the Hong Kong Association for Customer Service Excellence; and the Cross Border Insurance Services – Excellence and Annuity Plan – Excellence award in *Bloomberg Businessweek*'s Financial Institution Awards 2019.

Regional Business

Enhancing regional development strategies with the aim of building Southeast Asian entities into mainstream foreign banks in their local markets

Southeast Asia is a core focus of China's Belt and Road initiative, a market for RMB internationalisation and a target region for Chinese enterprises' "Going Global" efforts. The regional economy has remarkable development potential, supported by strong private consumption, infrastructure investment and ongoing foreign investment inflow. Meanwhile, the Regional Comprehensive Economic Partnership ("RCEP") is expected to bring more frequent trading activities and each country has pushed forward for digital transformation. The Group adopted BOC's development strategy and pushed forward its steadfast goal of building a top-class, full-service and internationalised regional bank. Accelerating its deployment in Southeast Asia, the Group crafted distinct development strategies for each of its Southeast Asian entities with the aim of gradually establishing differentiated competitive advantages, all with a focus on serving "Going Global" enterprises and large corporates in the region. The Group has developed a strong franchise and deep market-oriented management experience through a century of service in Hong Kong. Acting as the regional hub for Southeast Asia, the Group fully leveraged these advantages and introduced its competitively proven products and services, advanced technology and management, and professional talent teams from Hong Kong to Southeast Asian entities. By extending BOCHK's competitive advantages in funding, products, management and talent, the Group was able to upgrade its competitiveness and development quality in the Southeast Asia region. As a result of these regional integration efforts, Jakarta Branch ranked fifth in terms of overall operations in the Indonesian banking industry in 2018, as well as ranking first among all foreign banks in Indonesia. Moreover, Jakarta Branch was named the Best Foreign Bank of the Year in the 2019 Best Indonesian Business Awards.

Deepening Southeast Asian regional management and pushing forward integrated regional development

The Group successfully completed the acquisition of the Laos Business of BOC on 21 January 2019. BOCHK's Southeast Asian business now covers eight countries including Thailand, Malaysia, Vietnam, the Philippines, Indonesia, Cambodia, Laos and Brunei. The Group deepened the logical integration of the business mechanisms, systems, personnel and culture of its Southeast Asian entities. It accelerated the development of its regional management model of front, middle and back offices and steadily pushed forward the model's implementation and operation according to differentiated development and management strategies. The frontline units further refined their differentiated regional customer segmentation, business positioning and management models, so as to implement integrated operational and management objectives. The middle office units strengthened the regional risk control capabilities of the Southeast Asian entities, in order to effectively improve their management of credit risk, internal control and compliance and anti-money laundering capabilities. The back offices enhanced regional administration and resource support in order to improve the operational capacity and information technology system connectivity of the Group's back office operations across Southeast Asia.

The Group's Southeast Asian business achieved satisfactory results in 2019. Net operating income before impairment allowances of its Southeast Asian entities* was HK$2,807 million, a growth of 16.4% year-on-year. As at the end of 2019, deposits from customers and advances to customers amounted to HK$56,582 million and HK$50,354 million, up 18.3% and 26.7% respectively from the end of 2018. The non-performing loan ratio was 1.51%, up 0.38 percentage points from the end of 2018.

- Referring to the eight Southeast Asian entities, including BOC Thailand, BOC Malaysia, Ho Chi Minh City Branch, Manila Branch, Jakarta Branch, Phnom Penh Branch, Vientiane Branch and Brunei Branch. Net operating income before impairment allowances, the balance of deposits from customers and advances to customers represented the consolidated data which were prepared in accordance with Hong Kong Financial Reporting Standards. Non-performing loan ratio was calculated in accordance with local regulatory requirements.

Promoting regional risk management to achieve healthy and sustainable development, using the Three Lines of Defense and Take-the-Most-Stringent-Approach principle

The Group promoted regional risk management on the basis of the Three Lines of Defense and the Take-the-Most-Stringent-Approach principle. It established a uniform regional risk management system, actively pushed forward the full implementation of its risk management framework and stepped up the construction of the management structure and personnel deployment of its Southeast Asian entities. It comprehensively strengthened its Southeast Asian entities' management of credit risk, launched a credit rating system applicable to Southeast Asian regional customers, and strengthened Southeast Asian market research and investigation of high-value customers and major projects so as to improve approval efficiency. The Group also strengthened its management of internal control and compliance by closely monitoring market and liquidity risk in the Southeast Asian market, so as to enhance its Southeast Asian entities' ability to cope with emergencies and thus lay a solid foundation for high-quality development built on enhanced risk compliance and control capabilities. The Group continued to push forward the implementation of its Southeast Asian entities' anti-money laundering systems, conducting regional anti-money laundering measures under the most stringent regulatory requirements and enhancing communications with regulatory bodies so as to ensure compliance with the regulatory requirements of the HKMA and local authorities, and to operate in accordance with the standards stipulated by the Group.

Fintech and Innovation

Adhering to the concept of "technology-based and innovation-driven development", the Group kept pace with fintech development trends and made increased investments to expedite its transformation into a digital bank. By applying innovative technology such as big data, artificial intelligence ("AI"), blockchain, biometric technology, open API and robotic process automation ("RPA") in financial products, service processes, operations management and risk control, the Group was able to improve its service levels and continuously strengthen customer stickiness.

In line with the HKMA's preparations to bring Hong Kong into a new era of smart banking, the Group took the lead in launching an open API project in January 2019. At the same time, it promoted open API interfaces in accordance with the HKMA's framework, allowing third party service providers to provide real-time banking information to clients using BOCHK's open APIs. It continuously strengthened its biometric applications, with finger vein authentication coverage now extending to all of BOCHK's automated teller machines in Hong Kong as well as BOCHK iService. In addition, the Group introduced the Global Transaction Banking Platform, providing corporate clients with all-in-one regional integrated online banking services. The Group has built a new generation of mobile banking services, utilising enhanced voice search and wealth management functions and integrated with big data technology and personalisation elements. It also constructed an intelligent customer service platform to support pioneering uses of mobile phones and the Group's future business development. A blockchain-based system now covers approximately 85% of the Group's property valuation transactions, and RPA technology has been gradually introduced to handle middle and back office operational procedures, which effectively improved operational efficiency and reduced operational risks. It also completed Jakarta Branch's IT Applications On-shoring Project in Indonesia, the construction of a scaled-down overseas core banking system, the expansion of the production centre and the building of a new disaster recovery centre for Jakarta Branch. The Group is committed to continually reshaping and refining its business processes with a view to enhancing operational efficiency, improving customer experience and strengthening product innovation and service capabilities. It stepped up its efforts to promote innovative elements in its products, services and business models. With the formation of inter-departmental agile project teams, the Group was able to respond to market changes effectively, to undertake innovation-driven strategic research, and to deepen scenario-based applications of fintech, thereby enhancing its competitiveness. In addition, the Group is dedicated to fostering fintech talent. During the year, it hosted the BOCHK Hackathon 2019 and organised a series of workshops with the aim of encouraging young people to participate and promote innovation in Hong Kong's banking industry and to integrate technological innovations, such as artificial intelligence, the internet of things, natural language processing, cloud applications and big data, in the banking industry.

The Group optimised coverage of its integrated collection platform, BoC Bill, by providing comprehensive payment and settlement solutions such as QR code (including UnionPay QR code and FPS scanning code), contactless and traditional credit card transactions to different types of enterprises in Hong Kong. Its coverage has been extended to a vast number of retail outlets in Hong Kong, with the aim of pioneering a new era in payment behavior and assisting SMEs to enhance their competitiveness. At the same time, the Group continuously upgraded the functionalities of BoC Pay, the first mobile application provided by a bank to focus on payment solutions. BoC Pay now supports non-BOCHK customers to open smart payment accounts, and offers real-time redemption of bonus points for payment as well as friend referrals. Focusing on meeting customers' general livelihood needs, BoC Pay allows customers to scan and pay at a number of local merchants and to make daily payments through FPS in Hong Kong. It also supports UnionPay QR code payments to more than 15 million merchants in the Mainland, including more than 1 million merchants in the Greater Bay Area. During the year, both the total number of users and transaction volumes increased.

In recognition of its innovative achievements in technology and IT development, BOCHK received the 2018 Shenzhen Fintech Innovation Award – Third Prize and 2018 Shenzhen Fintech Initiatives Award – Third Prize, jointly organised by the HKMA and Shenzhen Municipal Financial Regulatory Bureau; the FinTech (Banking, Insurance & Capital Market) Silver Award in the Hong Kong ICT Awards 2019, organised by the Office of the Government Chief Information Officer of the Hong Kong SAR Government and various trade and industry organisations in Hong Kong; the Awards of Excellence – FinTech Bank in the Financial Services Awards of Excellence 2019 organised by *Hong Kong Economic Journal*, and Excellent Brand of Greater Bay Area FinTech Services in the Hong Kong Leaders' Choice 2019 organised by Metro Finance.

Launching a virtual bank

On 27 March 2019, Livi VB Limited ("Livi"), a joint venture company owned by BOC Hong Kong (Holdings) Limited ("the Company"), Jingdong Digits Technology Holding Co., Ltd. ("JD Digits") and Jardine Matheson Group ("Jardines"), was granted a banking licence by the HKMA to conduct virtual banking business. The Company, JD Digits (through its subsidiary JD New Orbit Technology (Hong Kong) Limited) and Jardines (through its subsidiary JSH Virtual Ventures Holdings Limited) have made a total joint initial investment of HK$2.5 billion, with shareholdings of 44%, 36% and 20% respectively.

The Group collaborated with JD Digits and Jardines to actively support preparations for Livi's business commencement, making satisfactory progress. In the retail banking business, Livi will target local offline retail outlets to provide convenient banking, inclusive banking and smart banking services. In the SME business, it will introduce supply chain financing services to provide SME customers with convenient and efficient financing services.

Outlook and Business Focus for 2020

The global economic outlook for 2020 remains uncertain, given it dependency on the future development of global trade tensions, the monetary policy stance of major central banks, and the impact of COVID-19. The International Monetary Fund forecasts that global economic growth will most likely dip below last year's levels. The US economy is expected to shift to a slower pace of expansion as the economic boost from a previous round of tax cuts has now faded. The Mainland will be affected by the outbreak of COVID-19 in the near term, but the trend of keeping a good momentum of steady growth over a mid- to longer term does not change. Despite uncertainties in the global trade and market environment, the Southeast Asian regional economy is expected to grow steadily, supported by strong private consumption, infrastructure investment and ongoing foreign investment inflow to the region's manufacturing sector.

Hong Kong's economic outlook is expected to be affected by China-US trade frictions, the increasingly accommodative monetary policies of major economies, and the downside risks facing the global economy. Hong Kong banking operations will be challenged by slowing economic growth, intensifying market competition and increasing downward pressure on net interest margin. Nevertheless, Hong Kong possesses unique advantages and will continue to play a vital role in the reform and opening-up of the new era in the Mainland. Major national strategies, including the steadily progressing development plan for the Guangdong-Hong Kong-Macao Greater Bay Area and the acceleration of mainland capital account liberalisation, will provide more development opportunities for the banking industry in Hong Kong. In addition, the HKMA's seven measures to drive industry transformation towards a new era of smart banking, plus initiatives to promote green and sustainable finance, will create favourable conditions for the business development of Hong Kong banks. The HKSAR government's 2019 Policy Address put forward more than 220 specific measures with a focus on addressing people's livelihood issues, including land supply and housing policies, as well as arrangements for cooperation between Guangdong and Hong Kong and the nurturing of young talent in the technology sector. This will create a solid foundation for the long-term development of Hong Kong and provide long-term business opportunities for the banking industry.

In view of the opportunities and challenges ahead, the Group remains committed to "Building a Top-class, Full-service and Internationalised Regional Bank" by actively responding to market changes, adhering to prudent risk management and actively developing core businesses, so as to achieve healthy and sustainable development in each of its businesses. In addition, the Group will build a sustainable culture that delivers greater value for all stakeholders and integrate that culture into each of its business segments.

The Group will remain committed to developing the local market, cultivating agility in product innovation through digital transformation, adopting fintech solutions to enhance market responsiveness and building an innovative digital bank while always adhering to its customer-centric philosophy. At the same time, with the aim of expanding its customer base and comprehensively enhancing customer experience and satisfaction, the Group will integrate its banking services into corporate and personal customers' ecosphere through the provision of scenario-based financial services, diversified services and featured services. In addition, the Group will capture opportunities arising from the Chinese government's 16 new measures on the Guangdong-Hong Kong-Macao Greater Bay Area, with a focus on facilitating people's needs for livelihood convenience and cross-border financial services and on assisting Hong Kong's professionals to expand their businesses in the Greater Bay Area and increase the competitiveness of their products and services. The Group will also seize opportunities from the newly-enacted FTA between Hong Kong and ASEAN, the implementation of various ASEAN countries' economic strategies and the imminent ratification of the RCEP, in order to accelerate the expansion of key products to its Southeast Asian entities, deepen the development of RMB-related business, and enhance the quality and efficiency of its regional development in a comprehensive manner.

The outbreak of the COVID-19 since early January 2020 has taken a phased toll on the economy, and thus likely has impacted, to a certain extent, the Group's asset quality and returns from certain businesses. The magnitude of the COVID-19 impact depends on the progress of prevention and containment of the epidemic, its duration and the implementation of related economic measures. The Group will continuously and closely monitor the developments of COVID-19, evaluate and proactively address its impact on the Group's financial position and performance. As of the date of this report, such evaluation is still in progress.

Credit Ratings

As at 31 December 2019	Long-term	Short-term
Standard & Poor's	A+	A-1
Moody's	Aa3	P-1
Fitch	A	F1+

Risk Management

Banking Group

Overview

The Group believes that sound risk management is crucial to the success of any organisation. In its daily operation, the Group attaches a high degree of importance to risk management and emphasises that a balance must be struck between risk control and business development. The principal types of risk inherent in the Group's businesses are credit risk, market risk, interest rate risk, liquidity risk, operational risk, reputation risk, legal and compliance risk, and strategic risk. The Group's risk management objective is to enhance shareholder value by maintaining risk exposures within acceptable limits. The Group has a defined risk appetite statement approved by the Board, which is an expression of the types and level of risk that the Group is willing to take in a controllable way in order to achieve its business goals and to meet the expectations of its stakeholders. For details of the Group's risk management governance structure, please refer to Note 4 to the Financial Statements.

Credit risk management

Credit risk is the risk of loss that a customer or counterparty is unable to or unwilling to meet its contractual obligations. Credit risk exists in the trading book and banking book, as well as from on- and off-balance sheet transactions of the Group. It arises principally from lending, trade finance and treasury businesses. For details of the Group's Credit Risk Management, please refer to Note 4.1 to the Financial Statements.

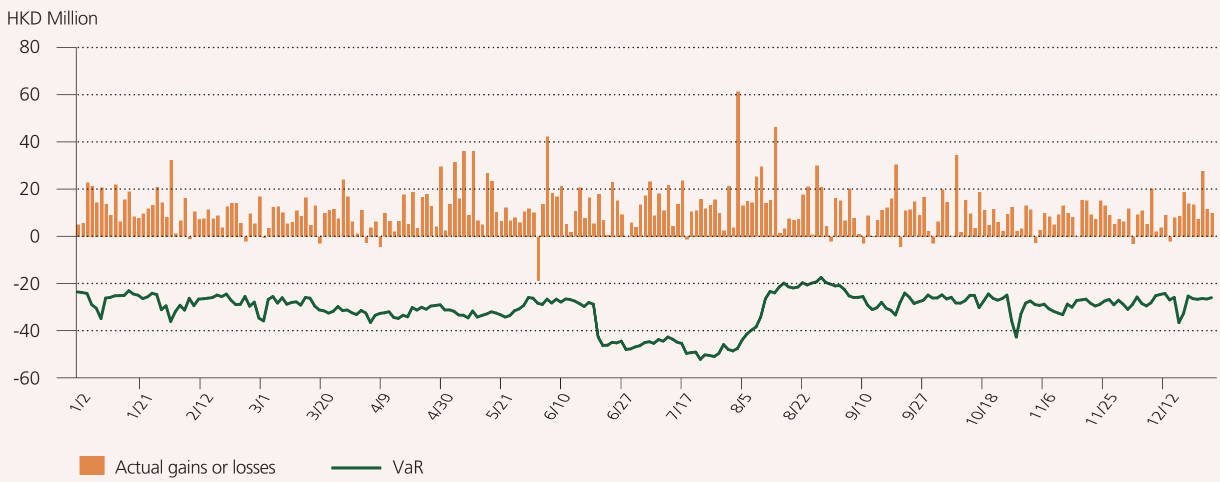
Market risk management

Market risk refers to the risk of loss arising from movements in the value of foreign exchange, interest rate, equity and commodity positions held by the Group due to the volatility of financial market price (foreign exchange rate, interest rate, equity price, commodity price). The Group adopts a moderate market risk appetite to achieve a balance between risk and return. For details of the Group's Market Risk Management, please refer to Note 4.2 to the Financial Statements.

The Group uses the VaR to measure and report general market risks to the Risk Committee ("RMC") and senior management on a periodic basis. The Group adopts a uniformed VaR calculation model, using a historical simulation approach and two years of historical market data, to calculate the VaR of the Group and its subsidiaries over a one-day holding period with a 99% confidence level, and sets up the VaR limit of the Group and its subsidiaries.

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

Daily Back-testing in 2019



There was no actual loss exceeding the VaR for the Group in 2019 as shown in the back-testing results.

Interest rate risk management

Interest rate risk means the risks to a bank's earnings and economic value arising from movements in interest rate and term structures of the bank's asset and liability positions. The Group's interest rate risk exposures are mainly structural. The major types of interest rate risk from structural positions are gap risk, basis risk and option risk. For details of the Group's Interest Rate Risk Management, please refer to Note 4.2 to the Financial Statements.

Liquidity risk management

Liquidity risk is the risk that banks may not be able to obtain sufficient and timely funding at a reasonable cost to meet their obligations as they fall due. The Group maintains a sound liquidity risk appetite to provide stable, reliable and adequate sources of cash to meet liquidity needs under normal circumstances or stressed scenarios; and to survive with net positive cumulative cash flow in extreme scenarios. For details of the Group's Liquidity Risk Management, please refer to Note 4.3 to the Financial Statements.

Operational risk management

Operational risk is the risk of loss resulting from inadequate or failed internal process, people and system, or from external events. The risk is inherent in every aspect of business operations and confronted by the Group in its day-to-day operational activities.

The Group has implemented the "Three Lines of Defence" for its operational risk management. All departments or functional units as the first line of defence are the first parties responsible for operational risk management, and carry out the duties and functions of self risk control in the process of business operation through self assessment and self enhancement. The Legal & Compliance and Operational Risk Management Department ("LCO"), together with certain specialist functional units in relation to operational risk management within the Group, including the Human Resources Department, Information Technology Department, Corporate Services Department, Financial Crime Compliance Department, Financial Management Department, Treasury and General Accounting & Accounting Policy Department (collectively known as "specialist functional units"), are the second line of defence. They are responsible for assessing and monitoring the operational risk conditions in the first line of defence, and providing them with guidance. The LCO, being independent from the business units, is responsible for assisting the Management in managing the Group's operational risk, including the establishment and review of the operational risk management policy and framework, designing the operational risk management tools and reporting mechanism, and assessing and reporting the overall operational risk position to the Management and RMC. Specialist functional units are required to carry out their managerial duties of the second line of defence with respect to some specific aspects of operational risk and its related issues. Besides taking charge of operational risk management in their own units, these units are also required to provide other units with professional advice/training in respect of certain operational risk categories and to lead the group-wide operational risk management. Group Audit is the third line of defence which provides independent assessment to the effectiveness and adequacy of the operational risk management framework and is required to conduct periodic audit of the operational risk management activities of various departments or functional units within the Group regarding their compliance and effectiveness and to put forward recommendations for remedial actions.

The Group has put in place an effective internal control process which requires the establishment of policies and control procedures for all the key activities. The Group adheres to the fundamental principle of proper segregation of duties and authorisation. The Group adopts various operational risk management tools or methodologies such as key risk indicators, self-assessment, operational risk events reporting and review to identify, assess, monitor and control the risks inherent in business activities and products, as well as purchase of insurance to mitigate unforeseeable operational risks. Business continuity plans are established to support business operations in the event of an emergency or disaster. Adequate backup facilities are maintained and periodic drills are conducted.

Reputation risk management

Reputation risk is the risk that negative publicity about the Group's business practices, whether genuine or not, will cause a potential decline in the customer base, or lead to costly litigation or revenue decrease. Reputation risk is inherent in other types of risk and every aspect of business operation and covers a wide spectrum of issues.

In order to mitigate reputation risk, the Group has formulated and duly followed its Reputation Risk Management Policy. The policy aims to identify and prevent reputation risk proactively at an early stage when an incident occurs. Since reputation risk is often caused by various types of operational and strategic issues that negatively impact the trust and perception of the Group, all operational and key risks identified are assessed through the established Key Control Self-Assessment framework, including risk assessment tools, to evaluate the severity of their impact on the Group, including the damage to reputation.

In addition, the Group has put in place a comprehensive framework to continuously monitor reputation risk incidents in the financial industry. This continuous monitoring enables the Group to effectively manage, control and mitigate any potential adverse impact from an incident. The Group also adopts robust disclosure practices to keep our stakeholders informed at all times, which helps build confidence in the Group and establish a strong public image.

Legal and compliance risk management

Legal risk is the risk that unenforceable contracts, lawsuits or adverse judgments may disrupt or otherwise negatively affect the operations or financial conditions of the Group. Compliance risk is the risk of legal or regulatory sanctions, financial losses or losses in reputation the Group may suffer as a result of its failure to comply with applicable laws and regulations. Legal and compliance risks are managed by the LCO, while the risks related to money laundering, terrorist financing and financial crimes including bribery and corruption are independently managed and monitored by the Financial Crime Compliance Department ("FCC"). Both LCO and FCC report directly to the DCE. As part of the Group's corporate governance framework, the policies for the management of legal and compliance risks, and money laundering, terrorist financing and financial crime compliance risks are approved by the RMC as delegated by the Board.

Strategic risk management

Strategic risk generally refers to the risks that may cause current or future negative impacts on the earnings, or capital or reputation or market position of the Group because of poor business decisions, improper implementation of strategies and inadequacies in the response to the changing market condition. The Board reviews and approves the strategic risk management policy. Key strategic issues have to be fully evaluated and properly endorsed by the senior management and the Board.

The Group regularly reviews its business strategies to cope with the latest market situation and developments.

Capital management

The major objective of the Group's capital management is to maximise total shareholders' return while maintaining a capital adequacy position in relation to the Group's overall risk profile. The Asset and Liability Management Committee ("ALCO") periodically reviews the Group's capital structure and adjusts the capital mix where appropriate to maintain an optimal balance among risk, return and capital adequacy.

To comply with the HKMA's requirements as stated in the Supervisory Policy Manual "Supervisory Review Process", the Group adopts the internal capital adequacy assessment process ("ICAAP") and reviews it annually. Based on the HKMA's guidelines on Pillar II, ICAAP has been initiated to assess the extra capital needed to cover the material risks not captured or not adequately captured under Pillar I, and therefore minimum Common Equity Tier 1 capital ratio, minimum Tier 1 capital ratio and minimum Total capital ratio are determined. Meanwhile, operating ranges for the aforementioned capital ratios have also been established which enable the flexibility for future business growth and efficiency of capital utilisation.

Stress testing

The Group supplements the analysis of various types of risks with stress testing. Stress testing is a risk management tool for estimating risk exposures under stressed conditions arising from extreme but plausible market or macroeconomic movements. These tests are conducted on a regular basis by the Group's various risk management units in accordance with the principles stated in the Supervisory Policy Manual "Stress-testing" published by the HKMA. The ALCO monitors the results against the key risk limits approved by the RMC. The Financial Management Department reports the combined stress test results of the Group to the Board and RMC regularly.

BOC Life

BOC Life's principal business underwrites long-term insurance business in life and annuity (Class A), linked long term business (Class C), permanent health (Class D), retirement scheme management category I (Class G) and retirement scheme management category III (Class I) in Hong Kong. Major types of risk arising from BOC Life's insurance business are insurance risk, interest rate risk, liquidity risk, credit risk, equity price risk and currency risk. BOC Life closely monitors these risks and reports to its Risk Management Committee on a regular basis. Furthermore, BOC Life has regular communication with the Group to ensure consistency with the Group's risk management strategy. The key risks of its insurance business and related risk control process are as follows:

Insurance risk management

BOC Life is in the business of insuring against the risk of mortality, morbidity, disability, critical illness, accidents and related risks. These risks are managed through the application of underwriting strategy, reinsurance arrangements and regular experience monitoring.

The underwriting strategy is intended to set premium pricing at an appropriate level that corresponds with the underlying exposure of the risks underwritten, and BOC Life's underwriting procedures include screening processes, such as the review of health condition and family medical history, to ensure alignment with the underwriting strategy.

The reinsurance arrangement transfers the insurance risk associated with the insurance contracts to the third party. It does not, however, discharge BOC Life's liability as the primary insurer. If a reinsurer fails to pay a claim for any reasons, BOC Life remains liable for the payment to the policyholder. The creditworthiness of reinsurers is considered by reviewing the reinsurers' financial strength prior to finalisation of any reinsurance contract. BOC Life directs its reinsurance placement policy and assesses the creditworthiness of all reinsurers and intermediaries by reviewing credit grades provided by rating agencies and other publicly available financial information. BOC Life also monitors the reinsurance counterparty risk exposure on an ongoing basis.

Uncertainty in the estimation of future benefit payments and premium receipts for long-term insurance contracts arises from the unpredictability of long-term changes in overall levels of mortality, morbidity and persistency. In this regard, BOC Life has conducted relevant experience studies and researches regularly to identify emerging trends. Results would be taken into account in pricing and underwriting management.

For details of the Group's Insurance Risk Management, please refer to Note 4.4 to the Financial Statements.

Interest rate risk management

An increase in interest rates may result in the depreciation of the value of BOC Life's investment assets. A decrease in interest rates may result in an increase in insurance liability and customer dissatisfaction due to decrease in returns. BOC Life manages the matching of assets and liabilities of its portfolios within an asset liability management framework that has been developed to achieve investment returns that match its obligations under insurance contracts; and to manage the adverse impact due to interest rate movement.

Liquidity risk management

BOC Life's liquidity risk is the risk of not being able to meet payment obligations as they fall due. BOC Life's asset and liability management framework includes stress tests and cash flow management to preserve liquidity to fulfil policy payment obligations from time to time.

Credit risk management

BOC Life has exposure to credit risk that a customer, debtor or counterparty will be unable to or unwilling to meet a commitment that they have entered into. Key areas to which BOC Life's insurance business is exposed include:

- Default risk associated with bonds, notes and counterparties
- Credit spread widening as a result of credit migration (downgrade)
- Reinsurers' share of insurance unpaid liabilities
- Amounts due from reinsurers in respect of claims already paid
- Amounts due from insurance contract holders
- Amounts due from insurance intermediaries

BOC Life manages credit risk by placing limits on its exposure to each investment counterparty and issuer. Such limits are subject to review by the Management at least once a year.

Equity price risk management

BOC Life's equity price risk refers to the risk of loss due to volatility of market price in equity securities, equity funds and private equity. BOC Life's asset and liability management framework includes managing the adverse impact due to equity price movement through stress test and exposure limit.

Currency risk management

BOC Life's currency risk refers to the risk of loss due to volatility of exchange rate. BOC Life's asset and liability framework includes managing the adverse impact due to exchange rate movement through stress test, exposure limit and risk limit.