5. Banking sector performance

The profitability of retail banks improved notably in the first half of 2023 compared with the same period in 2022, mainly contributed by higher net interest income amid the widening of net interest margins. The overall funding costs of retail banks continued to rise at a gradual pace in the first half of 2023 amid further US interest rate hikes. The classified loan ratio increased during the review period, but remained at a healthy level. Overall, the Hong Kong banking sector remained robust and resilient, underpinned by strong capital and liquidity buffers. In the period ahead, uncertainties on the future US interest rate path and the associated impact on local interest rates, concerns about the growth prospects for major advanced economies and the pace of economic recovery of the Mainland economy, and the lingering geopolitical risks will continue to pose challenges to the banking sector. Banks should carefully assess how the possible intensification of these risk factors could impact the asset quality of their loan portfolios.

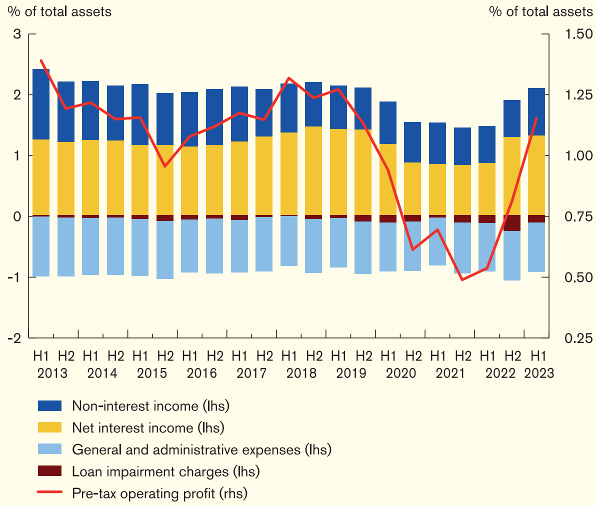
5.1 Profitability and capitalisation

Profitability

The aggregate pre-tax operating profit of retail banks[41] increased significantly by 120.5% in the first half of 2023 compared with the same period in 2022, while the return on assets rose notably to 1.15% from 0.53% (Chart 5.1). The improvement in profit was mainly contributed by increases in net interest income and income from investments held for trading.

Against the higher interest rate environment, the net interest margins of retail banks increased notably to 1.62% in the first half of 2023 from 1.03% a year ago (Chart 5.2).

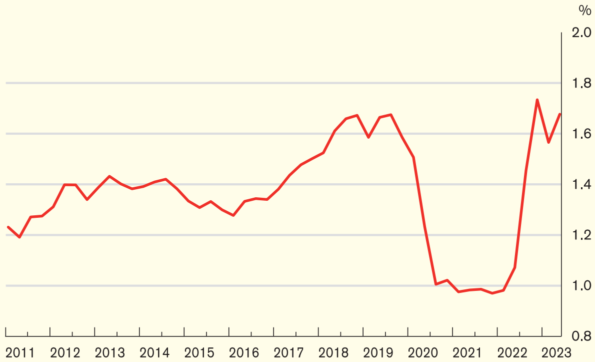
Chart 5.1
Profitability of retail banks



Note: Annualised semi-annual figures.
Source: HKMA.

[41] Throughout this chapter, figures for the banking sector relate to Hong Kong offices only, unless otherwise stated.

Chart 5.2
Net interest margin of retail banks

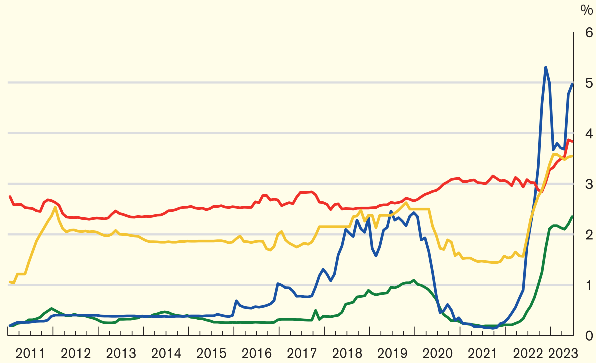


Note: Annualised quarterly figures.
Source: HKMA.

During the review period, HKD interbank interest rates hovered in a wider range driven by seasonal factors. In particular, the three-month Hong Kong Interbank Offered Rate (HIBOR) saw a notable decline by 128 basis points (bps) in the first quarter of 2023 after reaching a high level of 4.99% at the end of 2022. However, it rebounded to 4.97% at the end of June 2023 after the US interest rate hike in May (blue line in Chart 5.3).

On the retail front, the HKD deposit funding cost increased as more current and savings deposits switched to term deposits, and many banks raised their savings deposit rates along with the corresponding rise in Best Lending Rate (BLR) by 12.5 bps after the US Federal Reserve (Fed) rate hike in May 2023. Reflecting the development for wholesale and retail funding costs, the composite interest rate (a measure of the average cost of HKD funds for retail banks) increased by 24 bps over the past six months, reaching 2.35% in June 2023 (green line in Chart 5.3).

Chart 5.3
Interest rates

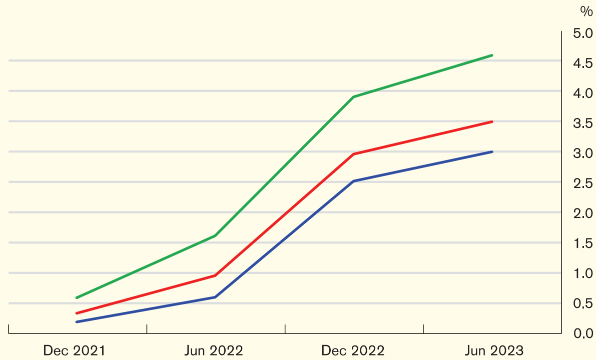


- Composite interest rate (a, c)
- 3-month HIBOR (a)
- Average mortgage rate for BLR-based mortgages (b)
- Average mortgage rate for HIBOR-based mortgages (b)

Notes:
(a) End-of-period figures.
(b) Period-average figures for newly approved loans.
(c) Since June 2019, the composite interest rate has been calculated based on the new local "interest rate risk in the banking book" (IRRBB) framework. As such, figures from June 2019 onwards are not strictly comparable with those of previous months.
Sources: HKMA and staff estimates.

More broadly, the overall HKD and USD funding cost for licensed banks in Hong Kong increased by 53 bps in the first six months of 2023 (red line in Chart 5.4).

Chart 5.4
Hong Kong dollar and US dollar funding costs of licensed banks



- Funding cost by deposits
- Market-based funding cost
- Overall funding cost

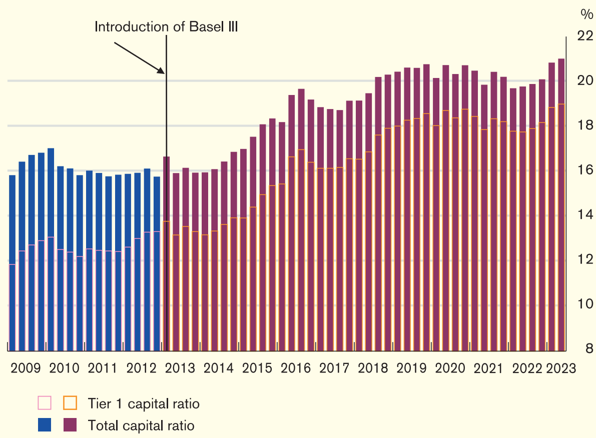
Note: Since June 2019, licensed banks not exempted from the new local IRRBB framework report under the new framework, while exempted licensed banks continue to report under the existing interest rate risk exposure framework. The overall funding cost has been calculated as the weighted averages of the respective funding costs for these two groups of licensed banks. As such, figures from June 2019 onwards are not directly comparable with those of previous periods.
Source: HKMA.

Looking ahead, while the higher interest rate environment would benefit banks' earnings, the future improvement in net interest income may be capped by the upward pressures in funding costs and lower loan demands. In addition, heightened uncertainties in the external environment may continue to cloud the profitability outlook. In particular, as a "high for longer" interest rate environment may be one possible scenario in advanced economies, the tighter global financing conditions for a longer period, and the associated negative impacts on global economic growth might worsen borrowers' debt repayment abilities. This could increase banks' loan loss provisions and thus weigh on profitability.

Capitalisation

Capitalisation of the Hong Kong banking sector continued to be strong and well above minimum international standards. The consolidated total capital ratio of locally incorporated authorized institutions (AIs) stood at a high level of 21.0% at the end of June 2023 (Chart 5.5), well above the international minimum requirement of 8%. The Tier 1 capital and the Common Equity Tier 1 (CET1) capital ratios were 19.0% and 17.0%, respectively. In addition, the non-risk-based Leverage Ratio[42] (LR) of locally incorporated AIs recorded a healthy level of 8.0% at the end of June 2023, exceeding the statutory minimum of 3%.

Chart 5.5
Capitalisation of locally incorporated AIs



Notes:
1. Consolidated basis.
2. With effect from 1 January 2013, a revised capital adequacy framework under Basel III was introduced for locally incorporated AIs. The capital ratios from March 2013 onwards are therefore not directly comparable with those up to December 2012.

Source: HKMA.

5.2 Liquidity and interest rate risks

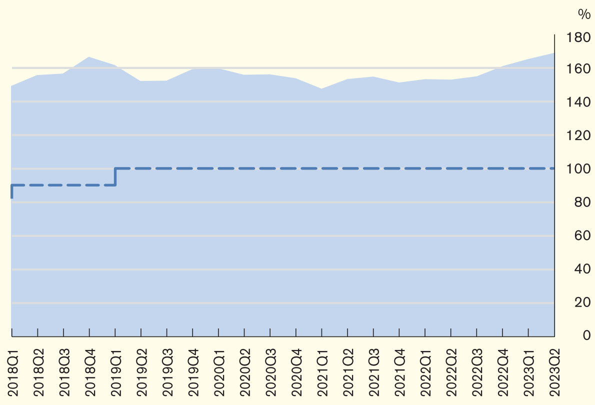
Liquidity and funding

The liquidity positions of the banking sector, as measured by the Basel III Liquidity Coverage Ratio (LCR)[43], remained sound during the review period. The average LCR of category 1 institutions rose to 169.8% in the second quarter of 2023 from 161.8% in the fourth quarter of 2022 (Chart 5.6), staying well above the statutory minimum requirement of 100%. The average Liquidity Maintenance Ratio (LMR) of category 2 institutions was 63.8% during the same period, also well above the statutory minimum requirement of 25%.

[42] The Basel III non-risk-based LR requirement acts as a "backstop" to restrict the build-up of excessive leverage in the banking sector. For details, see Banking (Capital) Rules (Cap. 155L).

[43] The Basel III LCR requirement is designed to ensure that banks have sufficient high-quality liquid assets to survive a significant stress scenario lasting 30 calendar days. In Hong Kong, AIs designated as category 1 institutions adopt the LCR; while category 2 institutions adopt the LMR. For details, see the HKMA's Supervisory Policy Manual (SPM) LM-1, "*Regulatory Framework for Supervision of Liquidity Risk*".

Chart 5.6
Liquidity Coverage Ratio

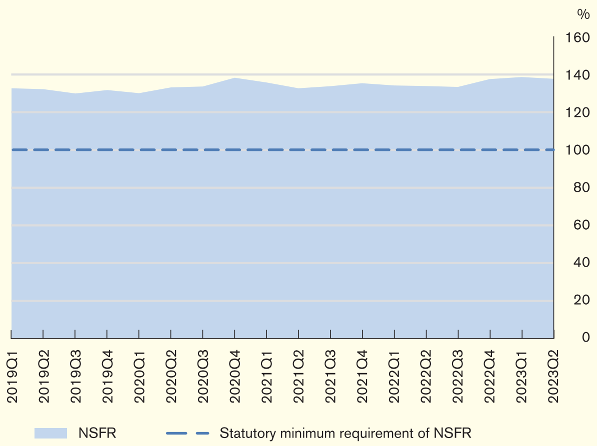


Notes:
1. Consolidated basis.
2. Quarterly average figures.
Source: HKMA.

The latest ratios of the Net Stable Funding Ratio (NSFR)[44] requirement also reflected a stable funding position of AIs. The average NSFR of category 1 institutions remained at a high level of 137.6% in the second quarter of 2023 (Chart 5.7), well above the statutory minimum requirement of 100%. The average Core Funding Ratio (CFR) of category 2A institutions also stayed at a high level of 154.0%, exceeding the statutory minimum requirement of 75%. The strong liquidity buffers and stable funding positions of AIs suggest that the Hong Kong banking sector is well positioned to withstand liquidity shocks.

[44] The Basel III NSFR requires banks to maintain a stable funding profile in relation to the composition of their assets and off-balance-sheet activities. In Hong Kong, category 1 institutions are required to comply with the NSFR; while category 2 institutions designated as category 2A institutions must comply with the requirements relating to the local CFR. For details, see Banking (Liquidity) Rules (Cap. 155Q).

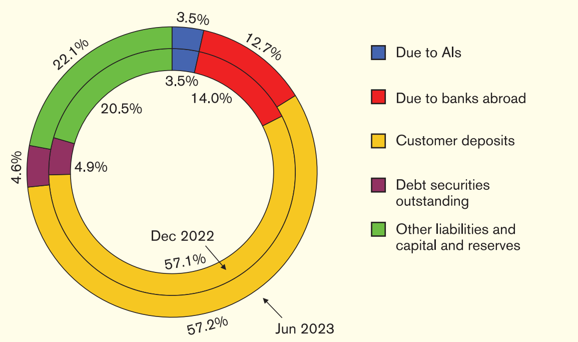
Chart 5.7
Net Stable Funding Ratio



Note: Consolidated basis.
Source: HKMA.

Customer deposits continued to be the primary source of funding for AIs, underpinning a stable funding structure in the banking system. At the end of June 2023, the share of customer deposits to all AIs' total liabilities stayed largely unchanged at 57.2%, compared to 57.1% six months ago (Chart 5.8).

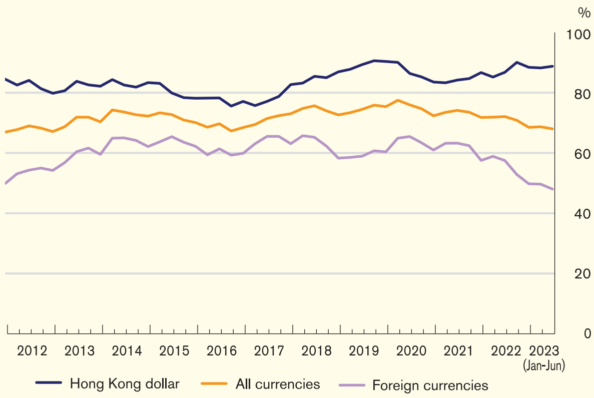
Chart 5.8
The liability structure of all AIs



Notes:
1. Figures may not add up to total due to rounding.
2. Figures refer to the percentage of total liabilities, including capital and reserves.
3. Debt securities comprise negotiable certificates of deposit and all other negotiable debt instruments.
Source: HKMA.

The average all-currency loan-to-deposit (LTD) ratio of all AIs decreased mildly from 68.5% at the end of 2022 to 68.0% at the end of June 2023 (Chart 5.9). The decrease in all currency LTD ratio is largely driven by a decrease in foreign currency portion, while the HKD LTD ratio was broadly unchanged. Specifically, the HKD LTD ratio and foreign currency LTD ratio were 88.7% and 48.0% at the end of June 2023 respectively, compared with 88.4% and 49.8% six months ago.

Chart 5.9
Average loan-to-deposit ratios of all AIs



Note: End-of-quarter figures.
Source: HKMA.

Interest rate risk

While the recent US banking turmoil in March 2023 raised concern over the impacts of a rapid tightening of monetary policy on banks' interest rate risk management, the latest assessment suggested that the interest rate risk exposure of banks in Hong Kong remained at a relatively low level in the second quarter of 2023.

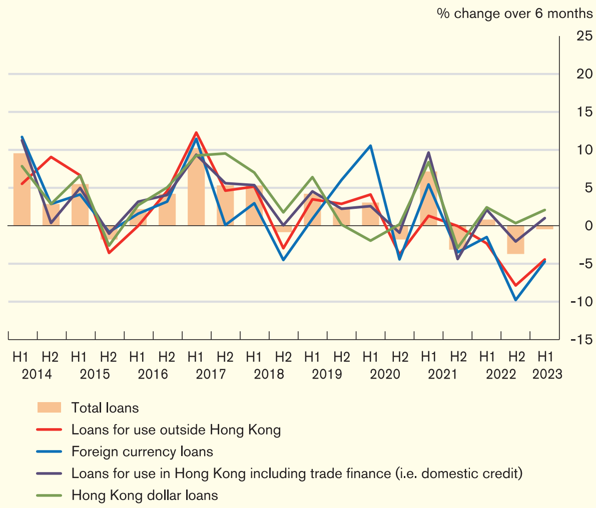
Under a hypothetical shock of an across-the-board 200-basis-point increase in HKD and USD interest rates[45], the economic value of locally incorporated licensed banks' interest rate positions is estimated to decrease by an amount equivalent to 1.87% of their total capital base at the end of June 2023.[46] The relatively moderate impact suggests that banks in Hong Kong should be well positioned to withstand interest rate shocks.

5.3 Credit risk

Overview

In part reflecting weaker loan demand amid higher borrowing costs and a weakened global economic outlook, total loans and advances of all AIs declined slightly by 0.5% during the first half of 2023 (Chart 5.10). The decline was mainly driven by a decrease in loans for use outside Hong Kong by 4.5% during the review period, which more than offset an increase in domestic loans (comprising loans for use in Hong Kong and trade financing) by 1.0%.

Chart 5.10
Loan growth



Note: Since December 2018, figures for loans for use in or outside Hong Kong have been restated to reflect AIs' reclassification of working capital loans. The reported percentage changes over six months for 2019 and onwards are calculated based on the reclassified loan data, while the historical percentage changes until the second half of 2018 are calculated based on the data without such reclassification.
Source: HKMA.

The credit demand is likely to stay weak in the near term. According to the results of the HKMA Opinion Survey on Credit Condition Outlook in June 2023, the share of surveyed AIs expecting loan demand to be lower in the following three months increased to 23% compared to 13% in the previous survey conducted six months ago (Table 5.A).

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45 The impact of the interest rate shock refers to its impact on the economic value of the banking and trading book, expressed as a percentage of the total capital bases of banks.

46 This estimation does not take into account the effect of any mitigating action by banks in response to the shock. The impact will be smaller if mitigating action is taken.

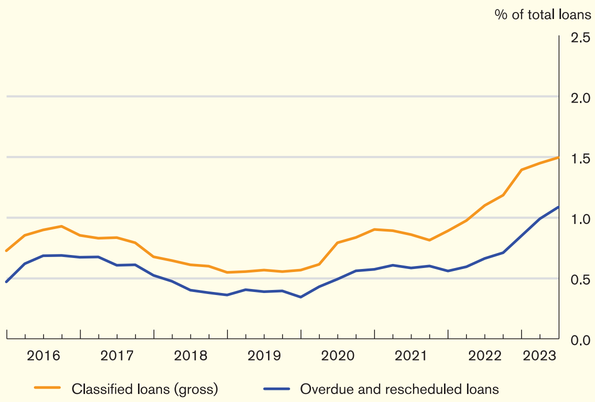
Table 5.A
Expectations of loan demand in the next three months

% of total respondents	Sep-22	Dec-22	Mar-23	Jun-23
Considerably higher	0	0	0	0
Somewhat higher	20	27	37	20
Same	70	60	53	57
Somewhat lower	10	10	10	20
Considerably lower	0	3	0	3
Total	100	100	100	100

Note: Figures may not add up to total due to rounding.
Source: HKMA.

The asset quality of banks' loan portfolios deteriorated slightly. The gross classified loan ratio (CLR) of all AIs rose to 1.50% in the end of June 2023 from 1.39% at the end of 2022. Similarly, the ratio of overdue and rescheduled loans of all AIs also rose from 0.85% at the end of 2022 to 1.09% at the end of June 2023 (Chart 5.11). Despite the increase in CLR, the asset quality of the Hong Kong banking sector stayed healthy.

Chart 5.11
Asset quality of all AIs



Note: Classified loans are those loans graded as "sub-standard", "doubtful" or "loss".
Source: HKMA.

Household exposure[47]

Household debt grew by 2.2% in the first half of 2023, faster than the 0.7% increase in the second half of 2022, but slower than the 4.4% increase in both the first and second halves of 2021 (Table 5.B). A breakdown of the data shows that the growth of residential mortgage loans increased to 2.6% in the first half of 2023 due to the higher number of residential property transactions during the period, compared with the second half of 2022. Personal loans reverted to positive growth of 1.4% after contracting by 2.2% in the second half of 2022.

Table 5.B
Half-yearly growth of loans to households of all authorized institutions (AIs)

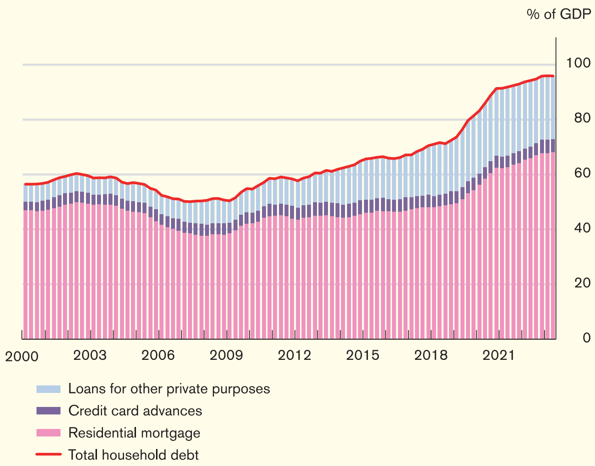
	2020		2021		2022		2023
(%)	H1	H2	H1	H2	H1	H2	H1
Residential mortgages	3.5	4.7	4.0	5.7	2.1	1.9	2.6
Personal loans	-2.4	2.2	5.3	1.6	-2.5	-2.2	1.4
of which:							
Credit card advances	-9.0	0.0	-0.4	8.1	-5.3	14.4	0.2
Loans for other private purposes	-1.1	2.6	6.4	0.4	-2.0	-5.1	1.6
Total loans to households	1.5	3.9	4.4	4.4	0.7	0.7	2.2

Source: HKMA.

The household debt-to-GDP ratio remained virtually unchanged at 95.8% in the first half of 2023 (Chart 5.12), compared to the second half of 2022. The contribution from growth in household debt (+2.1 percentage points), was completely offset by the expansion in Hong Kong's nominal gross domestic product (GDP) (-2.1 percentage points).

[47] Loans to households constitute lending to professional and private individuals, excluding lending for other business purposes. Mortgages account for a major proportion of household loans, while the remainder comprises mainly loans to private banking and wealth management customers secured by financial assets, credit card advances and unsecured personal loans. As of end-June 2023, household lending accounted for 35.5% of domestic lending.

Chart 5.12
Household debt-to-GDP and its components



Notes:
1. Only borrowings from AIs are covered.
2. GDP refers to the annualised GDP, which is the sum of the quarterly GDP in the trailing four quarters.
3. Since December 2018, the figure for household debt has been restated to reflect AIs' reclassification of working capital loans.

Source: HKMA.

It is noteworthy that the household debt-to-GDP ratio is a widely-used measure for gauging the financial soundness of households due to its simplicity. When interpreting this ratio, it is important to take into account that: (i) the denominator of the ratio uses nominal GDP as a proxy for the household income for ease of comparison across economies, and is thus not the actual income of the households with borrowings. Therefore, the household debt-to-GDP ratio does not reflect the actual debt servicing burden of households in the economy; and (ii) the numerator takes into account only the gross debts of households (instead of the net debts which take into account household assets).

As such, a full and objective assessment of the risks associated with household debt requires the consideration of other factors, including the actual debt servicing ratio and the asset side of the household balance sheet. In fact, the average debt servicing ratio of new mortgages remained at a healthy level of 39.8% in July 2023. Household net worth has also stayed at a high level. Specifically, both the net worth-to-liabilities ratio and the safe asset-to-liabilities ratio of Hong Kong's household sector remained high at 10.9 times and 2.91 times respectively in 2021 (Charts 5.13 and 5.14), which are much higher than those of most other developed economies. This suggests that Hong Kong's households, on aggregate, are financially sound and have a strong buffer to cushion potential financial and economic shocks.

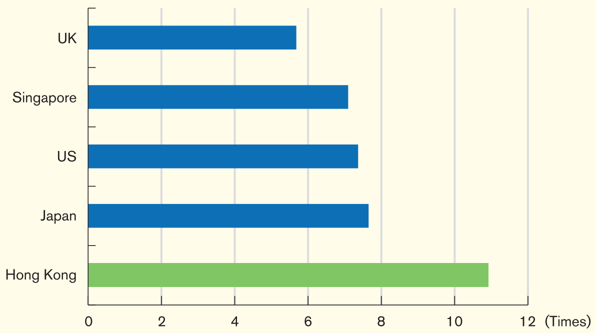
The HKMA has been closely monitoring household indebtedness and regularly collects data from the banks. The majority of the household debts are residential mortgage loans, which are governed by the macroprudential policy framework, as well as collateralised loans to wealth management customers against financial assets. Coupled with the fact that household net worth has stayed at a high level, the HKMA considers that the household balance sheet remains healthy and the associated credit risk is manageable.

For residential mortgages, the average loan-to-value (LTV) ratio and average debt servicing ratio of newly approved mortgage loans have stayed at healthy levels following several rounds of countercyclical macroprudential measures introduced by the HKMA since 2009. In July 2023, the HKMA adjusted the countercyclical macroprudential measures by increasing the maximum loan-to-value ratios for both residential and non-residential properties, after taking into account a range of factors including recent changes in market conditions.[48] For personal loans to wealth management customers secured by financial assets, the HKMA requires banks to adopt prudent and effective credit risk management measures on this type of business. Such measures include imposing a cap on LTV ratios for financial assets pledged as collateral, issuing prompt margin calls, and adopting forced liquidation mechanisms.

48 For details, see the press release "Countercyclical Macroprudential Measures for Property Mortgage Loans" on 7 July 2023 (https://www.hkma.gov.hk/eng/news-and-media/press-releases/2023/07/20230707-4).

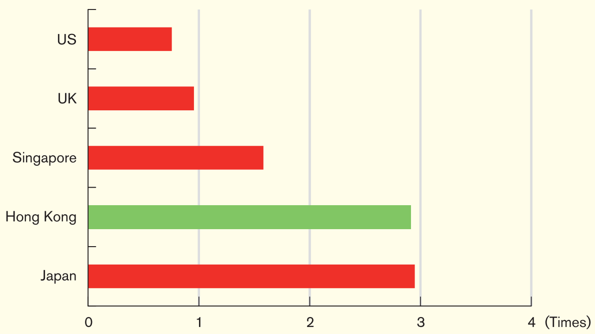
The HKMA also requires banks to adopt prudent underwriting standards for credit card advance and unsecured personal loan businesses. In reviewing credit applications, banks should understand borrowers' credit and financial conditions and carefully assess their repayment ability. As for post-lending, banks should implement effective monitoring that includes regular assessment of the asset quality of the loan portfolios.

Chart 5.13
Household net worth-to-liabilities ratio for selected economies



Note: Figures for Singapore, the UK and the US refer to those at end-2022, while figures for other economies (including Hong Kong) refer to those at end-2021.
Sources: Statistical agencies or central banks of selected economies, and HKMA staff estimates.

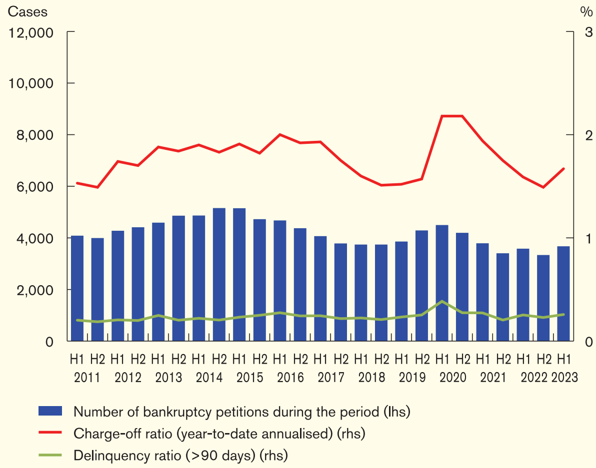
Chart 5.14
Safe assets-to-liabilities ratio for selected economies



Note: Safe assets comprise deposits, as well as currencies if data is available. In the case of Hong Kong, safe assets refer to deposits only. Figures for Singapore, the UK and the US refer to those at end-2022, while figures for other economies (including Hong Kong) refer to those at end-2021.
Sources: Statistical agencies or central banks of selected economies, and HKMA staff estimates.

For unsecured household exposure, while the associated credit risk has deteriorated slightly, it remained contained during the review period. The number of bankruptcy petitions increased in the first half of 2023 compared with the preceding six months. The year-to-date annualised credit card charge-off ratio increased from 1.49% in the fourth quarter of 2022 to 1.67% in the second quarter of 2023, while the delinquency ratio increased to 0.26% in June 2023 (Chart 5.15).

Chart 5.15
Charge-off ratio and delinquency ratio for credit card lending and bankruptcy petitions



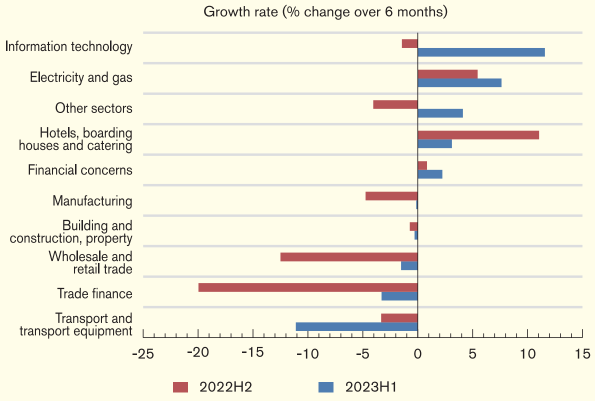
Sources: Official Receiver's Office and HKMA.

Corporate exposure[49]

Domestic corporate loans grew mildly by 0.4% during the first half of 2023, after registering a decline in the second half of 2022. Analysed by economic sectors, loans to information technology, electricity and gas sectors registered relatively larger growth in the first half of 2023. By contrast, loans to wholesale and retail trade, transport sectors and trade finance continued to decline during the review period (Chart 5.16).

[49] Excluding interbank exposure. At the end of June 2023, the share of corporate loans in domestic lending was 64.5%.

Chart 5.16
Growth in domestic corporate loans by selected sector

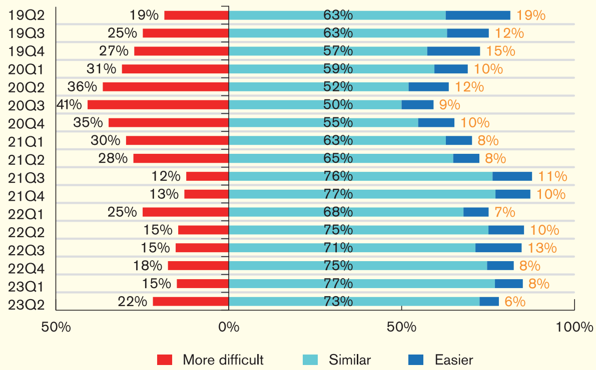


Source: HKMA.

The demand-side survey on the credit conditions of small and medium-sized enterprises (SMEs) showed that the credit conditions of SMEs remained largely stable with little signs of prevalent stress. SMEs' perception of banks' credit approval stance weakened in the second quarter of 2023, with 22% of respondents perceiving more difficult credit approval (Chart 5.17).[50]

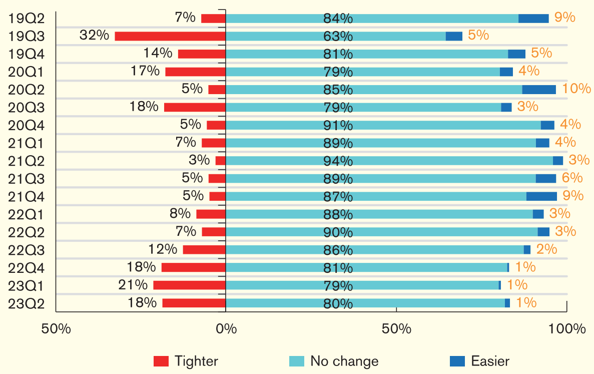
Of respondents with existing credit lines, 18% indicated a tighter stance by banks in 2023Q2, down from 21% registered in the previous quarter (Chart 5.18). As a tighter stance on existing credit lines denotes a range of possible measures or arrangements (e.g. reducing unused and used credit lines, raising the interest rate, imposing additional collateral requirements, or shortening loan tenor), respondents' indication of banks' stance on existing credit lines may not directly reflect banks' supply of credit to SMEs. The HKMA together with the Banking Sector SME Lending Coordination Mechanism (Mechanism) launched the Pre-approved Principal Payment Holiday Scheme (Scheme) in May 2020 to tide customers over the pandemic. Up to the end of July 2023, banks had granted over 119,000 applications for loan tenor extensions and other forms of relief to corporate customers, involving an aggregate amount of HK$1.2 trillion. As the pandemic has passed, the HKMA together with the Mechanism announced in July 2023 the commencement of an orderly exit from the Scheme when it expired at the end of July 2023. Meanwhile, the application period for the principal moratorium arrangement under the SME Financing Guarantee Scheme (SFGS) was further extended by three months to end in end-September 2023. The maximum principal moratorium period remained at 42 months.

Chart 5.17
SMEs' perception of banks' credit approval stance relative to six months ago



Note: Excluding respondents who answered "no idea / don't know".
Source: HKMA.

Chart 5.18
SMEs' reported change in banks' stance on existing credit lines



Note: The data covers only respondents with existing credit lines.
Source: HKMA.

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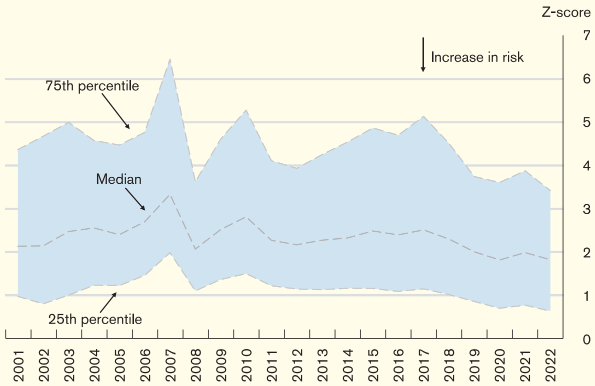
50 The perception of a more difficult credit approval stance may not necessarily reflect actual difficulties faced by SMEs in obtaining bank credit as the perception could be affected by a number of factors, such as media or news reports, business conditions, and opinions of relatives and friends.

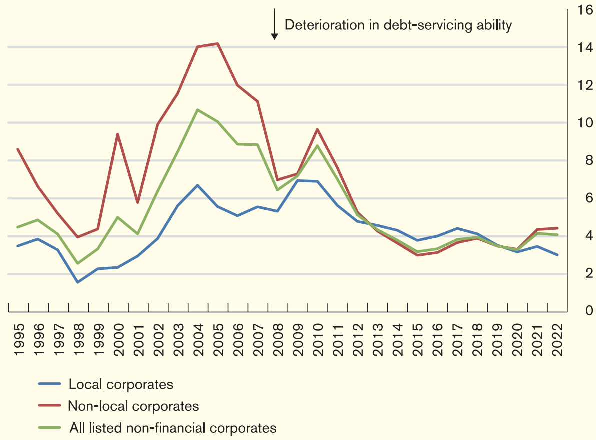
The financial health of listed corporates has shown signs of deterioration based on the latest available financial information.[51] Based on accounting data for all non-financial corporates listed in Hong Kong up to end-2022, the Altman's Z-score (a default risk measure for non-financial corporates based on accounting data) saw an across-the-board decline in 2022 (Chart 5.19). Their debt servicing ability, as indicated by the weighted average interest coverage ratio (ICR), also deteriorated mildly in 2022 (Chart 5.20).

Chart 5.19
Altman's Z-score of listed non-financial corporates in Hong Kong



Notes:
1. All non-financial corporates listed on the Hong Kong Stock Exchange are selected.
2. Figures are calculated based on information up to end-August 2023.
Source: HKMA staff calculations based on estimates compiled by Bloomberg.

Chart 5.20
Interest coverage ratio of listed non-financial corporates in Hong Kong

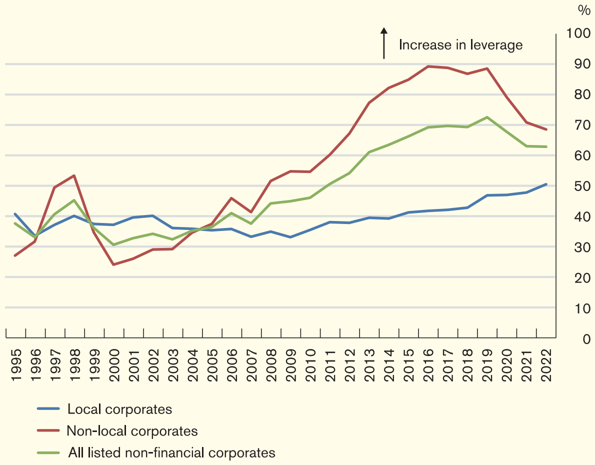


Notes:
1. Weighted average figures.
2. The ICR is calculated by dividing the earnings before interest and tax (EBIT) by total interest expenses. A lower value indicates deterioration of debt servicing ability.
3. All non-financial corporates listed on the Hong Kong Stock Exchange are selected. Local and non-local corporates refer to listed firms that are domiciled in and outside Hong Kong, respectively.
4. Figures are calculated based on information up to end-August 2023.
Source: HKMA staff estimates based on data from Bloomberg.

The weighted average debt-to-equity ratio, a common measure of corporate leverage, remained largely stable in 2022 for all listed non-financial corporates in Hong Kong (the green line in Chart 5.21). The leverage ratio for non-local corporates decreased slightly during 2022 (the red line in Chart 5.21), while that for local corporates increased moderately (the blue line in Chart 5.21).

[51] The analysis is based on financial disclosures of listed firms up to the financial positions of end-2022, as the 2023H1 financial positions are not available for most listed firms as of end-August 2023 due to a time lag in the availability of accounting data.

Chart 5.21
Leverage ratio of listed non-financial corporates in Hong Kong



Notes:
1. Weighted average figures.
2. The leverage ratio is defined as the ratio of debt to equity. A higher value indicates higher leverage.
3. All non-financial corporates listed on the Hong Kong Stock Exchange are selected. Local and non-local corporates refer to listed firms that are domiciled in and outside Hong Kong, respectively.
4. Figures are calculated based on information up to end-August 2023.

Source: HKMA staff estimates based on data from Bloomberg.

Looking ahead, the possible "high for longer" interest rate environment in major advanced economies may put pressure on corporates' debt repayment abilities, not only because of a higher cost of debt repayment, but also the weaker growth prospect under the scenario. Banks should therefore stay alert to the credit risk of their corporate exposures.

Mainland-related lending and non-bank exposures

The banking sector's total Mainland-related lending decreased by 3.0% to HK$4,388 billion (14.4% of total assets) at the end of June 2023, from HK$4,522 billion (14.9% of total assets) at the end of December 2022 (Table 5.C). Other non-bank exposures increased by 2.3% to HK$1,884 billion (Table 5.D). The gross CLR of Mainland-related lending of all AIs[52] increased to 2.40% at the end of June from 2.24% at the end of 2022.

[52] Figures cover AIs' Hong Kong offices and Mainland branches and subsidiaries.

Table 5.C
Mainland-related lending

HK$ bn	Sep 2022	Dec 2022	Mar 2023	Jun 2023
Mainland-related loans	4,714	4,522	4,551	4,388
Mainland-related loans excluding trade finance	4,388	4,254	4,247	4,107
Trade finance	326	268	303	281
By type of AIs:				
Overseas incorporated AIs	1,702	1,604	1,605	1,573
Locally incorporated AIs*	2,207	2,104	2,137	2,061
Mainland banking subsidiaries of locally incorporated AIs	805	814	809	754
By type of borrowers:				
Mainland state-owned entities	1,908	1,825	1,918	1,838
Mainland private entities	1,446	1,404	1,375	1,335
Non-Mainland entities	1,360	1,293	1,258	1,215

Notes:
1. * Including loans booked in Mainland branches of locally incorporated AIs.
2. Figures may not add up to the total due to rounding.

Source: HKMA.

Table 5.D
Other non-bank exposures

HK$ bn	Sep 2022	Dec 2022	Mar 2023	Jun 2023
Negotiable debt instruments and other on-balance sheet exposures	1,344	1,337	1,432	1,389
Off-balance sheet exposures	521	504	474	494
Total	**1,865**	**1,841**	**1,906**	**1,884**

Note: Figures may not add up to the total due to rounding.
Source: HKMA.

In view of the heightened uncertainty surrounding the pace of economic recovery in the Mainland economy as well as the risk associated with the property market downturn, banks should stay attentive to the credit risk management of their Mainland-related exposures.

Macro stress testing of credit risk

Because of the importance of corporate lending on banks' total loan exposures, Box 4 presents a refined framework for stress testing the credit risk of Hong Kong's banking sector and reports the latest assessment results. By incorporating the default risk and key financial performance ratios of Hong Kong corporate sector into the macro stress-testing framework, the refined framework would strengthen our capacity to obtain a clearer and fuller assessment on the resilience of the banking sector.

5.4 Systemic risk

Amid the improvement in domestic economic conditions in the first half of 2023, the systemic risk in the Hong Kong banking sector has remained contained. Nevertheless, several downside risk factors may continue to pose challenges to the Hong Kong banking sector going forward.

First, the uncertainty on the future US interest rate movements will remain a key risk factor to watch for. While there have been some signs of progress in combating inflationary pressure in the US in the first half of the year, it remains to be seen when the US inflation rate can reach the Fed's targeted level. If the core inflation rate in the US remains sticky, the "high for longer" interest rate environment may transmit to the region, including Hong Kong, which may exert pressure on borrowers' repayment ability.

In addition, the "high for longer" interest rate outlook and the associated tighter global financial conditions could weigh on global growth outlook and weaken external demand. Any further deterioration in the external economic environment, coupled with a slower pace of economic recovery in the Mainland economy, would put pressures on the earnings of corporates in the region. This, together with higher debt servicing costs, would put corporates' debt repayment abilities to the test. This, in turn, may pose challenges to banks' credit risk management for their corporate exposures.

Besides credit risk concerns, the rapid rise in global interest rates could also expose banks to significant interest rate risk as witnessed in the recent US banking turmoil in March 2023. Also, as learnt from the episode, the subsequent abrupt erosion of market confidence could trigger significant contagion risks to other jurisdictions even without strong direct linkages to the failed banks. Although the interest risk exposures of the Hong Kong banking sector have remained relatively low and the contagion risks stemming from the US regional bank failures have moderated recently, banks should still stay vigilant to these risks and maintain a prudent interest rate and liquidity management in view of the "high for longer" interest rate outlook.

Geopolitical risks will continue to warrant monitoring. Any intensification in geopolitical conflicts could further amplify the downside risks to the global economy.

That said, the robust capital and liquidity positions of the Hong Kong banking sector should provide strong buffers to withstand shocks arising from these risk factors.

The countercyclical capital buffer for Hong Kong

The countercyclical capital buffer (CCyB) is part of the internationally agreed Basel III standards and is designed to enhance the resilience of the banking sector against system-wide risks. This buffer can be reduced in times of a downturn, allowing banks to continue providing credit to support the real economy. The latest applicable jurisdictional CCyB for Hong Kong, announced on 13 July 2023, is 1.0%[53].

In setting the CCyB, the Monetary Authority considered a series of indicators (Table 5.E), including an "indicative buffer guide" (which is a metric providing a guide for the CCyB based on the gap between the ratio of credit-to-GDP and its long term trend, and between the ratio of residential property prices to rentals and its long term trend).[54] The setting of the CCyB for Hong Kong is, however, not a mechanical exercise and

[53] For details, see the Announcement of the CCyB to AIs on July 2023 (https://www.hkma.gov.hk/eng/key-functions/banking/banking-legislation-policies-and-standards-implementation/countercyclical-capital-buffer-ccyb/).

[54] The credit-to-GDP gap is the gap between the ratio of credit to GDP and its long-term trend, while the property price-to-rent gap is the gap between the ratio of residential property prices to rentals and its long-term trend.

the Monetary Authority will always consider a broad range of reference indicators ("Comprehensive Reference Indicators") and all relevant information available in addition to the indicative buffer guide.[55]

In the latest assessment based on the first quarter data of 2023, the indicative buffer guide signals a CCyB of 0%. The projection, based on all available data at the decision date, suggests the indicative buffer guide is likely to signal a CCyB of 0% when all relevant data for the second quarter of 2023 become available.

The information drawn from the series of Comprehensive Reference Indicators, along with all relevant information available at the time of the decision in June 2023, suggests that the latest economic indicators point to further stabilisation of economic activities in Hong Kong in the second quarter of 2023, but uncertainties about the global economic environment remain high. In view of the planned transition to a Positive Neutral CCyB[56] of 1% in 2024, the Monetary Authority considers that it is appropriate to keep the CCyB ratio at the current level for the time being and continue to monitor the situation closely.

Table 5.E
Information related to the Hong Kong jurisdictional CCyB

	8-Feb-23	4-May-23	13-Jul-23
Announced CCyB rate	1.0%	1.0%	1.0%
Date effective	08/02/2023	04/05/2023	13/07/2023
Indicative buffer guide	0.0%	0.0%	0.0%
Basel Common Reference Guide	0.8%	1.3%	0.0%
Property Buffer Guide	0.0%	0.0%	0.0%
Composite CCyB Guide	0.0%	0.0%	0.0%
Indicative CCyB Ceiling	None	None	None
Primary gap indicators			
Credit/GDP gap	4.6%	6.0%	-4.8%
Property price/rent gap	-5.5%	-10.7%	-6.7%
Primary stress indicators			
3-month HIBOR spread (percentage points)	0.43%	0.76%	0.49%
Quarterly change in classified loan ratio (percentage points)	0.12%	0.24%	0.06%

Note: The values of all CCyB guides, the Indicative CCyB Ceiling and their respective input variables are based on public data available prior to the corresponding review/announcement date, and may not be the most recent available as of the end of each quarter (refer to SPM CA-B-1 for explanations of the variables).

Source: HKMA.

Key performance indicators of the banking sector are provided in Table 5.F.

55 These include measures of bank, corporate and household leverage; debt servicing capacity; profitability and funding conditions within the banking sector and macroeconomic imbalances.

56 Under the Positive Neutral CCyB approach, authorities aim for a positive CCyB when risks are judged to be neither subdued nor elevated. Please refer to (https://www.bis.org/publ/bcbs_nl30.htm) for more information.

Table 5.F
Key performance indicators of the banking sector[1] (%)

	Jun 2022	Mar 2023	Jun 2023
Interest rates			
1-month HIBOR fixing[2] (quarterly average)	0.31	3.01	3.98
3-month HIBOR fixing (quarterly average)	0.88	3.82	4.28
BLR[3] and 1-month HIBOR fixing spread (quarterly average)	4.69	2.62	1.72
BLR and 3-month HIBOR fixing spread (quarterly average)	4.12	1.81	1.42
Composite interest rate[4]	0.47	2.13	2.35
		All AIs	
Balance sheet developments[5]			
Total deposits	-0.7	+0.5	-0.3
Hong Kong dollar	+0.1	+2.6	-0.9
Foreign currency	-1.5	-1.4	+0.2
Total loans	-0.4	+0.9	-1.3
Domestic lending[6]	+0.1	+1.4	-0.4
Loans for use outside Hong Kong[7]	-1.7	-0.4	-4.1
Negotiable instruments			
Negotiable certificates of deposit (NCDs) issued	+8.1	-2.0	-5.4
Negotiable debt instruments held (excluding NCDs)	-1.2	+3.8	+0.8
Asset quality			
As a percentage of total loans[8]			
Pass loans	97.11	96.57	96.58
Special mention loans	1.79	1.98	1.92
Classified loans[9] (gross)	1.10	1.45	1.50
Classified loans (net)[10]	0.63	0.83	0.84
Overdue > 3 months and rescheduled loans	0.66	0.99	1.09
Classified loan ratio (gross) of Mainland related lending[11]	1.50	2.25	2.40
Liquidity ratios (consolidated)			
Liquidity Coverage Ratio — applicable to category 1 institutions (quarterly average)	153.6	166.0	169.8
Liquidity Maintenance Ratio — applicable to category 2 institutions (quarterly average)	58.4	64.2	63.8
Net Stable Funding Ratio — applicable to category 1 institutions	133.8	138.6	137.6
Core Funding Ratio — applicable to category 2A institutions	147.7	153.5	154.0
		Retail banks	
Profitability			
Loan impairment charges as a percentage of average total assets (year-to-date annualised)	0.14	0.06	0.13
Net interest margin (year-to-date annualised)	1.03	1.56	1.62
Cost-to-income ratio (year-to-date)	53.9	38.2	38.8
		Surveyed institutions	
Asset quality			
Delinquency ratio of residential mortgage loans	0.05	0.06	0.07
Credit card lending			
Delinquency ratio	0.25	0.25	0.26
Charge-off ratio — quarterly annualised	1.88	1.60	1.76
— year-to-date annualised	1.59	1.60	1.67
		All locally incorporated AIs	
Capital adequacy (consolidated)			
Common Equity Tier 1 capital ratio	15.8	16.9	17.0
Tier 1 capital ratio	17.7	18.8	19.0
Total capital ratio	19.7	20.8	21.0
Leverage ratio	7.7	8.0	8.0

Notes:
1. Figures are related to Hong Kong offices only except where otherwise stated.
2. The Hong Kong Interbank Offered Rates are released by the Hong Kong Association of Banks.
3. With reference to the rate quoted by The Hongkong and Shanghai Banking Corporation Limited.
4. The composite interest rate is a weighted average interest rate of all Hong Kong dollar interest-rate-sensitive liabilities, which include deposits from customers, amounts due to banks, negotiable certificates of deposit and other debt instruments, and all other liabilities that do not involve any formal payment of interest but the values of which are sensitive to interest rate movements (such as Hong Kong dollar non-interest bearing demand deposits) on the books of banks. Further details can be found on the HKMA website.
5. Quarterly change.
6. Loans for use in Hong Kong plus trade finance.
7. Including “others” (i.e. unallocated).
8. Figures are related to all AIs’ Hong Kong offices, as well as locally incorporated AIs’ overseas branches and major overseas subsidiaries.
9. Classified loans are those loans graded as “substandard”, “doubtful” or “loss”.
10. Net of specific provisions/individual impairment allowances.
11. Figures are related to all AIs’ Hong Kong offices, as well as locally incorporated AIs’ Mainland branches and subsidiaries.

Box 4
Incorporating the non-financial corporate sector into the macro stress testing framework for banks' credit risk

Introduction

Stress testing of banks' credit risk is one important tool to assess the resilience of the banking sector under "extreme but plausible" shocks. A conventional macro stress testing framework generally focuses on the assessment of shocks to different macroeconomic or financial variables. However, as shown during the COVID-19 pandemic, earning and liquidity shocks to the non-financial corporate ("corporate") sector, together with the risk transmission to the broader economy through the macroeconomic channels, could expose banks to significant credit risk. To further improve the banking stability surveillance, this box presents a refined macro stress testing framework by incorporating the corporate sector into the analysis. Apart from facilitating the assessment of conventional macroeconomic stressed scenarios, the refined framework broadens the scope of analysis to investigate (i) how deterioration in the financial performance of Hong Kong's corporate sector may affect the default risk of this sector, and (ii) how the resulting impact on default risk of the corporates may be transmitted to the broader economy, and affect the credit risk of the Hong Kong banking sector.

The framework

Chart B4.1
Schematic view of the refined macro stress testing framework

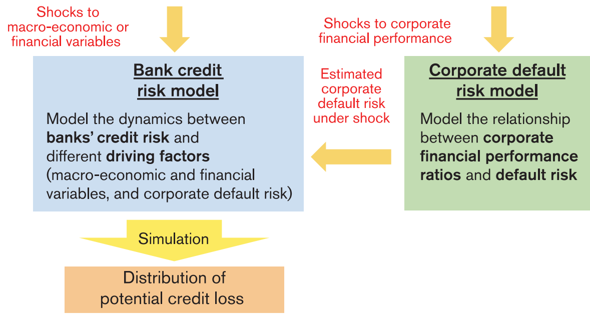


Chart B4.1 provides a schematic view of the refined macro stress testing framework. The left block (in light blue) is a bank credit risk model that captures the dynamics between the credit risk of retail banks in Hong Kong and key driving factors. These driving factors include the four major macroeconomic and financial variables captured by our previous macro stress testing framework, and a newly added default risk indicator of the Hong Kong corporate sector (Table B4.1). The empirical relationships between these driving factors are modeled using a vector autoregressive (VAR) model, such that the interaction between these factors can be captured in the analysis.

Table B4.1
Indicators in the bank credit risk model

Indicator	Definition
Banks' credit risk	Quarterly change in aggregated banks' specific loan loss provision to total loan ratio ("specific provision ratio") of retail banks in Hong Kong
Driving factors of banks' credit risk	
Domestic economic growth	Year-on-year percentage growth of Hong Kong's real GDP
Property price growth	Quarter-on-quarter percentage changes in real property price (Rating and Valuation Department nominal property price index deflated by CPI)
Interest rate	Quarterly change in real interest rate (3-month HIBOR minus inflation rate)
Mainland economic growth	Year-on-year percentage growth of Mainland real GDP
Corporate default risk	The median value of the quarterly change in the market-based one-year ahead probability of default (PD) for corporates listed in Hong Kong[57]

With the first four driving factors resembling those used in the previous framework, conventional macro-economic shocks can be analysed using the refined framework. The newly added driving factor, i.e. the median quarterly change in the probability of default for corporates listed in Hong Kong can facilitate the analysis of the impact of financial stress of corporates in Hong Kong.

One important feature of the refined framework is a satellite empirical model linking the default risk of corporates to key financial performance ratios (i.e. the corporate default risk model, the green block in Chart B4.1). The model is estimated using financial data of corporates listed in Hong Kong, covering the period from 2000 to 2022. Table B4.2 summarises the estimation results of the corporate default risk model. Specifically, the default risk of corporates listed in Hong Kong is estimated to increase with higher leverage (measured by the debt-to-asset ratio, DTA), lower profitability (measured by return on assets, ROA), and lower liquidity (measured by a net cash buffer, NCB). In addition, the estimation result indicates that when ROA and NCB are negative, the default risk would be higher. Overall, the estimation results are in line with economic intuition.

Table B4.2
Estimated relationships between corporates' financial ratios and default risk

Explanatory Variable	Estimated relationship
DTA	+
ROA	–
$ROA^{Negative}$	+
NCB	–
$NCB^{Negative}$	+
Size	–

Notes:
1. This table reports the signs of the estimated coefficients of a fixed effect panel regression model with corporate default risk as dependent variable and selected financial performance ratios as explanatory variables. The data sample covers 1,196 corporates listed in Hong Kong, with quarterly data spanning from 2000 Q1 to 2022 Q4.
2. Net cash buffer (NCB) is calculated as the difference between gross cash buffer (i.e. sum of cash and equivalent and total revenue) and cash outlay (i.e. sum of interest expense, other operating expense and short-term debt repayment).
3. $ROA^{Negative}$ and $NCB^{Negative}$ are dummy variables that equal to one when a corporate's ROA and NCB is negative in a particular quarter respectively, and zero otherwise.
4. All estimated relationships are statistically significant at 1% level.

Source: HKMA staff estimates.

Stress testing results

Macro-economic shocks

We first assess the potential credit loss under four conventional macro-economic shocks. The shocks are calibrated by referencing to the extreme episodes observed in the past:[58]

1. ***Hong Kong GDP shock:*** reductions in Hong Kong's real GDP by 3.2%, 3.6%, 9.3% and 9.4% year-on-year respectively in each of the four consecutive quarters starting from 2023 Q3;

[57] The one-year ahead PD is obtained from Bloomberg's DRSK module. It refers to the probability that a corporate will default over a one-year horizon from now. According to Bloomberg, the PD is derived from first estimating the distance-to-default (DTD) based on the Black-Cox model. The estimated DTD is then transformed into one-year ahead PD by applying a logistic regression of historical realised defaults against the DTD and additional risk factors such as profitability and insolvency.

[58] In particular, the Hong Kong GDP shock scenario replicates the significant economic downturn recorded from 2019 Q3 to 2020 Q2. The property price shock and interest rate shock scenarios resemble the movements in real interest rate and property prices during the Asian Financial Crisis, while the Mainland GDP shock scenario makes reference to the Mainland's economic slowdown in 2020 amid the COVID-19 pandemic.

2. ***Property price shock:*** Reductions in Hong Kong's real property price by an average of 12% in each of the four consecutive quarters starting from 2023 Q3;

3. ***Interest rate shock:*** a rise in real interest rates by 0.1, 0.9, 1.8 and 3.2 percentage points (ppts) respectively in each of the four consecutive quarters starting from 2023 Q3; and

4. ***Mainland GDP shock:*** an average year-on-year growth rate of 2% for Mainland real GDP in the four consecutive quarters starting from 2023 Q3.

Using 2023 Q2 as the current environment, we simulate the specific provision ratio over a two-year horizon (i.e., 2023 Q3 to 2025 Q2) under these scenarios using the Monte Carlo method.[59] Based on the estimated specific provision ratio, we further estimate the credit loss rate at the end of the stress horizon (i.e. 2025 Q2):

Table B4.3 reports the simulation results.[60] For comparison purpose, the table also includes a baseline scenario where no shock is applied. The results suggest that the average expected credit loss (as % of loan portfolio) under the four macroeconomic shocks are moderate, ranging from 0.95% (Interest rate shock and property price shock) to 1.37% (Hong Kong GDP shock).

[59] We adopt the same simulation procedure as used in J. Wong et al. (2006), "A framework for stress testing banks' credit risk", *Journal of Risk Model Validation*, Vol. 2(1), pages 3–23. We refer readers to this paper for details of the simulation procedure.

[60] While the same types of macro-economic shocks in our previous framework are considered under the refined framework, the credit loss estimates produced by the two frameworks are not directly comparable for two reasons. First, the stressed scenarios have been re-calibrated with reference to the more recent stress episodes where appropriate. Second, the inclusion of corporate default risk in the refined stress testing framework would capture fuller transmissions of macro-economic shocks through the corporate sector.

Taking into account tail risk, the Value-at-risk (VaR) at 99% confidence level (CL) of bank credit loss would increase noticeably in all four scenarios, ranging from 2.51% (Property price shock) to 3.42% (Hong Kong GDP shock).

Table B4.3
The mean and VaR statistics of simulated credit loss distributions under macro-economic shocks

Scenario	Estimated credit loss (% of the loan portfolio)	
	Mean	VaR at 99% CL
Baseline[1]	0.65	1.73
Stressed scenarios		
Hong Kong GDP shock[2]	1.37	3.42
Property price shock[3]	0.95	2.51
Interest rate shock[4]	0.95	2.52
Mainland GDP shock[5]	1.22	3.01

Notes:
1. No shock throughout the two-year stress period.
2. Reductions in Hong Kong's real GDP by 3.2%, 3.6%, 9.3% and 9.4% year-on-year respectively in each of the four consecutive quarters starting from 2023 Q3.
3. Reductions in Hong Kong's real property prices by an average of 12% in each of the four consecutive quarters starting from 2023 Q3.
4. A rise in real interest rates (HIBORs) by 0.1, 0.9, 1.8 and 3.2 ppts respectively in each of the four consecutive quarters starting from 2023 Q3.
5. An average year-on-year Mainland real GDP growth rate of 2% for the four consecutive quarters starting from 2023 Q3.

Shocks to the corporate sector

We next consider shocks to corporates' financial performance. Specifically, we consider a shock to corporates' liquidity by assuming that their short-term (ST) debts cannot be rolled over during the first year, while their revenue is also assumed to reduce by 50% year-on-year in each of the four consecutive quarters starting from 2023 Q3. This scenario simulates the extreme financial stress facing the corporate sector amid the COVID-19 pandemic.[61] Based on the estimation results of the corporate default risk model (Table B4.2), the combined earning and liquidity shocks would translate into a higher default risk for the Hong Kong corporate sector. Using the estimated default risk of the Hong Kong corporate sector under this stress scenario, we further simulate the credit loss rates of retail banks in Hong Kong using the bank credit risk model.

[61] In particular, the assumed revenue decline (50%) references the average year-on-year percentage change in the lowest 10th percentile of sampled corporates from 2020 Q1 to 2020 Q4.

Table B4.4 reports the distribution of simulated credit loss rates under this scenario. In particular, the results show that the potential credit loss under this scenario is comparable to those under conventional macro-economic shocks, with the average estimated credit loss and the VaR estimate at 99% CL being 1.13% and 2.74% respectively. The results indicate that corporate sector shocks would also be an important driver of banks' credit risk in Hong Kong.

Table B4.4
The mean and VaR statistics of simulated credit loss distributions under corporate shock

Scenario	Estimated credit loss (% of the loan portfolio)	
	Mean	VaR at 99% CL
Baseline[1]	0.65	1.73
Stressed scenario		
Corporate shock[2]	1.13	2.74

Notes:
1. No shock throughout the two-year stress period.
2. A shock to corporates' liquidity where all corporates' ST debts cannot be rolled over during the first year, together with a reduction in revenue for all corporates by 50% year-on-year in each of the four consecutive quarters starting from 2023 Q3.

Conclusion

This box presents a refined framework for stress testing the credit risk of Hong Kong's banking sector. Given that the corporate sector is one important part of the Hong Kong economy, shocks to the corporate sector or conventional macro shocks transmitting through the corporate sector could have important implications for credit loss of loan portfolios of banks in Hong Kong. By incorporating the Hong Kong corporate sector into the macro stress testing framework, the refined framework would strengthen our capacity to obtain a clearer and fuller assessment on the resilience of the banking sector.