5. Banking sector performance

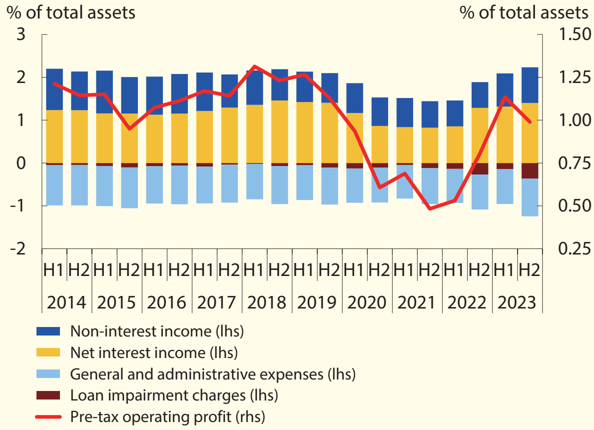
Retail banks registered higher profits in the second half of 2023 compared with the same period in 2022 mainly due to higher net interest income. However, partly reflecting subdued credit demand driven by higher borrowing costs and weak global growth prospect, total bank credits decreased moderately in the second half. The classified loan ratio (CLR) also increased during the second half of 2023, albeit remaining at a healthy level. Overall, the Hong Kong banking sector remained robust and resilient, underpinned by strong capital and liquidity buffers. Going forward, the Hong Kong banking sector is expected to face challenges from a number of risk factors arising from uncertainties over the future path of US monetary policy rate, global growth prospects, and geopolitical tensions. Banks should remain vigilant against the impacts of these risk factors on the asset quality of their loan portfolios.

5.1 Profitability and capitalisation

Profitability

The aggregate pre-tax operating profit of retail banks[56] increased further by 25.8% in the second half of 2023 compared with the same period in 2022, while the return on assets rose to 0.99% from 0.80% (Chart 5.1). The improvement in profit was mainly contributed by increases in net interest income and income from investments held for trading. This was partly offset by an increase in loan impairment charges.

Chart 5.1
Profitability of retail banks



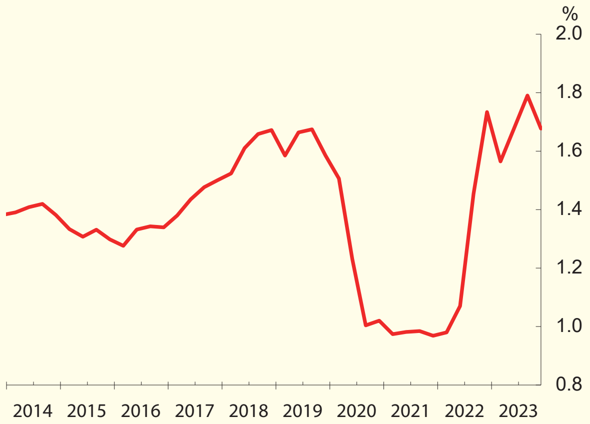
Note: Annualised semi-annual figures.
Source: HKMA.

With interest rates remaining at elevated levels during the second half, the net interest margin (NIM) of retail banks widened further to 1.73% compared with 1.59% for the same period in 2022 (Chart 5.2).

For 2023 as a whole, the aggregate pre-tax operating profit of retail banks increased notably by 62.1%, while the return on assets rose to 1.06% from 0.67% in 2022.

56 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

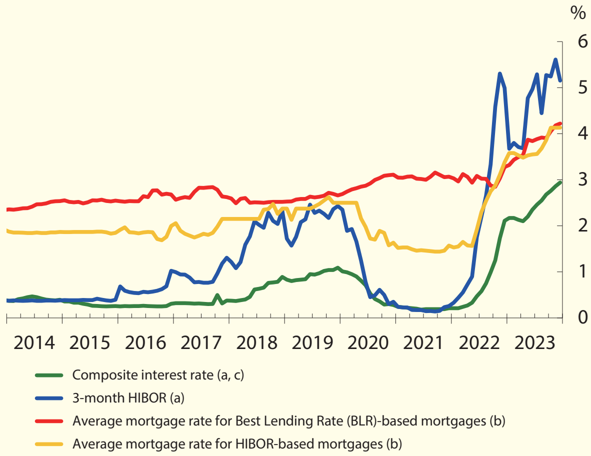


Note: Annualised quarterly figures.
Source: HKMA.

The HKD interest rates stayed at elevated levels in the second half of 2023. In the interbank market, the three-month Hong Kong Interbank Offered Rate (HIBOR) hovered around 5% throughout the second half, and stayed at 5.15% at the end of 2023 (blue line in Chart 5.3).

On the retail front, amid elevated HIBORs, banks were keen to compete for HKD time deposits by offering high time deposit rates. As depositors continued to substitute savings deposits with time deposits, this increased banks' overall deposit funding costs. Reflecting higher wholesale and retail funding costs, the composite interest rate (a measure of the average cost of HKD funds for retail banks) rose to 2.94% at the end of 2023 (green line in Chart 5.3).

Chart 5.3
Interest rates

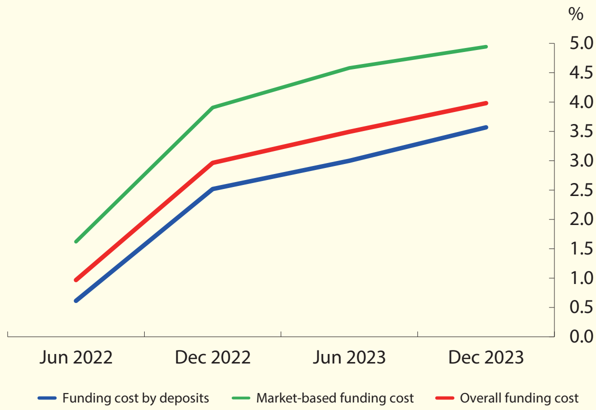


Notes:
(a) End-of-period figures.
(b) Period-average figures for newly approved loans.
(c) Since June 2019, the composite interest rate has been calculated based on the new local "interest rate risk in the banking book" (IRRBB) framework. As such, figures from June 2019 onwards are not strictly comparable 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 from 3.49% to 3.98% during the second half of 2023 (red line in Chart 5.4).

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



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.

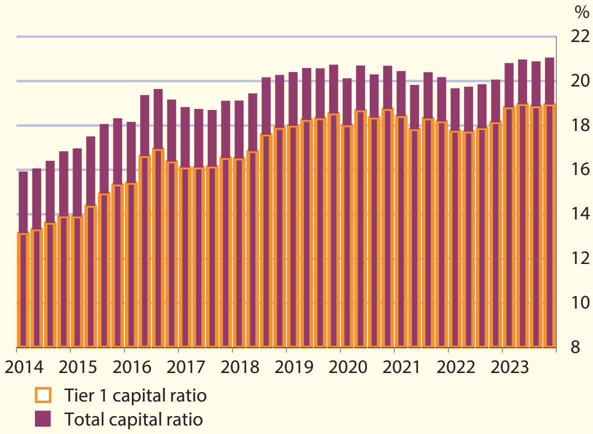
Source: HKMA.

Looking ahead, the profitability outlook of Hong Kong banks may be clouded by the uncertainties over the future path of the US monetary policy. In a "high for longer" interest rate scenario, the rising funding costs and subdued credit demand could weigh on banks' net interest income, as both loan volume and NIM may contract. Such a scenario may also weaken economic outlook, leading to lower corporate earnings and debt repayment abilities. The associated credit losses may further weigh on bank profitability.

Capitalisation

Capitalisation of the Hong Kong banking sector continued to be strong and well above international minimum standards. The consolidated total capital ratio of locally incorporated authorized institutions (AIs) stood at a high level of 21.1% at the end of 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 18.9% and 17.2%, respectively. In addition, the non-risk-based Leverage Ratio (LR)[57] of locally incorporated AIs recorded a healthy level of 7.9% at the end of 2023, exceeding the statutory minimum of 3%.

Chart 5.5
Capitalisation of locally incorporated AIs



Note: Consolidated basis.
Source: HKMA.

5.2 Liquidity and interest rate risks

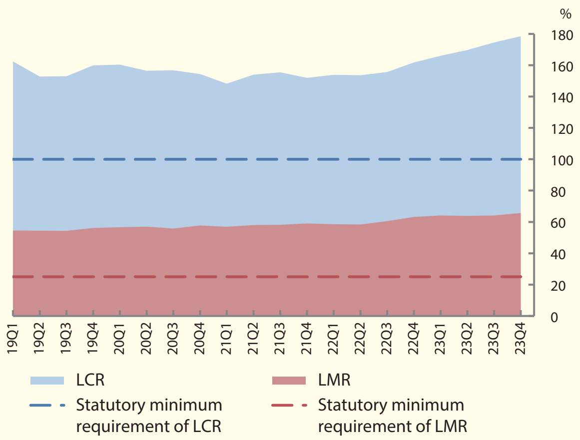
Liquidity and funding

The liquidity positions of the banking sector, as measured by the Basel III Liquidity Coverage Ratio (LCR),[58] remained sound during the review period. The average LCR of category 1 institutions and the average Liquidity Maintenance Ratio (LMR) of category 2 were 178.6% and 65.7% in the fourth quarter of 2023 respectively (Chart 5.6), staying well above their corresponding statutory minimum requirement of 100% and 25%.

[57] 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).

[58] 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*".

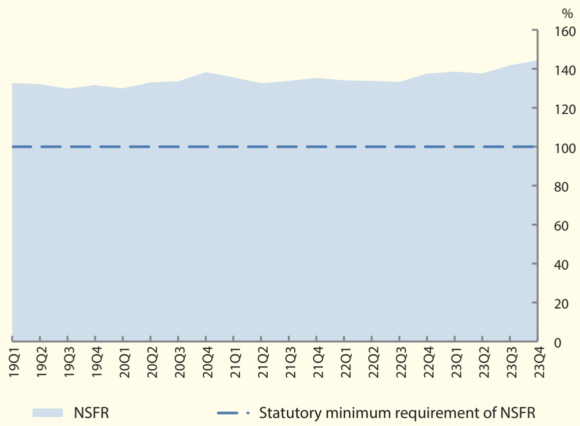
Chart 5.6
Liquidity Coverage Ratio and Liquidity Maintenance Ratio



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

Funding positions of AIs remained stable. The average Net Stable Funding Ratio (NSFR) of category 1 institutions remained at a high level of 144.4% in the fourth quarter of 2023 (Chart 5.7), well above the statutory minimum requirement of 100%. The average Core Funding Ratio of category 2A institutions also stayed at a high level of 169.4%, 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.

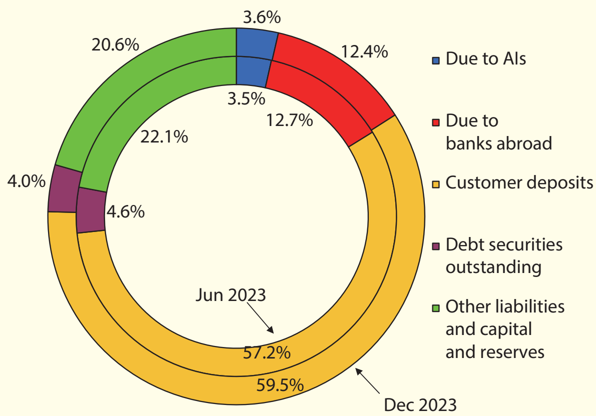
Chart 5.7
Net Stable Funding Ratio



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.[59] At the end of 2023, the share of customer deposits to all AIs' total liabilities increased to 59.5%, compared to 57.2% six months ago (Chart 5.8).

Chart 5.8
The liability structure of all AIs

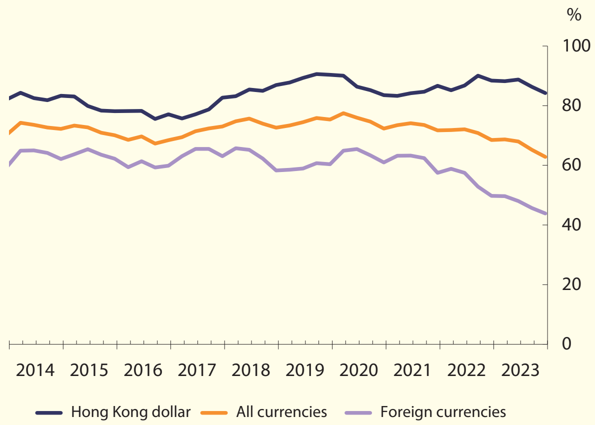


Notes:
1. Figures may not add up to total due to rounding.
2. Figures refer to the percentage of total liabilities, including capital and reserves.
3. Debt securities comprise negotiable certificates of deposit and all other negotiable debt instruments.
Source: HKMA.

[59] In addition, the stable funding profile of the Hong Kong banking sector can be further enhanced by the recent proposal in raising the protection limit of the Deposit Protection Scheme.

The average all-currency loan-to-deposit (LTD) ratio of all AIs dropped from 68.0% at the end of June 2023 to 62.8% at the end of 2023 (Chart 5.9). The decrease in the ratio was attributable to a decrease in total lending arisen from subdued credit demand, while total deposits increased during the same period. The HKD and foreign-currency LTD ratios declined to 84.2% and 43.9% at the end of 2023 respectively, compared with 88.7% and 48.0% six months ago.

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



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

Interest rate risk

The interest rate risk exposure of banks in Hong Kong remained at a relatively low level in the fouth quarter of 2023. Under a hypothetical shock of an across-the-board 200-basis-point increase in HKD and USD interest rates,[60] the economic value of locally incorporated licensed banks' interest rate positions is estimated to decrease by an amount equivalent to 1.83% of their total capital base at the end of December 2023.[61] The relatively moderate impact suggests that banks in Hong Kong should be well positioned to withstand interest rate shocks.

5.3 Credit risk

Overview

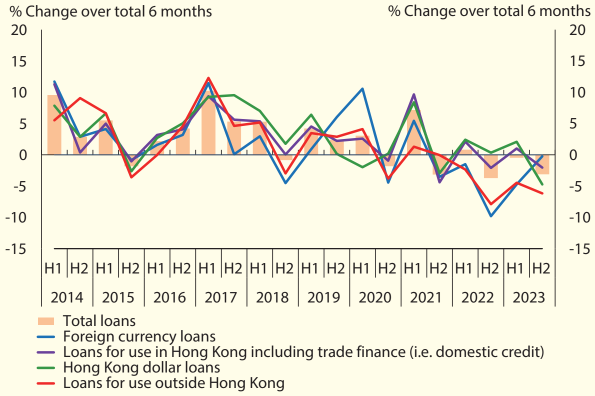
Against the background of higher borrowing costs, demand for bank credit continued to stay weak in the second half of 2023. Partly reflecting this, total lending of the banking sector contracted by 3.6% in 2023, after recording a 3.0% decrease in 2022.

On a half-yearly basis, total loans and advances of all AIs contracted by 3.1% in the second half of 2023 (Chart 5.10) driven by the decreases in both domestic loans (comprising loans for use in Hong Kong and trade financing) and loans for use outside Hong Kong. Domestic loans decreased by 2.0% after recording a 1.0% growth during the first half, while loans for use outside Hong Kong declined further by 6.2% after a 4.5% drop during the first half of 2023.

[60] 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.

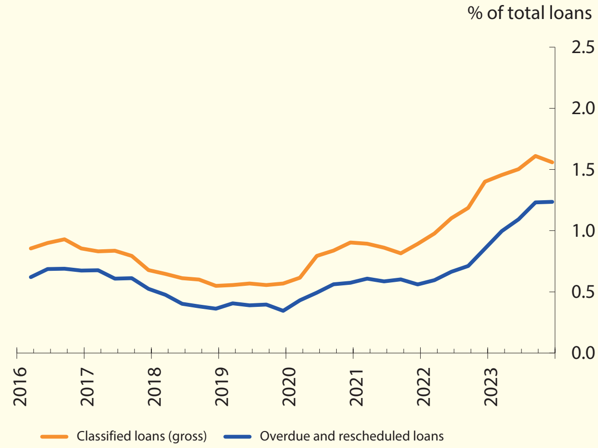
[61] This estimation does not take into account the effect of any mitigating action by banks in response to the shock. The impact will be smaller if mitigating action is taken.

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.

Chart 5.11
Asset quality of all AIs



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

The weak credit demand is expected to persist in the near future amid the higher borrowing cost environment. According to the results of the HKMA Opinion Survey on Credit Condition Outlook in December 2023, around 70% of the surveyed AIs expect the loan demand to be the same in the coming three months (Table 5.A).

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

% of total respondents	Mar-23	Jun-23	Sep-23	Dec-23
Considerably higher	0	0	0	0
Somewhat higher	37	20	20	17
Same	53	57	57	70
Somewhat lower	10	20	20	10
Considerably lower	0	3	3	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 in the second half of 2023. The gross CLR of all AIs rose to 1.56% at the end of December 2023 from 1.50% at the end of June 2023. Similarly, the ratio of overdue and rescheduled loans of all AIs also rose from 1.09% at the end of June 2023 to 1.24% at the end of December 2023 (Chart 5.11). Despite the slight increase in CLR, the asset quality of the Hong Kong banking sector stayed healthy.

Household exposure[62]

Household debt grew by 0.5% in the second half of 2023, visibly slower than the 2.2% and 0.7% increase in the first half of 2023 and second half of 2022 (Table 5.B). A breakdown of the data shows that the growth of residential mortgage loans moderated to 0.8% in the second half of 2023, given the lower number of residential property transactions. During the same period, personal loans reverted to a slight contraction of 0.3%, after increasing by 1.4% in the first half of 2023.

[62] 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. At the end of December 2023, household lending accounted for 36.4% of domestic lending. In this section, household debt is also referred to as loans to households.

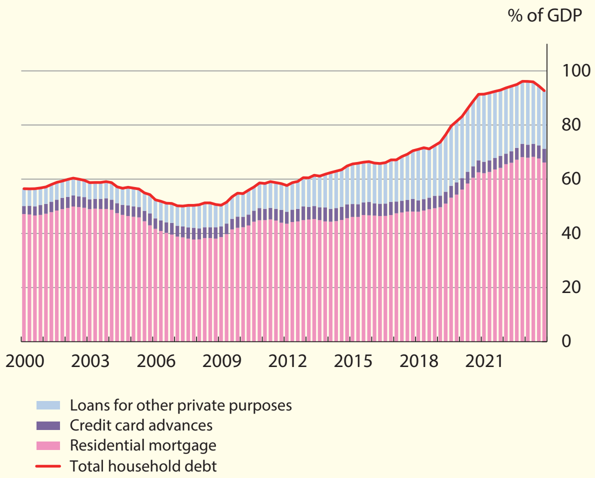
Table 5.B
Half-yearly growth of loans to households of all AIs

(%)	2020 H1	2020 H2	2021 H1	2021 H2	2022 H1	2022 H2	2023 H1	2023 H2
Residential mortgages	3.5	4.7	4.0	5.7	2.1	1.9	2.6	0.8
Personal loans	−2.4	2.2	5.3	1.6	−2.5	−2.2	1.4	−0.3
of which:								
Credit card advances	−9.0	0.0	−0.4	8.1	−5.3	14.4	0.2	10.5
Loans for other private purposes	−1.1	2.6	6.4	0.4	−2.0	−5.1	1.6	−2.6
Total loans to households	1.5	3.9	4.4	4.4	0.7	0.7	2.2	0.5

Source: HKMA.

The household debt-to-GDP ratio decreased to 92.7% in the second half of 2023 (Chart 5.12), from 95.9% in the first half of 2023. During this period, the expansion in Hong Kong's nominal gross domestic product (GDP) contributed 3.6 percentage points of the 3.2-percentage-point decrease in the household debt-to-GDP ratio, while the growth of household debt partially offset the decrease in the ratio by 0.4 percentage points.

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).

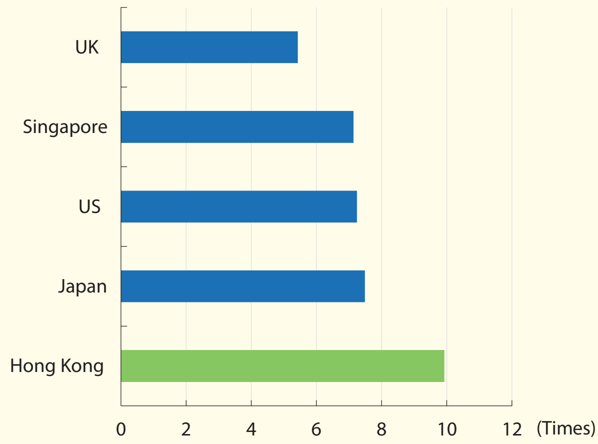
As such, a full and objective assessment of the risks associated with household debt requires the consideration of other factors, including the actual debt servicing ratio (DSR) and the asset side of the household balance sheet. In fact, the average DSR of new mortgages remained at a healthy level of 40.2% in January 2024. The household net worth has also stayed at a high level. Specifically, both the net worth-to-liabilities ratio and safe asset-to-liabilities ratio of Hong Kong's household sector remained high at 9.9 times and 2.9 times respectively in 2022 (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 DSR of newly approved mortgage loans have stayed at healthy levels following several rounds of countercyclical macroprudential measures introduced by the HKMA since 2009. After taking into account a range of factors including recent changes in market conditions, the HKMA adjusted the countercyclical macroprudential measures and other related supervisory requirements in February 2024, which included increasing the maximum LTV ratios for both residential and non-residential properties, and suspending the interest rate stress testing requirement for mortgage loans.[63] 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.

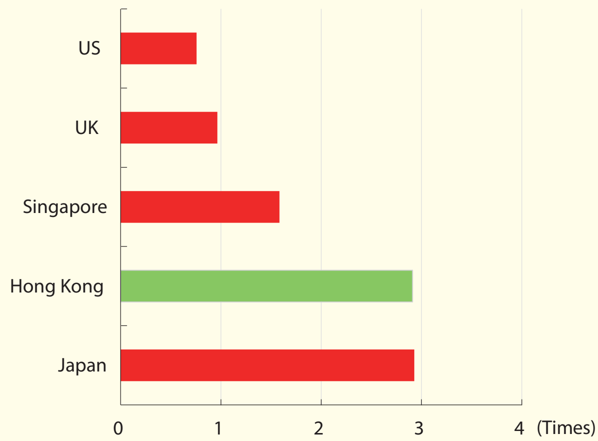
The HKMA also requires banks to adopt prudent underwriting standards for credit card advance and unsecured personal loan businesses. In reviewing credit applications, banks should understand borrowers' credit and financial conditions and carefully assess their repayment ability. As for post-lending, 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: Figure for Singapore refer to that at end-2023, while figures for other economies (including Hong Kong) refer to those at end-2022.
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. Figure for Singapore refer to that at end-2023, while figures for other economies (including Hong Kong) refer to those at end-2022.
Sources: Statistical agencies or central banks of selected economies, and HKMA staff estimates.

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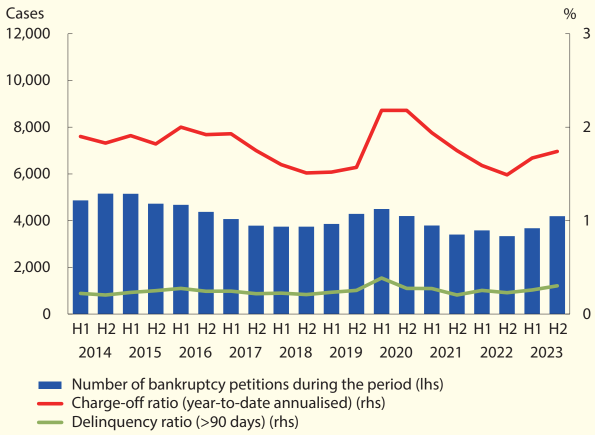
[63] For details, see the press release "Countercyclical Macroprudential Measures for Property Mortgage Loans" on 28 February 2024 (https://www.hkma.gov.hk/eng/news-and-media/press-releases/2024/02/20240228-3/).

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 by 14.1% in the second half of 2023 compared with the preceding six months. The year-to-date annualised credit card charge-off ratio increased slightly from 1.67% in the second quarter of 2023 to 1.74% in the fourth quarter of 2023, while the delinquency ratio increased slightly to 0.30% in December 2023 (Chart 5.15).

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



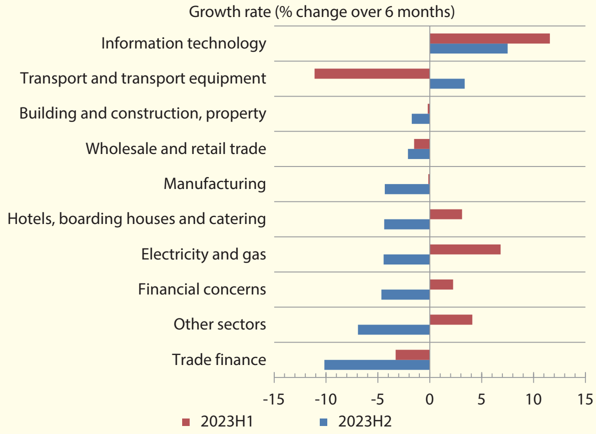
Sources: Official Receiver's Office and HKMA.

Corporate exposure[64]

Domestic corporate loans contracted by 3.4% during the second half of 2023, after registering a modest growth of 0.4% in the first half of 2023. Lending to most economic sectors recorded declines (Chart 5.16), which could be attributed to the subdued credit demand amid the high interest rate environment.

[64] Excluding interbank exposure. At the end of 2023, the share of corporate loans in domestic lending was 63.6%.

Chart 5.16
Growth in domestic corporate loans by selected sectors



Source: HKMA.

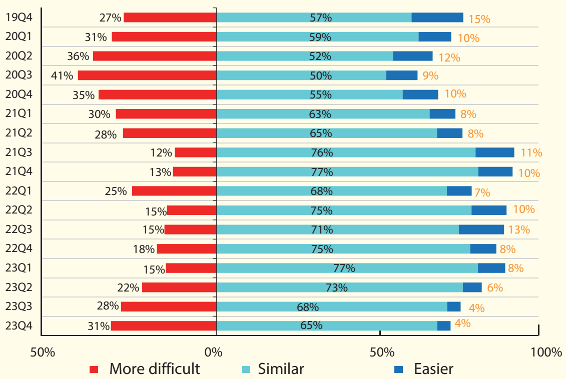
The demand-side survey on the credit conditions of small and medium-sized enterprises (SMEs) showed that SMEs' credit conditions continued to face headwinds from the high interest rate environment. The SMEs' perception of banks' credit approval stance weakened in the fourth quarter of 2023, with 31% of respondents perceiving more difficult credit approval (Chart 5.17).[65] That said, the proportion still remained within the normal range observed.

Of respondents with existing credit lines, 24% reported a "tighter" stance by banks in the fourth quarter of 2023, down from 34% 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.

[65] 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.

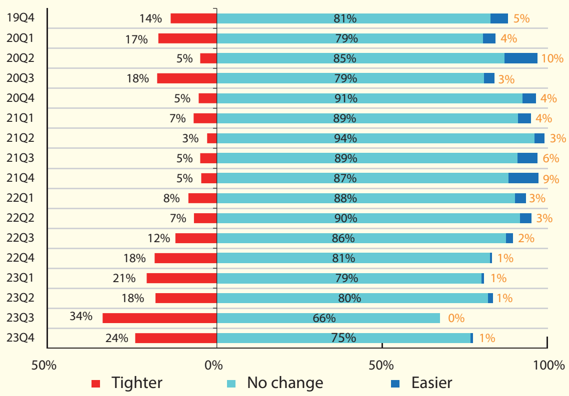
The HKMA has encouraged banks to be sympathetic in handling the funding needs of corporates which are facing cash flow pressure, subject to prudent risk-management principles. In December 2023, the HKMA issued a circular to banks setting out guidance on lending practices that seek to strike a balance between prudent risk management and supporting real economic activities.

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.

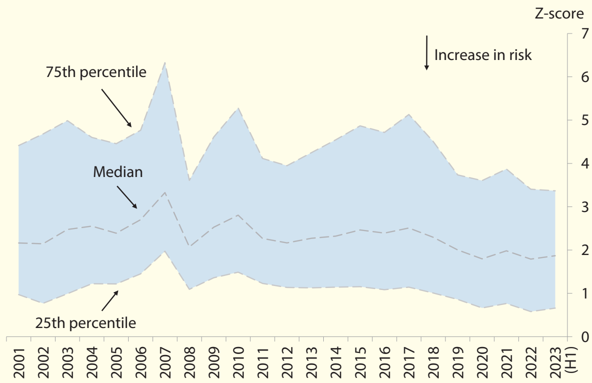
Chart 5.18
SMEs' reported change in banks' stance on existing credit lines



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

The financial health of listed corporates has shown signs of stabilisation based on the latest available financial information. Based on accounting data for all non-financial corporates listed in Hong Kong up to the first half of 2023, the Altman's Z-score (a default risk measure for non-financial corporates based on accounting data) generally stabilised (Chart 5.19).

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

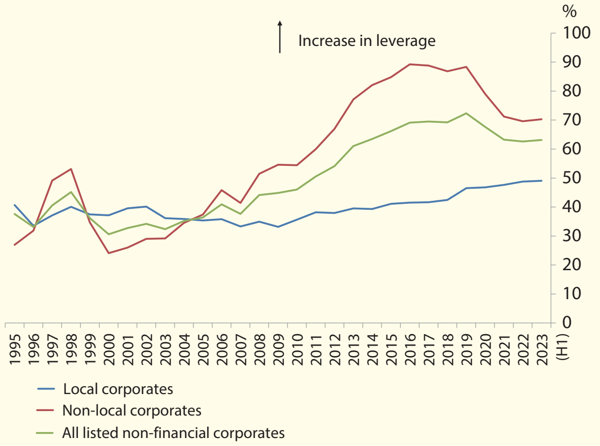


Notes:
1. All non-financial corporates listed on the Hong Kong Stock Exchange are selected.
2. Figures are calculated based on information up to late February 2024.

Source: HKMA staff calculations based on estimates compiled by Bloomberg.

In addition, the weighted average debt-to-equity ratio, a common measure of corporate leverage, remained largely stable in the first half of 2023 for listed non-financial corporates in Hong Kong (the green line in Chart 5.20), although the leverage ratio for non-local corporates edged up slightly (the red line in Chart 5.20). Meanwhile, the debt servicing ability of listed non-financial corporates, as indicated by the weighted average interest coverage ratio (ICR) (Chart 5.21), weakened slightly in the same period.

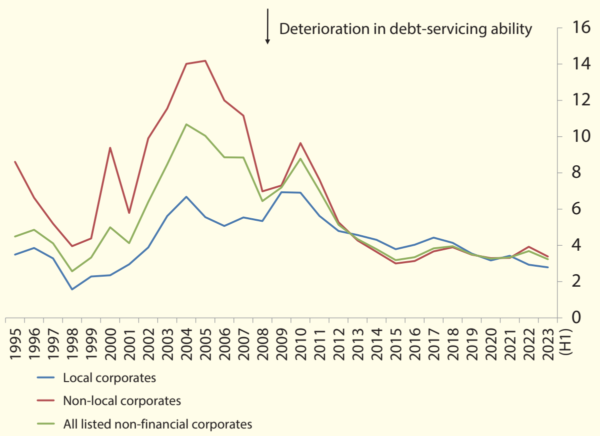
Chart 5.20
Leverage ratio of listed non-financial corporates in Hong Kong



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 late February 2024.

Source: HKMA staff estimates based on data from Bloomberg.

Chart 5.21
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 late February 2024.

Source: HKMA staff estimates based on data from Bloomberg.

Given the significant cross-border lending of the Hong Kong banking sector, particularly to the Asia-Pacific region, it is important to examine the debt servicing ability of corporates in the region under the current macro-financial environment. Findings in Box 4 suggest that the additional cash buffers accumulated by corporates in the region during the pandemic play an important role in mitigating the credit risk impact arising from higher funding costs and lower economic growth. This may help explain why corporate defaults in the region have not increased notably so far.

However, signs of depletion in cash buffers have appeared. More corporates in the region may see repayment difficulties if the high interest rate and weak economic growth environment persist. Therefore, banks should remain vigilant and carefully assess the possible negative impacts on their corporate loan portfolios.

Mainland-related lending and non-bank exposures

The banking sector's total Mainland-related lending decreased by 3.7% to HK$4,226 billion (13.7% of total assets) at the end of December 2023, from HK$4,390 billion (14.4% of total assets) at the end of June 2023 (Table 5.C). Other non-bank exposures increased by 6.7% to HK$2,011 billion (Table 5.D). The gross CLR of Mainland-related lending of all AIs[66] increased to 2.58% at the end of December 2023 from 2.41% at the end of June 2023.

66 Figures cover AIs' Hong Kong offices and Mainland branches and subsidiaries.

Table 5.C
Mainland-related lending

HK$bn	Mar 2023	Jun 2023	Sep 2023	Dec 2023
Mainland-related loans	4,551	4,390	4,291	4,226
Mainland-related loans excluding trade finance	4,247	4,108	4,025	3,978
Trade finance	303	281	266	247
By type of AIs:				
Overseas incorporated AIs	1,605	1,573	1,516	1,490
Locally incorporated AIs*	2,138	2,062	2,010	1,964
Mainland banking subsidiaries of locally incorporated AIs	809	754	765	771
By type of borrowers:				
Mainland state-owned entities	1,918	1,838	1,822	1,841
Mainland private entities	1,375	1,336	1,300	1,256
Non-Mainland entities	1,258	1,216	1,169	1,128

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	Mar 2023	Jun 2023	Sep 2023	Dec 2023
Negotiable debt instruments and other on-balance sheet exposures	1,432	1,389	1,409	1,468
Off-balance sheet exposures	474	494	532	542
Total	**1,906**	**1,884**	**1,941**	**2,011**

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

While the Mainland authorities have introduced stimulus measures to boost domestic demand, the full effects of these measures may take some time and the near-term economic performance of the Mainland economy may be subject to various challenges, including the softening domestic real estate sector and global geopolitical tensions. Banks should therefore remain vigilant in managing their related credit risks.

Macro stress testing of credit risk[67]

Results of the latest macro stress testing on retail banks' credit exposure suggest the Hong Kong banking sector remains resilient and should be able to withstand severe macroeconomic shocks. Table 5.E presents a simulated future credit loss rate of retail banks in the fourth quarter of 2025 under four specific macroeconomic shocks[68] using information up to the fourth quarter of 2023.

In stressed scenarios, the average expected credit losses two years after different macroeconomic shocks are estimated to be moderate, ranging from 1.02% (Property price shock and Interest rate shock) to 1.46% (Hong Kong GDP shock).

Taking into account tail risk, the Value-at-risk (VaR) at 99% confidence level (CL) of bank credit loss would increase in all four scenarios, ranging from 2.67% (Interest rate shock) to 3.65% (Hong Kong GDP shock).

67 Macro stress testing refers to a range of techniques used to assess the vulnerability of a financial system to "exceptional but plausible" macroeconomic shocks. The credit loss estimates presented in this report are obtained based on a revised framework presented in Box 4 of the *Half-Yearly Monetary and Financial Stability Report* published in September 2023. All estimates in the current report are not strictly comparable to estimates from previous reports.

68 These shocks are calibrated by referencing to the extreme episodes observed in the past. For instance, the Hong Kong GDP shock scenario replicates the severe economic downturn recorded between the third quarter of 2019 and the second quarter of 2020.

Table 5.E
The mean and value-at-risk statistics of simulated credit loss distributions[1]

Scenario	Estimated credit loss (% of the loan portfolio) Mean	VaR at 99% CL
Baseline[2]	0.75	1.99
Stressed scenarios[3]		
Hong Kong GDP shock	1.46	3.65
Property price shock	1.02	2.68
Interest rate shock	1.02	2.67
Mainland GDP shock	1.22	3.02

Notes:
1. The assessments assume the economic conditions in 2023 Q4 as the current environment. The Monte Carlo simulation method is adopted to generate the credit loss distribution for each scenario.
2. Baseline scenario: no shock throughout the two-year period.
3. Stressed scenarios:
   Hong Kong GDP shock: reductions in Hong Kong's real GDP by 3.2%, 3.6%, 9.3% and 9.4% respectively in each of the four consecutive quarters starting from 2024 Q1.
   Property price shock: Reductions in Hong Kong's real property prices by an average of 12% in each of the four consecutive quarters starting from 2024 Q1.
   Interest rate shock: A rise in real interest rates by 0.1, 0.9, 1.8 and 3.2 percentage points respectively each of the four consecutive quarters starting from 2024 Q1.
   Mainland GDP shock: An average year-on-year real GDP growth rate of 2% for the four consecutive quarters starting from 2024 Q1.

Source: HKMA staff estimates.

5.4 Risks and resilience

As shown in the previous sections, the Hong Kong banking sector has remained resilient. While the systemic risk remained contained, several downside risk factors could pose challenges for the Hong Kong banking sector going forward.

First, the uncertainties over the future path of the US policy rate would be a key risk factor. While the market generally expects rate cuts in 2024, the timing and extent of rate cuts remain highly uncertain. This could pose challenges for the banking sector to manage the funding costs.

Banks should also stay alert in their credit risk management and closely monitor the financial fundamentals of corporate borrowers against downside risk factors. In particular, the possible "high for longer" interest rate scenario in major AEs, and concerns over the near-term economic performance of the Mainland economy could weigh on the global economic outlook. The resulting weaker corporate earnings and persistently high borrowing costs could put their debt repayment abilities to the test.

Rising geopolitical tensions, including the military conflicts in multiple territories, are another important risk factor that warrants a close monitoring, as any escalation of the conflicts can 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 20 February 2024, is 1.0%.[69]

[69] For details, see the Announcement of the CCyB to AIs in February 2024 (https://www.hkma.gov.hk/eng/key-functions/banking/banking-legislation-policies-and-standards-implementation/countercyclical-capital-buffer-ccyb/).

In setting the CCyB, the Monetary Authority considered a series of indicators (Table 5.F), including an "indicative buffer guide" produced by the Monetary Authority's Initial Reference Calculator (IRC). The IRC 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 the gap between the ratio of residential property prices to rentals and its long term trend.[70] The setting of the CCyB for Hong Kong is, however, not a mechanical exercise and the Monetary Authority will consider a broad range of reference indicators ("Comprehensive Reference Indicators") and all relevant information available in addition to the indicative buffer guide produced by the IRC.[71]

In the latest assessment based on the third quarter data of 2023, the IRC signals a CCyB of 0%. The projection based on all available data at the decision date and the new IRC formula[72] that takes into account the Positive Neutral CCyB[73] to be effective from 1 April 2024 suggests that the IRC would likely signal a CCyB of 1% when all relevant data for the fourth quarter of 2023 become available.

Taking also into account the information drawn from the series of Comprehensive Reference Indicators and all relevant information available at the time of the decision in February 2024, the quantitative indicators suggest that overheating risks in Hong Kong are well contained. In view of the planned transition to a Positive Neutral CCyB of 1% this year, 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.F
Information related to the Hong Kong jurisdictional CCyB

	13-Jul-23	03-Nov-23	20-Feb-24
Announced CCyB rate	1.0%	1.0%	1.0%
Date effective	13-Jul-23	03-Nov-23	20-Feb-24
Indicative buffer guide	0.0%	0.0%	0.0%
Basel Common Reference Guide	0.0%	0.0%	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	–4.8%	–10.3%	–19.1%
Property price/rent gap	–6.7%	–10.7%	–17.2%
Primary stress indicators			
3-month HIBOR spread (percentage points)	0.49%	0.36%	0.48%
Quarterly change in classified loan ratio (percentage points)	–0.06%	0.08%	0.14%

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 recently 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.G.

70 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.

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

72 Under the new CCyB framework to be effective from 1 April 2024, the IRC will be the higher of two constituent components: a Composite CCyB Guide based on the credit-to-GDP gap and the property price-to-rent gap, and a Positive Neutral CCyB that sets a floor for the IRC.

73 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.G
Key performance indicators of the banking sector[1] (%)

	Dec 2022	Sep 2023	Dec 2023
Interest rates			
1-month HIBOR fixing[2] (quarterly average)	3.67	4.86	5.19
3-month HIBOR fixing (quarterly average)	4.75	5.03	5.34
BLR[3] and 1-month HIBOR fixing spread (quarterly average)	1.65	0.98	0.69
BLR and 3-month HIBOR fixing spread (quarterly average)	0.58	0.82	0.54
Composite interest rate[4]	2.11	2.68	2.94
		All AIs	
Balance sheet developments[5]			
Total deposits	+1.0	+2.1	+2.8
Hong Kong dollar	+1.2	–0.1	+0.5
Foreign currency	+0.9	+4.2	+4.8
Total loans	–2.3	–2.2	–1.0
Domestic lending[6]	–1.3	–1.9	–0.1
Loans for use outside Hong Kong[7]	–5.0	–2.8	–3.4
Negotiable instruments			
Negotiable certificates of deposit (NCDs) issued	+9.2	–13.1	–2.5
Negotiable debt instruments held (excluding NCDs)	+3.7	+1.3	+2.5
Asset quality			
As a percentage of total loans[8]			
Pass loans	96.58	96.49	96.41
Special mention loans	2.02	1.90	2.03
Classified loans[9] (gross)	1.40	1.61	1.56
Classified loans (net)[10]	0.81	0.87	0.83
Overdue > 3 months and rescheduled loans	0.85	1.23	1.24
Classified loan ratio (gross) of Mainland related lending[11]	2.26	2.68	2.58
Liquidity ratios (consolidated)			
Liquidity Coverage Ratio — applicable to category 1 institutions (quarterly average)	161.8	174.5	178.6
Liquidity Maintenance Ratio — applicable to category 2 institutions (quarterly average)	63.2	64.1	65.7
Net Stable Funding Ratio — applicable to category 1 institutions	137.5	141.8	144.4
Core Funding Ratio — applicable to category 2A institutions	155.7	159.2	169.4
		Retail banks	
Profitability			
Loan impairment charges as a percentage of average total assets (year-to-date annualised)	0.20	0.20	0.26
Net interest margin (year-to-date annualised)	1.31	1.68	1.68
Cost-to-income ratio (year-to-date)	48.0	38.4	38.8
		Surveyed institutions	
Asset quality			
Delinquency ratio of residential mortgage loans	0.06	0.07	0.08
Credit card lending			
Delinquency ratio	0.23	0.28	0.30
Charge-off ratio — quarterly annualised	1.50	1.88	1.98
— year-to-date annualised	1.49	1.72	1.74
		All locally incorporated AIs	
Capital adequacy (consolidated)			
Common Equity Tier 1 capital ratio	16.2	17.1	17.2
Tier 1 capital ratio	18.1	18.9	18.9
Total capital ratio	20.1	20.9	21.1
Leverage ratio	7.9	7.9	7.9

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
Assessing the mitigating effects of cash buffers on corporate sector vulnerability in Asia-Pacific

Introduction[74]

Corporate debt vulnerability has long been considered as one of the key financial stability risks in the Asia-Pacific (APAC) region. Given that the region's corporate indebtedness has increased further after the pandemic, the current high interest rate environment and slower global economic growth have raised concerns about the debt servicing ability of corporates in the region. The potential rise in credit risk may in turn adversely impact the asset quality of banks' corporate exposures.

To enhance our understanding of corporate debt vulnerability in the region under the current macro-financial environment, it is important to examine firms' fundamentals and their related risk implications. In particular, there is anecdotal evidence that some firms in the region had accumulated stronger cash buffers during the pandemic, which may help them cushion the impact of higher interest expenses under the current environment. This may also help explain why corporate defaults in the region have not increased notably so far. Some studies also showed that cash holdings could play a vital role in supporting firms' operation and investment decisions during economic downturns.

Against this background, this box studies the effects of cash buffers on mitigating corporate vulnerabilities based on the accounting data of non-financial firms listed in APAC.[75] First, a panel regression model is employed to provide firm-level evidence on the effects of cash buffers on firms' operating performance and investments, based on the COVID-19 pandemic episode. Scenario analysis is then conducted to illustrate to what extent these increased cash buffers may help alleviate the credit risk for the APAC corporate sector.

Recent developments on corporate debt and cash holdings in APAC

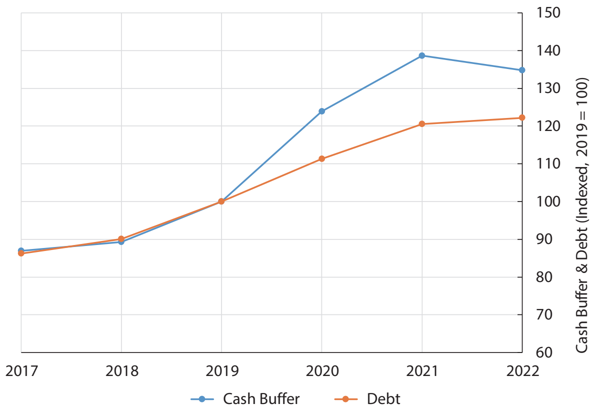
We begin our analysis by reviewing the recent trend in corporate debt and cash holdings since the outbreak of the COVID-19 pandemic, based on a sample of around 14,000 listed non-financial corporates in the APAC region.

As seen in Chart B4.1, there has been a notable rise in corporate debt amounts among our sampled firms since 2020, in part driven by the accommodative monetary conditions and the unprecedented package of support measures introduced by authorities during the pandemic. Nonetheless, the rise in corporate debt has been accompanied by a concurrent increase in corporate cash holdings (i.e. blue line in Chart B4.1), as corporates took advantage of the favourable financing terms to build up higher cash buffers amid heightened uncertainty. In addition, some firms may have stepped up their cash management strategies, such as reducing dividend payouts, scaling down investment projects, and re-scheduling cash-flow payments, to preserve additional cash holdings.

[74] For details, we refer readers to Ho et al. (2023): "Corporate Sector Vulnerability and the Role of Cash Holdings during and after the COVID-19 Crisis: Evidence from Non-financial Corporates Listed in Asia-Pacific", *HKIMR Working Paper*, No.16/2023.

[75] The list of APAC economies includes AU, CN, HK & MO, ID, MY, NZ, SG, KR, TH, and VN. Firms' accounting data are obtained from S&P Capital IQ.

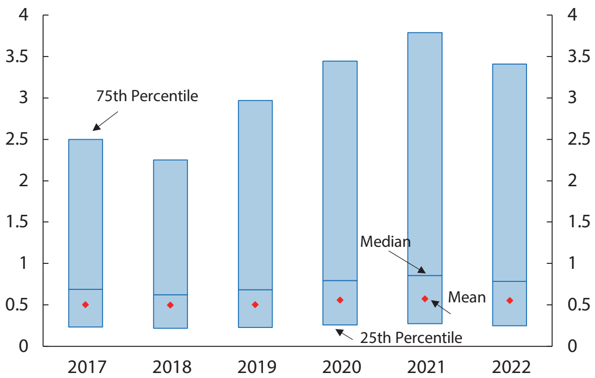
Chart B4.1:
Growth in corporate debts and cash holdings for listed firms in APAC



Source: HKMA staff estimates based on S&P Capital IQ.

Given that the extent of growth in cash holdings outweighed the growth in debts, the cash-to-debt ratio for APAC corporates generally saw a notable rise since 2019. While there has been a sign of decline in the cash-to-asset ratio in 2022, the level remained notably higher than the pre-pandemic level in 2019.

Chart B4.2:
Cash-to-debt ratio for listed firms in APAC



Source: HKMA staff estimates based on S&P Capital IQ.

Empirical analyses on the effects of cash buffers on corporate debt vulnerability

i Firm-level analysis based on a panel regression model

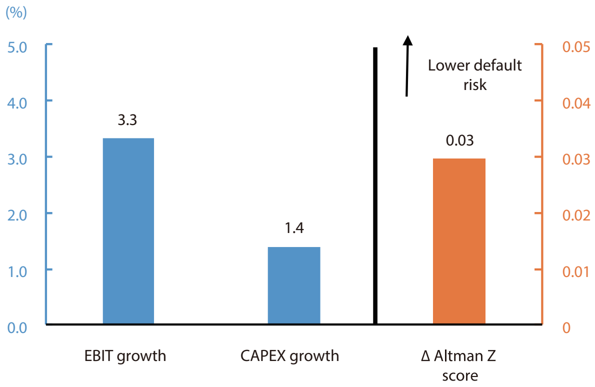
As mentioned, firms with higher cash holdings (denoted as high-cash firms) should have stronger buffers to cushion against cash flow shocks. Thus, these high-cash firms may exhibit better operational performance as compared with other firms during stress periods. To test this hypothesis empirically, the following panel regression model is applied on our samples for the period between 2020 and 2022:

$Y_{i,j,c,t} = \alpha_0 + \beta_1 HighCash_{i,j,c}$ + control variables + fixed effects + error term

$Y_{i,j,c,t}$ denotes selected financial performance indicators for firm i in industry j and in economy c at time t. These include the annual growth rate of earnings before interest and taxes (EBIT) and capital expenditure (CAPEX). To assess the resulting effect on firm's default risk, firm's Altman z-score (an accounting-based default risk indicator of firm) is also considered as one of the dependent variables. $HighCash_{i,j,c}$ is a dummy variable which takes value of 1 if a firm's cash-to-asset ratio is higher than its industry median ratio as of end-2020. The model also includes a set of firm- and macro-level controls and various fixed effects dummies to control for heterogeneity across firms and economies.[76] The estimated coefficient, β_1, thus reveals the difference in the selected financial performance indicators between high cash firms relative to other firms during the pandemic. Chart B4.3 presents the estimation results.

[76] Firm-level controls include size (measured by logarithm of firm's total assets), leverage (measured by debt-to-equity ratio), debt servicing ability (measured by interest coverage ratio), tangibility (measured by the share of property, plant and equipment to total asset). All firm-level controls are lagged by one year. Macroeconomic controls include real GDP growth of the firm's home country. Country-specific COVID-19 stringency index, constructed by the Oxford University, is included to control for the heterogeneity in pandemic-induced restrictions among APAC economies. Finally, industry-, country-, and year-fixed effects are included in the model.

Chart B4.3:
Estimated differences in selected financial performance indicators between high-cash firms and other firms during the pandemic



Source: HKMA staff estimates.

Overall, the estimation results are consistent with our conjecture. Key findings are summarised below:

1. On average, high-cash firms tend to attain relatively higher EBIT growth of 3.3 percentage points more than that of other firms during the pandemic. This result is consistent with economic intuition that higher cash buffers allow firms to enhance financial flexibility to adjust their business operations to cope with changes in business environments. The role of cash buffers is therefore particularly important during the pandemic given the high uncertainty in business environments.

2. High-cash firms are also found to attain relatively higher CAPEX growth than their counterparts, suggesting that the investment activities of these firms were relatively less affected during the pandemic. This is because the surplus cash reserve can equip firms with more financial flexibility to invest (when good investment opportunities arise) even during economic downturns. The relatively larger capital investment undertaken by these firms could improve future growth momentum.

3. Importantly, as a result of a relatively better financial performance, high-cash firms are estimated to exhibit a lower default risk compared with other firms during the pandemic.

ii. Scenario analysis based on debt-at-risk

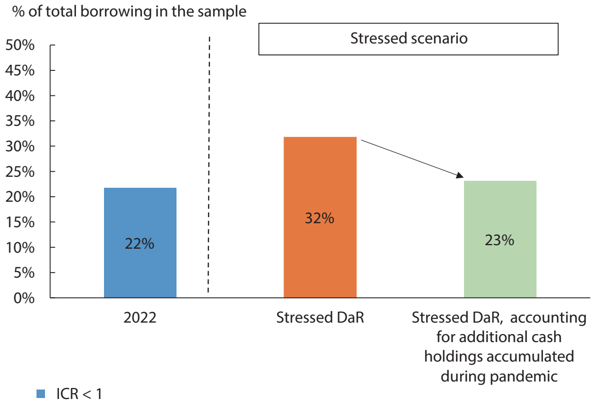
This section examines the mitigating effect of cash buffers on the credit risk of the corporate sector in the region as a whole. We conduct a scenario analysis to illustrate to what extent additional cash buffers accumulated by corporates during the pandemic may help mitigate the credit risk of the APAC corporate sector under a combination of interest rate and earnings shocks.

To measure the credit risk of the corporate sector, the debt-at-risk (DaR) indicator is employed. DaR is defined as the amount of debt from those corporates with an interest coverage ratio (ICR) lower than one (i.e. firms' EBIT lower than interest expenses) as a share of total corporate debt. A higher DaR typically implies a higher credit risk in the corporate sector.

We follow the assumptions used in the *IMF Global Financial Stability Report* (2023) to set a stressed scenario. Specifically, corporates' effective interest rate is assumed to rise notably by around 200 basis points, while corporates' EBIT is assumed to drop by 20%. These interest rate and earnings shocks are applied to the latest available accounting position of our sampled corporates.[77]

[77] The interest rate and earnings shocks are broadly in line with the similar scenario analysis conducted in the *IMF Global Financial Stability Report* (April 2023). According to IMF (2023), these shocks are calibrated to approximately match those during previous recession episodes, including inflationary recessions and the global financial crisis.

Chart B4.4
Debt-at-risk of corporate sector in APAC



Source: HKMA staff estimates based on S&P Capital IQ.

Chart B4.4 shows the DaR ratio for the APAC corporate sector at the end of 2022 (i.e. before the shocks) and the resulting stressed DaR ratios with and without accounting for corporates' additional cash buffers under the stressed scenario, respectively. It is shown that the stressed DaR ratio would rise significantly from 22% at the end of 2022 to 32%, when corporates' cash buffers are not taken into account in the calculation (i.e. the orange bar).

However, the associated credit risk impact could be mitigated significantly if the build-up of cash buffers during the pandemic is taken into account. As shown by the green bar in Chart B4.4, which assumes that firms with stressed ICR below one would utilise their additional cash buffers accumulated during the pandemic to help service the interest payment, the stressed DaR would reduce notably to 23% (which is near the pre-shock level). This shows an important role of corporate cash buffers in alleviating the credit risks.

Conclusion

This box shows that the additional cash buffers accumulated by corporates in the APAC region during the pandemic can play an important mitigating role in cushioning the credit risk impact arising from higher funding costs and lower economic growth. However, signs of depletion in cash buffers have appeared. More corporates in the region may see repayment difficulties if the high interest rate environment and weak economic growth environment persist. Therefore, banks must stay vigilant and continue to carefully assess the possible negative impacts on their corporate loan portfolios stemming from a prolonged high interest rate environment and subdued global economic growth.