



HONG KONG MONETARY AUTHORITY  
香港金融管理局

# HALF-YEARLY MONETARY AND FINANCIAL STABILITY REPORT

*September 2018*

*This Report reviews statistical information between the end of February 2018 and the end of August 2018.*



# Half-Yearly Monetary and Financial Stability Report

## September 2018

### Table of Contents

<b>1. Summary and overview</b>	<b>4</b>
<b>2. Global setting and outlook</b>	<b>10</b>
2.1 External environment	11
2.2 Mainland China	17
<b>3. Domestic economy</b>	<b>33</b>
3.1 Real activities	33
3.2 Inflation and unemployment	35
<b>4. Monetary and financial conditions</b>	<b>40</b>
4.1 Exchange rate and capital flows	40
4.2 Monetary environment and interest rates	42
4.3 Equity market	49
4.4 Debt market	56
4.5 Property markets	58
<b>5. Banking sector performance</b>	<b>61</b>
5.1 Profitability and capitalisation	61
5.2 Liquidity and interest rate risks	64
5.3 Credit risk	65
5.4 Systemic risk	74
Box 1. Property prices and corporate default likelihood in Mainland China	28
Box 2. Macroeconomic effects of uncertainty – implications of rising trade tensions for Hong Kong	37
Box 3. Do long-term institutional investors contribute to financial stability in Hong Kong?	52
Box 4. Implications of loan portfolio concentration for credit risk of banks in Hong Kong	77

#### Glossary of terms

#### Abbreviations

# 1. Summary and overview

---

*The risks of sustained trade tensions and global monetary policy divergence are likely to represent two of the biggest threats to the global economic outlook. While trade tensions could take a toll on business confidence, investment and production efficiency, prolonged global monetary policy divergence could fuel sustained US dollar strength, posing risks to the financial stability of emerging market economies. In East Asia, while the impact of trade tensions has yet to be reflected in the growth figures, capital outflow and currency depreciation pressures have become visible.*

*The Hong Kong dollar exchange rate has eased gradually since March, with the weak-side Convertibility Undertaking being triggered 27 times in April, May and August. Despite this, the Hong Kong dollar remained traded in a smooth and orderly manner near the weak side Convertibility Undertaking rate of 7.85. Total loans continued to grow steadily in the first half of 2018, while property prices increased further and the volume of transactions remained robust.*

*In view of the increasing uncertainties arising from the US-China trade conflict, the pace of US interest rate hikes and geopolitical risks, banks should remain vigilant against the risks of more volatile capital outflows and the associated impact on local interest rates. In particular, given rising corporate leverage, banks should carefully assess how these risk factors could affect the credit risk of their corporate exposures.*

## ***The external environment***

Global growth remained strong in the first half of 2018, but has become less even across countries. The US economy continued to expand at a solid pace on the back of procyclical fiscal policies and buoyant sentiments. However, activity in the euro area and Japan surprised on the downside early this year and, despite some improvements in the second quarter, growth performance was still weaker than in 2017. Signs of more divergent growth among the advanced economies (AEs) raised concerns that the cyclical upturn over the past two years has peaked outside the US. Adding to such concerns, political uncertainty in Italy and the UK has also clouded the near-term growth outlook in Europe.

Against a background of less synchronised global growth, there are increasing risks that escalating trade tensions between the US and major trading partners could derail the global recovery. Since early this year, the US administration has imposed, or threatened to impose, tariffs on a wide range of imports, prompting retaliatory measures from the rest of the world. At the same time, the Federal Reserve (Fed)'s continued normalisation of its balance sheet and interest rate policies has driven longer-term US Treasury yields and the US dollar higher, raising investor concerns about the spillover effects on emerging market economies (EMEs). These concerns have resulted in increased financial market volatility in major EMEs since mid-April, characterised by declines in EME equity market indices and, for

some of those with weaker fundamentals or higher political risks, increased capital outflow and currency depreciation pressures.

Looking ahead, the risks of sustained trade tensions and global monetary policy divergence are likely to represent two of the biggest threats to the global economic outlook. Negative trade developments could take a toll on business confidence, investment and production efficiency. At the same time, prolonged global monetary policy divergence could fuel sustained US dollar strength to the detriment of EMEs' financial stability.

In East Asia, the impact of the escalating trade conflict between Mainland China and the US has yet to be reflected in growth figures. However, capital outflow and currency depreciation pressures have become visible in the region, especially in those economies which have closer ties with Mainland's production chains. The ongoing trade conflict will pose multiple challenges to the region's outlook. While the direct impact on the region's exports due to increased tariffs is expected to be manageable, the trade war's damage to investor confidence could be much more disruptive to the economy. In the event of a slowdown in growth, central banks will need to strike a delicate balance between supporting growth by easing monetary policy and curbing capital outflows by tightening. With rising downside risks and uncertainties, East Asian economies are likely to face higher market volatility and weaker economic momentum in the near-term. Economies with stronger fundamentals, healthier external positions and larger fiscal policy space are more likely to withstand the headwinds.

In Mainland China, economic growth remained largely stable in the first quarter of 2018, but showed moderation in the second quarter as infrastructure investment growth slowed notably amid tightening measures on local government financing activities. Consumption growth,

however, remained vibrant, underpinned by solid labour market conditions and buoyant consumer sentiment. In the near-term, while the robust growth in higher value-added manufacturing and services industries should continue to support the growth outlook, increasing uncertainty amid the escalating trade conflict between the US and China could make it more challenging for Mainland authorities who are trying push ahead with structural reforms while maintaining financial stability and decent economic growth.

During the review period, Mainland authorities continued to contain financial risks through tightening measures. Reflecting these efforts, property prices stabilised, especially in first-tier cities, which is important for financial stability as drastic changes in property prices could have a significant impact on corporate default risks (see more details in Box 1, page 28). Amid government efforts to deleverage, the number of bond defaults increased, although the share of these bonds to overall non-financial debt securities remained small. In both equity and forex markets, investor sentiment deteriorated somewhat in recent months, reflecting concerns about the trade conflict. However, capital outflows were limited during the period, likely supported by stable economic conditions.

### ***The domestic economy***

Compared with the second half of 2017, economic growth in Hong Kong remained robust for the first half of 2018 as a whole. Real Gross Domestic Product (GDP) for the first half grew at an above-par rate of 2.4% over the preceding half year. The year-on-year real GDP growth fluctuated from the extraordinary growth of 4.6% in the first quarter to a slower 3.5% in the second quarter, in sharp contrast to the roughly stable growth in the second half of 2017. More specifically, private consumption posed an outsized increase in the first quarter, but slowed in the second. After a strong recovery, the

external trade performance also slowed, along with the deteriorating market sentiment amid the worsening trade conflict.

Economic growth is expected to continue for the remainder of 2018, but at a more moderate pace compared with the first half. While the escalating trade tensions, especially between the US and Mainland China, could weigh on Hong Kong's export performance, other components of the GDP, including private consumption, building and construction, as well as other exports of services are anticipated to be growth-supportive. For 2018 as a whole, the Government forecasts real GDP growth in the range of 3–4%, while the latest growth forecasts by private-sector analysts averaged 3.6%.

With the growing intensity of the US-China trade conflict, the downside risk to growth has risen compared with several months ago. While the short-term impact on Hong Kong is estimated to be limited through conventional trade channels, the local economy could be affected through other channels, which would result in a much more substantial negative impact for the overall economy. For example, increased economic uncertainty could affect macro-financial conditions (see Box 2). Besides trade protectionism, other major uncertainties or risks concerning the baseline economic outlook include those arising from major central banks' monetary policy normalisation, Mainland's economic performance amid its continued financial deleveraging, and potential volatility in international capital flows.

Local inflation edged up to a still-moderate level in the first half of 2018, with a slight uptick in inflation momentum reflecting both external and domestic price pressures. At the same time, the labour market tightened further along with a decline in the unemployment rate to 2.8%, the lowest level in more than 20 years. In the remainder of 2018, local inflationary pressures are expected to increase slightly, further

reflecting higher global inflation and continued feed-through of earlier rises in fresh-letting private residential rentals.

### ***Monetary conditions and capital flows***

Mainly driven by increased interest carry trade activities, the Hong Kong dollar spot exchange rate eased gradually since March, with the weak-side Convertibility Undertaking (CU) being triggered 27 times in April, May and August. Since the first triggering on 12 April, the HKMA purchased a total of HK\$103.5 billion (as at the end of August) on request from banks under the weak-side CU. As a result of these purchases, the Aggregate Balance of the banking system declined from HK\$179.7 billion at end-March to HK\$76.4 billion at end-August. Despite this, the Hong Kong dollar remained traded in a smooth and orderly manner near the weak side CU rate of 7.85.

Hong Kong Interbank Offered Rates (HIBORs) broadly picked up since the second quarter, reflecting the growing market expectation of US interest rate hikes, the reduced interbank liquidity following the triggering of the weak-side CU, Initial Public Offering (IPO)-related funding demand and seasonal liquidity needs. The overnight HIBOR fixing rose notably to 3.0% during the IPO subscription period at the end of the first half. It once eased back to a recent low of 0.08% in mid-July before picking up to around 0.9% at the end of August. Alongside the pick-up in HIBORs, retail banks' funding costs saw more upward pressure since the second quarter, with the composite interest rate increasing to 0.63% at the end of July from 0.38% at the end of March. On the other hand, the average lending rate for new mortgages hovered around the prevailing Prime-based cap of 2.15% in the second half despite the pick-up in HIBORs.

As the monetary policy normalisation continues in the US, Hong Kong dollar interest rates will inevitably maintain a rising trend. The spreads

between the Hong Kong dollar and US dollar interest rates may continue to encourage interest carry trade activities and lead to capital outflows. The outflow of funds from Hong Kong dollar is a normal and inevitable process for Hong Kong dollar interest rate normalisation under the Linked Exchange Rate System. The banking sector is holding a vast amount of Exchange Fund papers, which can be used by banks to obtain HKD liquidity via the discount window, serving as an effective cushion against any excessive volatility in interest rates. The HKMA also stands ready to calibrate the issuance of Exchange Fund papers to release liquidity in order to deal with possible sharp outflow from the Hong Kong dollar.

As trade tensions between the US and Mainland China intensified, the offshore (CNH) and onshore (CNY) renminbi depreciated sharply against the US dollar from the middle of June. This interrupted the stable relationships of the CNH and CNY with the US dollar as observed during the first five months of 2018. The exchange rate stabilised again in August after the counter-cyclical factor was re-instated gradually in the daily fixing of the CNY. The depreciation pressure from mid-June also saw CNH being mostly traded at a discount against its onshore counterpart, although the spread remained moderate by historical standards. Despite the sharp movement in the spot exchange rate market, the US-China trade tensions have not had an adverse impact on the funding condition in the offshore interbank market, as the overnight CNH HIBOR mostly traded below 4% in the first eight months of 2018. Meanwhile, Hong Kong's CNH liquidity pool continued to increase during the review period, led by renminbi deposits from both personal and corporate customers. The average daily turnover of the renminbi real time gross settlement system continued to stay high. Looking ahead, the development of the CNH market in Hong Kong will depend on the market expectation of the renminbi exchange rate amid the US-China trade

tensions and Mainland's macro-financial conditions. Nevertheless, Hong Kong's offshore renminbi business is expected to benefit from the progress in the Mainland's capital account liberalisation, the development of the Stock and Bond Connect schemes, and enhanced regional economic co-operation under the Belt and Road and Guangdong-Hong Kong-Macao Bay Area initiatives.

### **Asset markets**

The Hong Kong equity market progressively came under pressure during the review period as trade conflicts escalated and monetary normalisation picked up further pace. Although geopolitical tensions eased on the Korean Peninsula following the US-North Korean summit in Singapore, the focus of the market quickly shifted to the heightened tensions between the US and China on the trade front. Meanwhile, as the global economy continued to gather momentum, major central banks quickened their pace of normalising monetary conditions, putting upward pressure on interest rates across the yield curve worldwide. The combined negative impact of the unfavourable trade and monetary developments has caused local equity prices to spiral down sharply. However, looking ahead, although the outlook remains highly uncertain, attractive valuations may trigger bargain hunting activities, especially if the market corrects further from current levels. Box 3 looks at the effects of the value trading strategy of long-term institutional investors on the domestic stock market.

The Hong Kong dollar debt market grew markedly in the first half of the year. This is despite the fact that outflows from bond funds continued during the period, due to their lacklustre performance amid an increase in yields in both the sovereign and non-sovereign sectors. The growth was fairly broad-based except for the AIs. In the near term, the introduction of a number of government initiatives such as the

three-year Pilot Bond Grant Scheme and the Government Green Bond Programme are expected to stimulate local debt issuance. In contrast, the offshore renminbi debt market contracted for six successive quarters through to the second quarter of 2018. Although there was a pickup in primary market activity recently, the medium-term development outlook is subject to considerable uncertainties, including changes in the exchange rate expectations for the renminbi, discrepancies between onshore and offshore funding costs, and the current drive of Mainland authorities to deleverage the economy. The US-China trade war adds to the headwinds.

The residential property market in Hong Kong remained buoyant in the first half of the year. Amid robust economic conditions and the low mortgage rate environment, property prices increased further and the volume of transactions remained robust. But signs of moderation emerged stepping into the third quarter. As housing price growth outpaced that of household income during the review period, housing affordability deteriorated further.

Reflecting the Government's efforts in addressing land and housing supply issues, the government-appointed Task Force on Land Supply has invited stakeholders to offer views on land supply options and other land supply-related issues. The Government also announced six new housing initiatives in late June. These include revising the pricing policy for subsidised sale flats, reallocating private housing land for public housing and proposing "special-rates" on vacant first-hand private residential units.

A variety of factors make the outlook for the residential property market uncertain. On the one hand, the current favourable employment and income conditions might provide some support for the demand for property. On the other hand, the property market is likely to face a number of headwinds. In particular, if the US-China trade tensions persist or intensify, the positive market sentiments could turn quickly.

Furthermore, as the US monetary policy normalisation process continues, domestic mortgage rates are set to increase along with the rising funding costs of the banks. Indeed, banks increased their effective mortgage rates by raising the cap for newly approved HIBOR-based mortgages in August. In addition, the supply-demand gap is expected to narrow in the longer term, as the supply of residential property increases on the back of the Government's effort to address land and housing shortages.

### **Banking sector performance**

The profitability of retail banks continued to improve in the first half of 2018, with pre-tax operating profit increasing substantially by 24.8% year on year. The improvement was mainly driven by a significant increase in net interest income (boosted by higher net interest margins), and a reduction in loan impairment charges. Asset quality remained healthy by historical standards during the review period.

Banks continued to maintain strong capital positions, with the consolidated total capital ratios of locally incorporated AIs edging up to 19.4% at the end of June 2018. To enhance banks' resilience to systemic risks, the countercyclical capital buffer ratio for Hong Kong will rise to 2.5% with effect from 1 January 2019, from its current 1.875%.

Liquidity conditions within the banking system remained sound in the first half of 2018. Despite tangible rises in the short-term HIBORs following the triggering of the weak-side CU and IPO-related demand, the Hong Kong dollar funding cost of retail banks remained low by historical standards, largely underpinned by the still relatively low retail deposit rates. The liquidity positions of AIs were generally sound by Basel III standards, as the average Liquidity Coverage Ratio of category 1 institutions and the average Liquidity Maintenance Ratio of category 2 institutions increased to 156.6% and 51.3%

respectively, in the second quarter of 2018 and were well above their statutory minimum requirements. In addition, the implementation of the Net Stable Funding Ratio as part of the Basel III liquidity requirements has helped to strengthen banks' ability to fund their activities with sufficiently stable sources of funding and reduce their funding risk over a longer time horizon.

Despite rising uncertainties in the global economic environment, bank lending continued to grow steadily in the first half of 2018. Both domestic loans (comprising loans for use in Hong Kong and trade financing) and loans for use outside Hong Kong, grew by 5.4% and 5.1%, respectively, compared with 5.6% and 4.6% in the preceding six months. As a result, total loans and advances of all AIs continued to grow steadily by 5.3% in the first half of 2018, the same pace as in the second half of 2017. With total loan growth outpacing deposit growth during the review period, the loan-to-deposit ratios of all AIs rose to 75.7% in the first half of 2018 from 73.0% six months ago.

Within domestic loans, corporate loans continued to grow steadily by 5.4% on a half-yearly basis in the first half of 2018, while growth in household debt moderated to 5.3% in the first half of 2018 compared to 6.5% six months ago. Despite the slower growth in household debt, the household debt-to-GDP ratio edged up to 71.2% in the second quarter of 2018 from 70.3% in the fourth quarter last year. That said, our assessment finds that Hong Kong has a strong household balance sheet with high net-worth-to-liability and safe-asset-to-liability ratios. This suggests that the household sector as a whole has a strong buffer to cushion potential financial and economic shocks.

Based on data of banks in Hong Kong, Box 4 (see page 77) provides an empirical analysis to examine the net effect of loan concentration on the credit risk of banks' loan portfolios. Overall, the empirical results suggest that there are gains

of improved screening and monitoring abilities for banks, which buffer the associated concentration risks, by focusing lending to certain loan sectors. A key implication is that the potential specialisation gains from higher loan concentration should be taken into consideration in order to have a more balanced assessment of banks' credit exposures.

In view of rising uncertainties arising from the US-China trade conflict, the pace of US interest rate hikes and geopolitical risks, banks should remain vigilant against the risks of more volatile capital outflows and the associated impact on local interest rates. In particular, given rising corporate leverage, banks should carefully assess how these risk factors could affect the credit risk of their corporate exposures.

*The Half-yearly Report on Monetary and Financial Stability* is prepared by the staff of the Research Department of the Hong Kong Monetary Authority.

---

## 2. Global setting and outlook

---

*Global growth remained strong overall, although there is less synchronicity of economic momentum across countries, with the US continuing to post impressive economic data while other major advanced economies showing signs that their cyclical expansions might have peaked. As trade tensions escalated between the US and its trading partners, risks of spillovers from trade frictions weighed on the growth prospects of emerging market economies. In conjunction with the continued monetary policy normalisation by the Federal Reserve, emerging market economies experienced substantial capital outflows in the second quarter. Against this background, the global economic outlook is fraught with uncertainty. The recently announced or enacted tariffs by the US, as well as the likely retaliations by trading partners, particularly Mainland China, has increased the risk of full-scale trade wars. The outperformance of the US economy against other major advanced economies may prolong the divergence in global monetary policy, fuelling US dollar strength to the detriment of emerging market economies' financial stability. Over the medium term, the pace of growth seen in the US over the past year may not be sustained, as the effects of fiscal stimulus wane and as inflationary pressures build.*

*Despite the looming trade conflict between the US and Mainland China, growth momentum in East Asia remained stable in the first half of 2018. However, capital outflows and currency depreciation pressures have become visible in the region, especially for economies with a larger stake in Mainland's production chains. With a trade war becoming increasingly likely, East Asia faces multiple headwinds. While the direct impact of a trade war on the region's exports would likely be limited, its damage to investor confidence could be much more disruptive to the economy. Central banks may need to strike a delicate balance between supporting growth and curbing capital outflows. Against this background, economies with stronger fundamentals, healthier external positions and larger fiscal policy space are likely to fare better.*

*In Mainland China, growth momentum remained largely stable in the first half of 2018. While the fast expansion in higher value-added manufacturing and services industries would likely support the near-term growth outlook, rising uncertainty amid the escalating US-China trade conflict makes it more challenging for authorities to strike a balance between continued growth and structural reform. During the review period, home prices in first-tier cities remained largely stable with tightening measures in place. Banks continued to strengthen loan underwriting standards on riskier borrowers, such as firms in overcapacity sectors. To alleviate the financing difficulties facing small firms amid the recent declines in informal financing activities, the PBoC rolled out several rounds of targeted easing measures to encourage banks to better support small firm financing. Market sentiments deteriorated somewhat for both Mainland equities and the renminbi, although capital outflows were limited amid stable economic conditions.*

## 2.1 External environment

Global growth remained solid in the first half of 2018, supported in part by the continuation of the global cyclical upturn that began in 2016, and the recently enacted fiscal stimulus in the US. However, while the US economy sustained a solid pace of expansion amid the tailwinds of fiscal loosening, growth in the euro area and Japan remained modest in the second quarter, which raised concerns that the cyclical expansions outside the US may have peaked (Chart 2.1). Adding to such concerns, sovereign yields of several peripheral euro area countries increased sharply in late May in anticipation of the formation of a populist government in Italy. Renewed risks of a “hard Brexit” also weighed on the British Pound since June, highlighting the fragility of the European economic recovery in the face of lingering political uncertainty.

**Chart 2.1**  
**Real Gross Domestic Product (GDP) growth in selected advanced economies (AEs)**



Source: CEIC.

Against the backdrop of already less synchronised global growth, the marked escalation of trade tensions between the US and its major trading partners, including the European Union (EU), Canada, Mexico and Mainland China, may potentially derail the global recovery. Since early 2018, the US administration stepped up its protectionist trade measures by imposing, or threatening to impose, tariffs on a wide range of imports, including steel and aluminium, high

technology products from Mainland China and automobiles from the EU (Table 2.A). In response, the targeted countries announced retaliatory tariffs on a range of US exports.<sup>1</sup> At the same time, uncertainties remain over the renegotiations of the North American Free Trade Agreement (NAFTA). In late August, the US and Mexican administrations announced a bilateral trade agreement to replace NAFTA, but the Trump administration threatened to impose tariffs on automobiles from Canada if the latter does not agree to the new framework. It remains to be seen whether Canada would eventually offer concessions to bring itself back into negotiation with the US.

**Table 2.A**  
**Selected US trade measures in 2018**

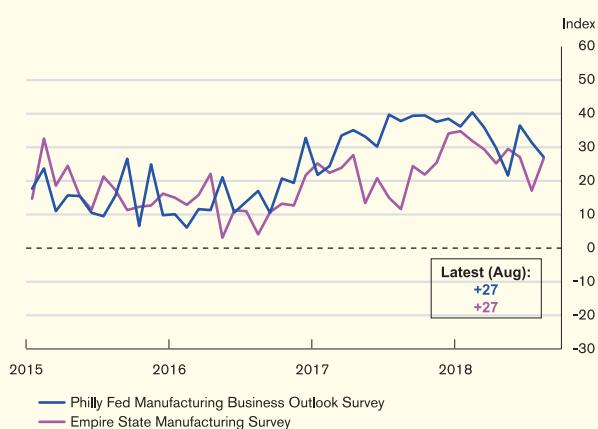
Date	Trade measures
22 Jan	Announcement to apply tariffs on imported washing machines and solar panels
22 Mar	Indication to prepare a list of tariffs on up to US\$60 billion of Mainland's products following Section 301 investigations
23 Mar	Filed a request in the World Trade Organisation (WTO) for consultations with Mainland China concerning protection of intellectual property rights
	10% tariffs on imported aluminium and 25% tariffs on imported steel went into effect, with temporary exemption for selected countries (including Canada, Mexico and the EU)
3 Apr	A list of 1,333 Mainland's products under consideration for 25% tariffs was released following 22 March announcement
23 May	Section 232 investigation into imported automobiles and auto parts initiated, with the Trump administration planning to raise tariffs to 25% on these products
29 May	Announcement to impose a 25% tariff on about \$50 billion worth of Mainland's goods deemed to have contained “industrially significant technology”, following the release of the proposed list of 1,333 products on 3 April
1 Jun	Steel and aluminium tariff exemptions for the EU, Canada and Mexico ended
15 Jun	Released a revised list of approximately US\$50 billion of Mainland's products to be targeted with 25% tariffs, with tariffs to be implemented in two phases starting 6 July
6 Jul	Imposed 25% tariffs on US\$34 billion of Mainland's goods
11 Jul	Released a list of another US\$200 billion of Mainland's products to be subjected to a 10% tariff
1 Aug	Signalled an intention to apply 25% tariffs (instead of the previously proposed 10%) on the list of US\$200 billion of Mainland's imports announced on 11 July, open for public comment until 6 September
7 Aug	Pertinent to the announcement on 15 June, US\$16 billion worth of imports from Mainland China would be subjected to 25% tariff, effective 23 August
27 Aug	Announced levy of antidumping duty and countervailing duty on imports of cast iron soil pipe and certain steel wheels from Mainland China respectively

Source: HKMA staff compilation.

<sup>1</sup> The US and the EU announced in late July that both sides would put new tariffs on hold while negotiating new arrangements to reduce trade barriers. But it remains to be seen whether the outcome of this negotiation will be followed by a de-escalation of US-EU trade conflicts.

The spectre of an all-out trade war between the US and Mainland China represents a key downside risk to the global economic outlook. Given the tightly integrated global supply chain, the imposition of import tariffs on a given country's exports will likely entail second-round impacts on other economies that are involved in the production chains of the targeted country.<sup>2</sup> In the longer run, higher import tariffs will likely translate into increased production costs or consumer prices, resulting in stagflationary pressures in a similar vein to a negative supply shock. Other economic spillover effects, such as job losses in export sectors and lower business investment due to increased uncertainty over trade policies, may result in distortions to resource allocation and lower productivity. In the US, for example, uncertainty over US trade policy has conceivably weighed on business confidence, with the minutes of the July Federal Open Market Committee (FOMC) meeting noting that manufacturers in a number of Federal Reserve (Fed)'s twelve districts have scaled back their capital expenditure (capex) plans or are planning to do so if global trade tensions do not get resolved (Chart 2.2).

**Chart 2.2**  
**Indices of 6-month-ahead business capex plans in selected US Fed districts**

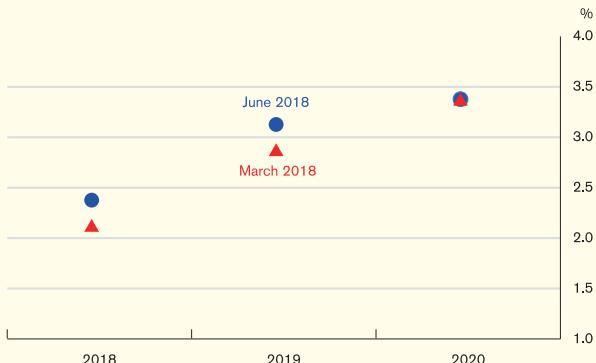


Source: CEIC.

At the same time, divergent underlying macroeconomic development across the globe has set the stage for sustained divergence in monetary policies across major AEs. In the US, strong job gains and higher disposable income due to the recent tax cuts supported a marked rebound in consumer spending after a temporary setback early this year. This, together with robust business investment, underpinned the US growth performance in the first half of 2018, with real GDP expanding robustly by +4.2% on a quarter-on-quarter annualised basis in the second quarter. The labour market tightened further, with the unemployment rate falling to 3.9% in July and the National Federation of Independent Business's index of actual employment compensation reaching an all-time high in May. Amid dwindling resource slack, core consumer price index (CPI) inflation picked up from +1.9% year-on-year (yoY) in the first quarter to +2.4% yoY in July, and import tariffs may add further to inflationary pressures. A labour market estimated to be operating above potential and firmer readings on inflation supported the case for continued balance sheet normalisation and further gradual interest rate hikes by the Fed, which judged that these developments roughly balanced downside risks, such as those emanating from trade tensions. In the first five meetings of 2018, the Fed increased rates twice by 25 basis points (the latest move in June raised the target range to 1.75 to 2%), and continued to implement balance sheet normalisation. Based on the latest Summary of Economic Projections (SEP), the FOMC expects two more increases in the second half of 2018 (Chart 2.3).

<sup>2</sup> In Mainland China, for instance, foreign content accounted for more than one-third of the total value-added in its gross exports in 2011, based on data from the Organisation for Economic Co-operation and Development (OECD)'s Trade in Value Added (TiVA) database.

**Chart 2.3**  
**Fed funds rate projections in SEP: June versus March 2018**



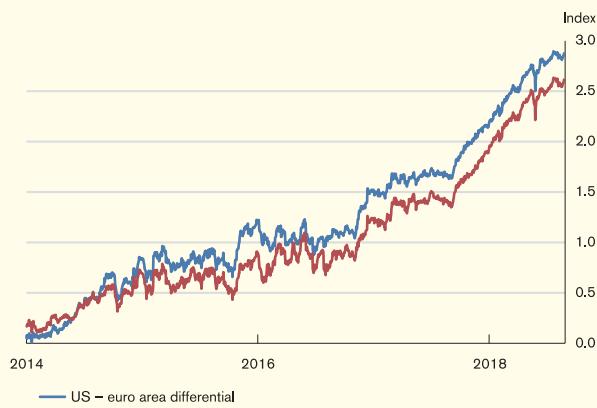
Source: The Fed.

On the other hand, economic growth in the euro area has shown signs of moderation since the first quarter of 2018, attributable to both temporary factors (e.g. adverse weather conditions) and increasingly binding supply-side constraints following several years of under-investment in the region. Nevertheless, despite progressively tightening labour market conditions and signs of rising wage costs, core inflation remained subdued, only hovering at about 1% in the second quarter. Against this background, the European Central Bank (ECB) announced in June its intention to end the asset purchase programme by year-end, while strengthening its forward guidance on policy interest rates to signal restraint from rate hikes at least until the summer of 2019. Similarly, in Japan, wage growth remained sluggish in spite of the very tight labour market conditions. This suggests the Bank of Japan (BoJ)'s Quantitative and Qualitative Easing programme is likely to remain in place in the near future, even though the BoJ recently adjusted its Yield Curve Control policies to allow the 10-year Japanese Government Bond (JGB) yield to move around 20 basis points from its policy target of zero percent, wider than the 10 basis point range allowed previously. At the same time, the BoJ has become more active in managing the bond

market below the yield ceiling. So far, investors have remained cautious despite the BoJ's shift, with the 10-year JGB yield still far below the 0.2% limit.

As the ECB and the BoJ are likely to maintain an accommodative monetary policy stance, interest rate markets have priced in an increasingly wide policy rate divergence between the US and the euro area, as well as between the US and Japan, as reflected by the differences in their 1-year forward overnight index swap (OIS) rates (Chart 2.4). Amid persistent global monetary policy divergence, risks to the US dollar will likely tilt to the upside in the near term, potentially resulting in tighter global financial conditions to the detriment of emerging market economies (EMEs). However, over the medium term, the strong pace of real GDP growth seen in the US in the past year may not be sustained, as the effects of fiscal stimulus wane and as inflationary pressures build.<sup>3</sup> The combination of slower growth and higher inflation, in turn, may add to the uncertainties over the Fed's longer-term monetary policy outlook.

**Chart 2.4**  
**Differences in 1-year forward 1-month OIS rates between (1) the US and the euro area and (2) the US and Japan**

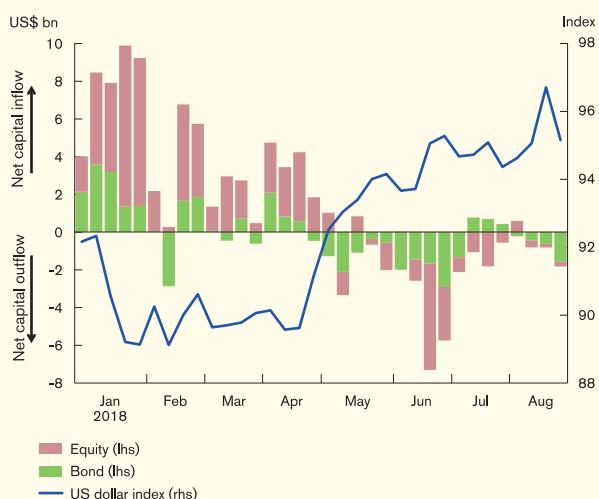


Source: Bloomberg.

<sup>3</sup> According to the June SEP, FOMC members expected US real GDP growth to slow from 2.8% in 2018 to 2.0% in 2020, while core private consumption expenditure inflation was projected to rise from 2.0% to 2.1% over the same period.

Downside risks to growth have also intensified outside the major AEs since the second quarter. As the Fed continued to normalise its balance sheet and policy rate, the US dollar strengthened as the long-term US Treasury yields increased. As at end-August, the US dollar index rebounded by 7% from this year's low in February alongside a 45 basis point year-to-date increase in the 10-year US Treasury yield. The resulting tightening of global financial conditions fuelled capital outflow pressures across EMEs in May and June (Chart 2.5), leading to double-digit currency depreciation against the US dollar in the second quarter in some EMEs with weaker fundamentals or domestic political issues (e.g. Argentina, Turkey and Brazil). In response to exchange rate pressures, central banks in several key EMEs, including Argentina, Mexico and Turkey, raised policy rates in recent months. As financial markets reappraised the potential impacts of trade conflicts on EMEs in June amid the Trump administration's increasingly bellicose rhetoric on trade, EME equity markets underperformed their AE counterparts (chart 2.6), while commodity prices (as measured by the benchmark CRB BLS index) also dropped by 9% from their peak in mid-June.

**Chart 2.5**  
**EME capital flows and US dollar index**



Sources: Datastream and EPFR.

### Chart 2.6

#### Morgan Stanley Capital International (MSCI) World and EM indices



Note: The MSCI World Index and the MSCI EM index cover stock markets in developed economies and EMEs respectively. Both series were rebased to 100 on 1 January 2018.

Source: Datastream.

Market turbulence in Turkey in August amid rising tension with the US generated a wave of selling pressure on EME assets. The Turkish lira lost 26% of its value in August, as investors were unnerved by Turkey's uncontained inflation, hefty current account deficit and significant foreign currency exposure. Risk-off sentiments spilled over to a wide range of EME assets. The MSCI emerging market index fell to its lowest level in mid-August in more than a year, and the currencies of EMEs with weaker economic fundamentals — such as Argentina and South Africa — declined significantly. While large-scale financial contagion did not occur, further deterioration in the situation in Turkey could put significant strain on the EMEs' capital flows.

In East Asia<sup>4</sup>, the effects of the looming trade war between the US and Mainland China have yet to be reflected in headline growth figures, and economies in the region grew at a stable pace in the first half of 2018. Although external demand has moderated from a strong 2017, it continued to drive economic growth. Meanwhile, the support from domestic demand remained resilient (Chart 2.7).

<sup>4</sup> In this Chapter, East Asia refers to a group of seven economies; they are Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand.

### Chart 2.7 East Asia: Domestic demand and exports



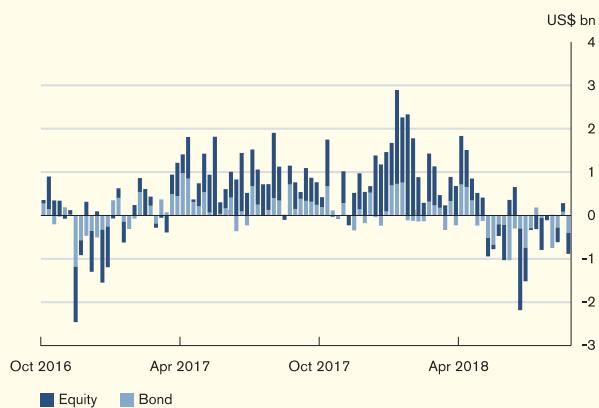
Note: The chart shows the weighted-average growth in domestic demand and exports in the national account of Indonesia, Malaysia, the Philippines, Singapore, South Korea and Thailand.

Sources: CEIC and International Monetary Fund (IMF).

Amid the solid growth momentum and higher oil prices, CPI inflation in many East Asian economies picked up modestly in recent months, although they stayed below the long-term average in most countries. Some inflation-targeters in the region (e.g. the Bank of Korea) have continued to struggle with below-target-median CPI inflation.

Despite stable real activities, the region's financial market volatility has increased since the second quarter, associated with rising trade tensions and the surge in US Treasury yields. Equity prices have decreased sharply since early June, while local currency sovereign bond yields have also increased. The downward pressure on asset prices was coupled with intensifying capital outflow pressures in recent months, with the region experiencing the largest broad-based portfolio outflows since late 2016 (Chart 2.8).

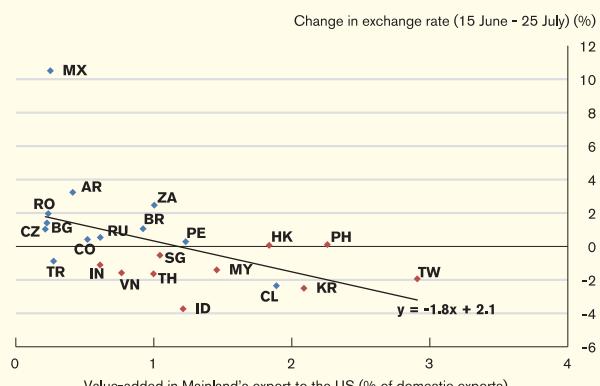
### Chart 2.8 Portfolio flows into East Asia



Source: EPFR.

The threat of an escalating trade conflict between the US and Mainland China has weighed on East Asian and other EMEs currencies, with depreciation pressures being more significant in economies that are tied to Mainland's production chains. These economies, such as Taiwan and South Korea, which contribute a large share of value-added in Mainland's exports to the US, have seen larger depreciations after the Trump administration proposed, and then partly imposed, tariffs on about US\$250 billion worth of imports from Mainland China since mid-June. EMEs with less presence in Mainland's production chains have fared better (Chart 2.9).

### Chart 2.9 East Asia and other EMEs: Recent exchange rate change and level of participation in Mainland's production chains



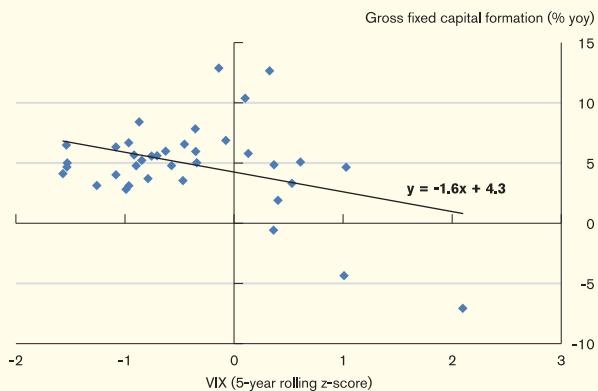
Note: Red dots are Asian economies.

Sources: Bloomberg and OECD-WTO TiVA.

Given the intensifying trade tensions between the US and Mainland China, the balance of risks has shifted to the downside. In this regard, there are multiple headwinds faced by East Asian economies in the near-term.

- First, while the direct impact of the trade war on growth in East Asia is expected to be limited, the damage it might cause to investor confidence might be much more disruptive to economies than the direct impact. The uncertainty that arises from a long-drawn out process of tit-for-tat trade negotiations could drag on investment in East Asia, as gross capital formation usually declines when indicators of uncertainty, such as the Chicago Board Options Exchange Market Volatility Index (VIX), increases (Chart 2.10). Since investment is a key component of domestic demand in East Asia, a slowdown in investment could put a brake on the region's economic growth. In a longer-term, a lower investment could also hurt productivity and potential growth.

**Chart 2.10**  
**East Asia: Gross fixed capital formation and VIX index**

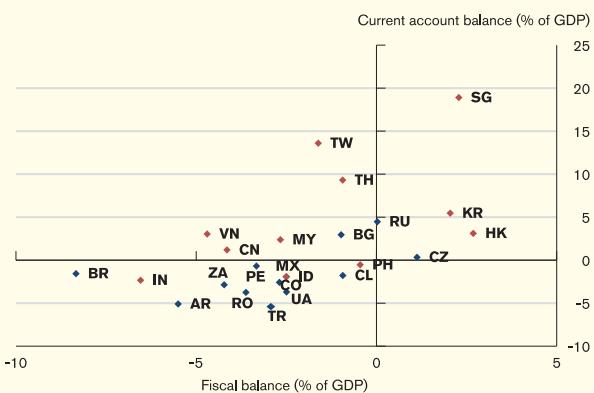


Note: The chart shows data from 2009 Q1 to 2018 Q1.

Sources: Bloomberg and CEIC.

- Second, in the event that real activities in the region start to slow due to the impact of a trade war, many East Asian central banks will be faced with a policy dilemma: to alleviate the impact of the trade war on investment and to support growth, they would need to cut policy interest rates; however, potential capital outflows associated with a deterioration in sentiment and the strengthening of the US dollar may warrant policy rate hikes. This dilemma would be especially significant in economies with weaker external positions and limited fiscal headroom (Chart 2.11), whereas economies with stronger fundamentals are more likely to withstand such headwinds.

**Chart 2.11**  
**East Asia and other EMEs: Current account balance and fiscal balance (forecasts for 2018)**



Note: Red dots are Asian economies.

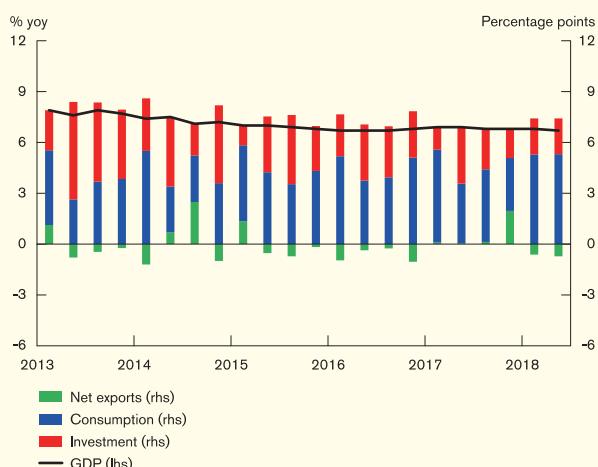
Source: IMF World Economic Outlook (April 2018).

## 2.2 Mainland China

### Real sector

Growth momentum remained largely stable in the first quarter of 2018 and showed some moderation in the second quarter. For the third consecutive quarter, real GDP expanded further by 6.8% year on year in the first quarter, but inched lower to 6.7% in the second quarter amid notably weaker infrastructure investment growth (Chart 2.12). Taking the first half of 2018 as a whole, the year-on-year real GDP growth stayed unchanged at 6.8% from the previous six months.

**Chart 2.12**  
**Mainland China: Contribution to GDP growth by demand component**



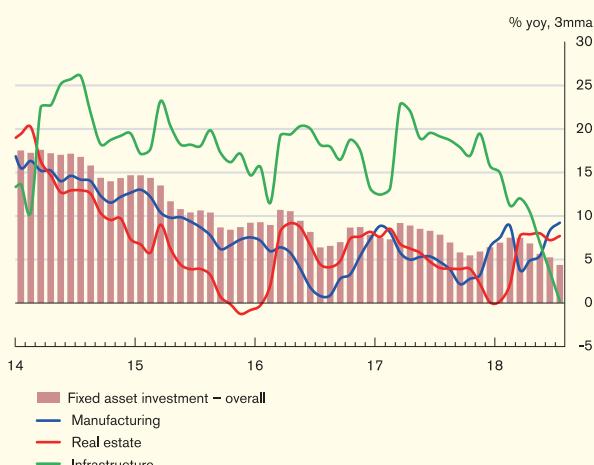
Sources: CEIC, NBS and HKMA staff estimates.

On the expenditure front, consumption growth remained vibrant in the first half of 2018 on the back of solid labour market conditions and buoyant consumer sentiment. As for gross capital formation, while real estate and manufacturing investment growth rebounded in the first half of the year, infrastructure investment growth declined notably amid tightening measures on local government

financing activities (Chart 2.13). Externally, despite increased uncertainty over the trade conflict with the US, export growth remained robust in the first half of 2018. However, as imports grew at a faster pace than exports, the contribution of net exports to overall growth turned negative during the period.

**Chart 2.13**

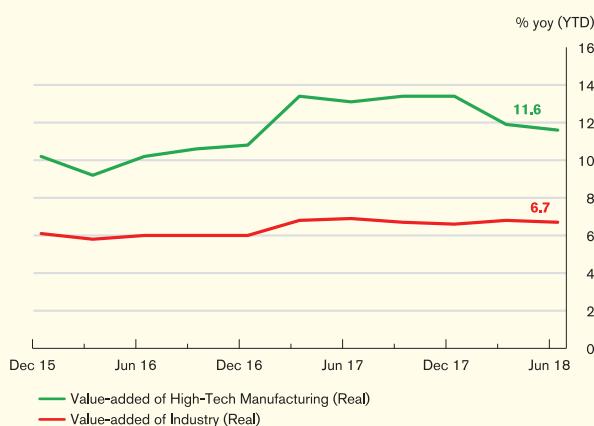
**Mainland China: Fixed asset investment by industry**



Sources: CEIC and HKMA staff estimates.

In value added terms, growth in the tertiary sector remained robust in the first half of 2018. In particular, the burgeoning IT and software industry continued to be the fastest growing subsectors, followed by leasing and commercial services, transport storage and postal services and others. Secondary industry growth edged higher, underpinned mainly by a rebound in construction amid improved real estate investment. In comparison, manufacturing activities registered slightly slower growth, but the high-tech subsectors powered ahead with stronger double-digit growth (Chart 2.14). As growth in the tertiary sector continued to outpace other sectors, its value-added share in the overall economy rose further to 54.3% in the first half of 2018 from 54% a year ago.

**Chart 2.14**  
**Mainland China: growth of industrial value added**



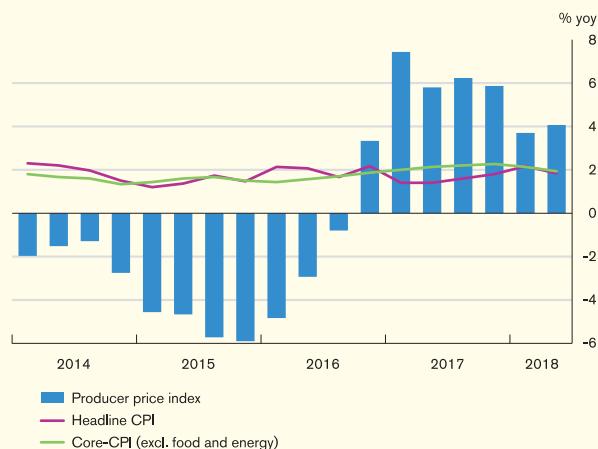
Sources: CEIC, Wind and government websites.

Looking ahead, while the near-term growth outlook should continue to be supported by higher value-added manufacturing and services industries, rising uncertainty amid the escalating trade conflict between the US and Mainland China makes it more challenging for Mainland authorities to strike a delicate balance between pushing ahead with structural reforms, maintaining financial stability and supporting economic growth. In this regard, monetary policy is being finely-tuned as more targeted easing measures are introduced to support private business expansion. Fiscal policy is set to be more proactive, with further tax and fee cuts to support small enterprises and corporate research and development (R&D), and more infrastructure spending to improve weak links in the economy. The latest consensus forecasts expect the Mainland economy to grow by 6.6% this year, down from 6.9% in 2017.

In the first half of 2018, consumer price inflation increased slightly amid robust consumption. Headline consumer price inflation crept up from an average of 1.7% year on year in the second half of 2017 to 2.0% in the first half this year, as

food prices reversed from a decline of -0.8% year on year to an increase of 1.2% during the same period (Chart 2.15). After excluding food and energy prices, core inflation, however, subsided from 2.2% year on year in the second half of 2017 to 2.0% in the first half of 2018, in part, driven by a slower price increase in housing rentals. At the wholesale level, producer price inflation tapered off from 6.1% year on year in the second half of 2017 to 3.9% in the first half of 2018 as commodity prices stabilised.

**Chart 2.15**  
**Mainland China: Consumer price and producer price inflation**

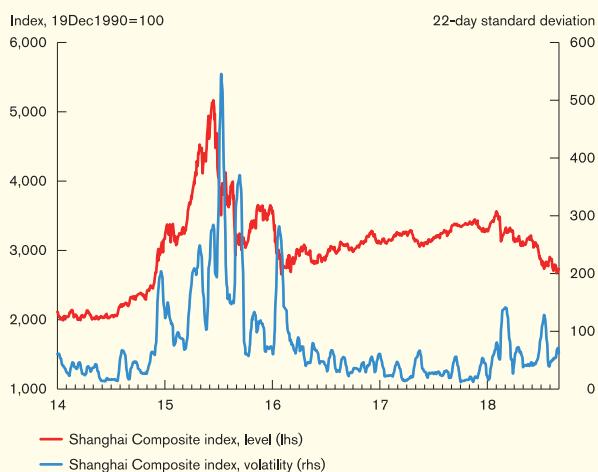


Sources: CEIC, NBS and HKMA staff estimates.

### Asset Markets

Although Mainland's economic conditions remained stable, investor sentiment in the stock market appeared to have deteriorated amid concerns over the escalating trade conflict with the US. Since the US announcement early this year of tariffs on Mainland's imports, the Mainland equity market has slumped, with the Shanghai Composite Index declining by around 24% in 6 months. Market volatility also rose, with the 22-day price swing rising to its highest level in almost two years in February 2018 (Chart 2.16).

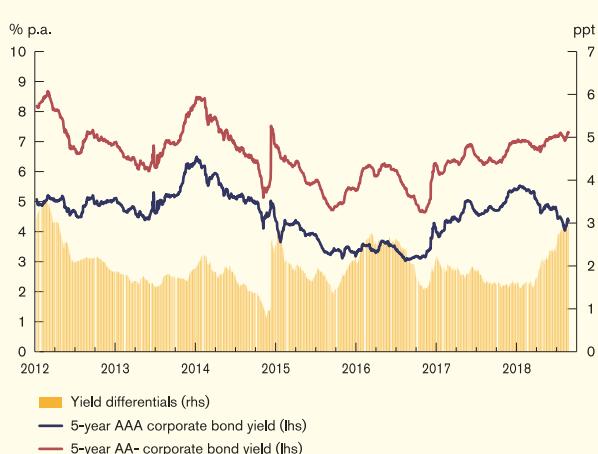
**Chart 2.16**  
**Mainland China: The Shanghai Composite Index and its volatility**



Sources: CEIC and HKMA staff estimates.

In the bond market, funding costs reduced visibly for corporate issuers with the better rating after several rounds of required reserve ratio (RRR) cuts in the first half of 2018 (Chart 2.17). By contrast, yields of lower-rated corporate bonds edged up further, likely reflecting the reduced risk appetite of investors in the face of rising uncertainty in Mainland's economic outlook, as well as a deteriorated debt servicing ability of firms with weaker financial positions amid continued financial deleveraging.

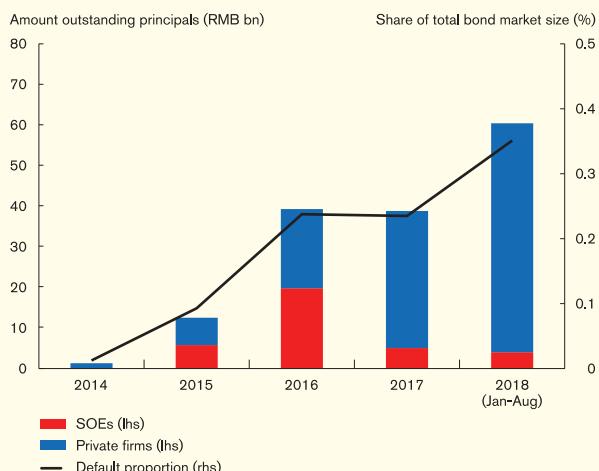
**Chart 2.17**  
**Mainland China: 5-year corporate bond yields**



Sources: Wind and HKMA staff estimates.

Indeed, the first eight months of 2018 witnessed bond defaults by 24 corporate issuers, compared with 21 for the whole of 2017<sup>5</sup>. The total size of default bonds during the period therefore increased to RMB60 billion, which is equivalent to 0.35% of the total outstanding size of non-financial debt securities at the end of August 2018 (Chart 2.18). Further analyses suggest that the recent defaults were concentrated mainly in lower-rated private issuers, which probably had a greater reliance on informal channels for financing. As a result, they might have faced greater funding pressures as the ongoing financial tightening is aimed at reining in shadow banking activities.

**Chart 2.18**  
**Mainland China: Bond default size and proportion**

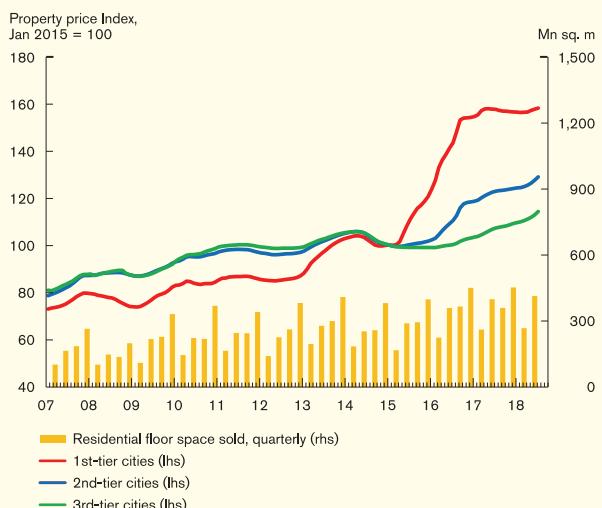


Sources: Wind and HKMA staff estimates.

During the review period, house prices in the Mainland property market, remained largely stable in first-tier cities with tightening measures in place, including increased down-payment requirements and home purchase and sale restrictions (Chart 2.19). In lower-tier cities, property prices edged up further, albeit at a much slower pace compared with 2016 when Mainland China was facing a home-buying frenzy.

<sup>5</sup> Data collected from Wind, including enterprise and corporate bonds, medium-term notes, short-term commercial papers and private placement notes.

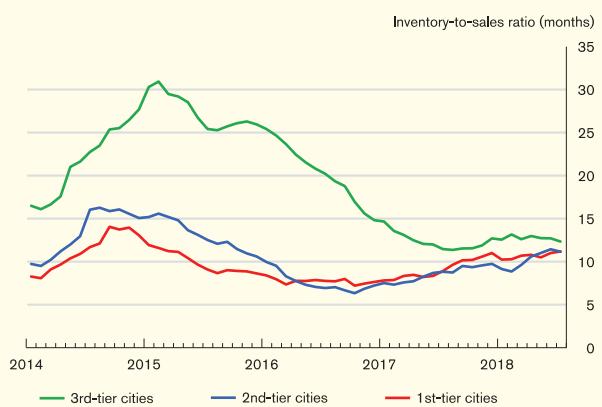
**Chart 2.19**  
**Mainland China: Residential prices by tier of cities and floor space sold**



Sources: CEIC and HKMA staff estimates.

Housing oversupply issues, which plagued third-tier cities in previous years, remained largely in check, partly due to robust sales amid bullish market sentiment. By the end of July 2018, the inventory-to-sales ratio in third-tier cities was stable at around 12 months, much lower than the peak of 31 months in early 2015 (Chart 2.20). However, real estate investment especially in third-tier cities rebounded notably in the first half of 2018 in tandem with steady increases in property prices. Whether the fast expansion in real estate investments will continue and potentially lead to a resurgence in housing oversupply requires close monitoring.

**Chart 2.20**  
**Mainland China: Inventory-to-sales ratios by city tier**



Sources: Wind and HKMA staff estimates.

Although the overheated Mainland property market appeared to have stabilised amid tightening measures introduced by the authorities, it is not clear whether housing prices can be sustained at their current level, given stretched affordability. This remains a key risk for Mainland financial stability. To understand the potential impact of real estate cycles on financial stability in Mainland China, Box 1 examines to what extent property market ups and downs can affect corporate default likelihood. For a large panel of listed non-financial firms, this analysis finds that while property price increases in Mainland China do little to decrease the default likelihood as perceived by stock market investors, property price declines significantly increase the default likelihood. In addition, such an impact seems to be non-linear, as the corporate default likelihood tends to be much larger if property price declines are abrupt.

To contain the potential risk and promote a stable and healthy development of the property market, the authorities accelerated the construction of indemnificatory housing, while speeding up the development of the rental market along with a more flexible system to increase land supply, as proposed at the Central Economic Work Conference in December 2017.

### Credit and asset quality

During the first half of 2018, loan demand from Mainland companies remained strong. According to a quarterly survey by the People's Bank of China (PBoC), recent increases in loan demand appeared to be broad-based. Smaller corporate borrowers continue to have the strongest demand (Chart 2.21).

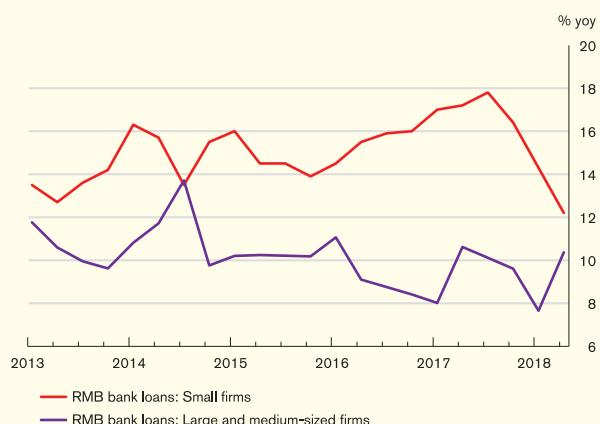
**Chart 2.21**  
**Mainland China: Loan demand index by industry**



Source: PBoC.

The strong and growing demand by smaller firms for loans in recent quarters might have been partly due to the fact that the ongoing financial deleveraging had led to a notable deceleration in shadow banking activities, which had provided important funding support to small and private firms, especially those with limited access to formal finance. In response to this development, the PBoC introduced several rounds of easing measures including targeted RRR cuts and conditional Medium-term Lending Facility (MLF) lending to better support bank lending to small firms (please refer to the fiscal and monetary section for details). As a result, bank lending to small firms continued to expand faster than bank loans extended to medium- and large-sized firms in recent quarters, though at a slower pace<sup>6</sup> (Chart 2.22).

**Chart 2.22**  
**Mainland China: Growth of bank lending to corporate borrowers**



Sources: PBoC and HKMA staff estimates.

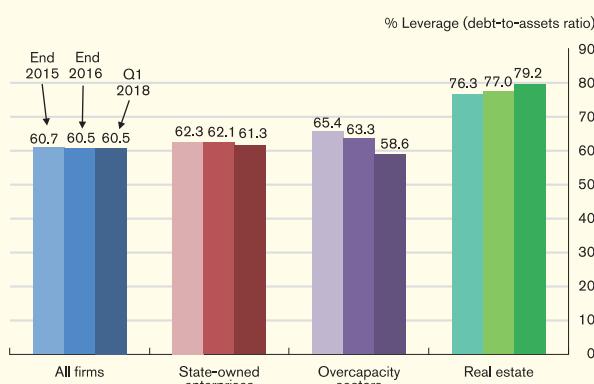
During the review period, the year-on-year growth in bank credit to Mainland firms slowed slightly to 12.3% at the end of June 2018 from 12.7% at the end of 2017, amid continued corporate deleveraging. In particular, banks continued to strengthen their loan underwriting standards on vulnerable borrowers, which helped keep in check banks' exposure to firms in overcapacity sectors. As a result, the leverage ratio of firms in overcapacity sectors further declined in the first quarter of 2018 with robust growth in corporate earnings (Chart 2.23). Meanwhile, the leverage ratio of state-owned enterprises (SOEs) inched lower, likely reflecting the fact that the borrowing constraint of less efficient and more vulnerable SOEs was tightened during the recent SOE reforms.<sup>7</sup>

<sup>6</sup> According to the quarterly press release of the China Banking and Insurance Regulatory Commission (CBIRC), growth in bank loans to the firms with credit limit less than RMB5 million picked up from 9.8% year on year at the end of 2017 to 15.6% at the end of June 2018.

<sup>7</sup> Alex Cheng, John Fu and Steven Chan (2018), "Are SOE reforms in China going anywhere? Evidence from corporate borrowing constraints." *HKMA Research Memorandum 03/2018*.

**Chart 2.23**

**Mainland China: Corporate leverage of SOEs, firms in overcapacity sectors and real estate companies**

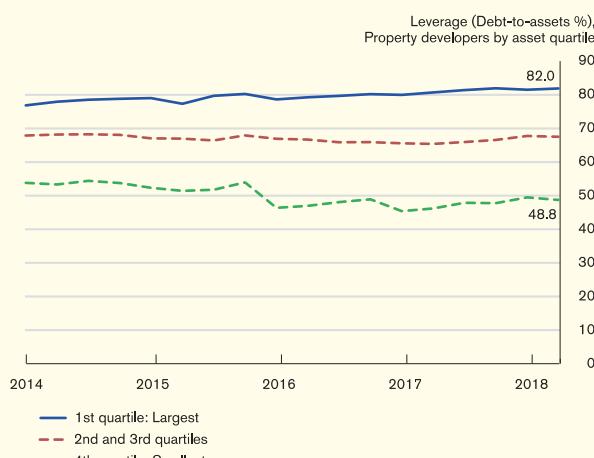


Sources: Bloomberg and HKMA staff estimates.

In comparison, the leverage ratio of property developers further increased in the first quarter of 2018 amid a rebound in real estate investment, in part supported by an acceleration in bank lending. Further analyses suggested leveraging was mainly concentrated in larger developers, whose financial positions are usually better (Chart 2.24).

**Chart 2.24**

**Mainland China: Corporate leverage of real estate developers by company size**



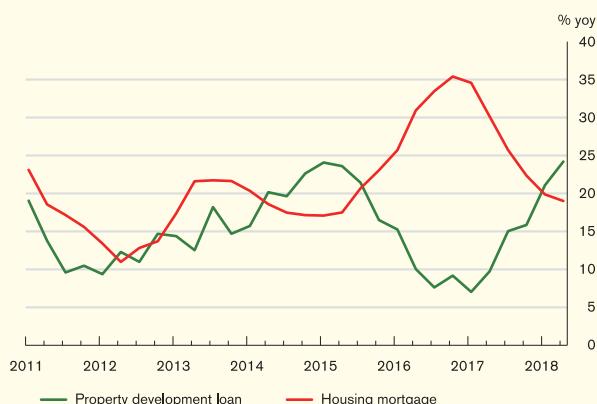
Sources: Bloomberg and HKMA staff estimates.

While year-on-year growth in property development loans further picked up to 24.2% at the end of June 2018 from 15.9% at the end of 2017, year-on-year growth in mortgages further slipped to 19% from 22.4% over the same period

amid tightening measures on home purchases (Chart 2.25). As a result, the share of property development loans and mortgages together in total bank loans, measuring banks' direct exposure to the property market, increased slightly to 26.5% by the end of June 2018 from 25.7% at the end of 2017.

**Chart 2.25**

**Mainland China: Growth in mortgage and property development loans**



Sources: CEIC and HKMA staff estimates.

During the review period, the asset quality of banks remained sound as loan underwriting standards strengthened and the profitability of Mainland corporates improved<sup>8</sup>. In the first half of 2018, the share of special mention loans in total bank loans continued to decline<sup>9</sup>. The bad debt coverage ratio of banks remained largely stable at 179% in the second quarter of 2018 compared to 181% at the end of 2017.

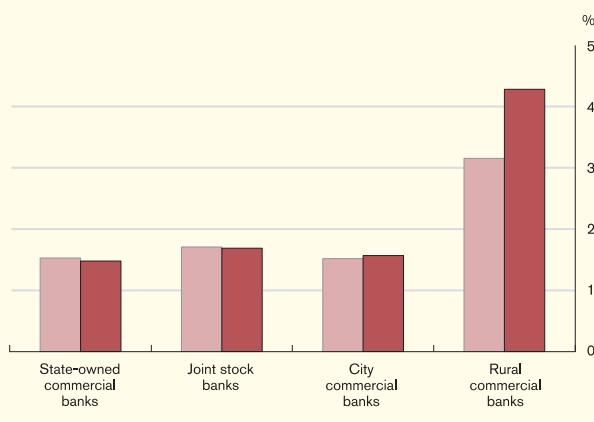
Nevertheless, the ratio of NPL increased in the first half of 2018. In particular, while the NPL ratio of state-owned banks remained largely stable, the NPL ratio of smaller commercial

<sup>8</sup> Listed non-financial company data suggests that profitability as measured by the four-quarter rolling return on equity (ROE) of the corporate sector increased to 8.2% in the first quarter of 2018 from 8.0% in the last quarter of 2017. In particular, ROE of over-capacity sectors increased to 10% from 9.4% during the same period.

<sup>9</sup> A loan will be classified as special mention loans if the borrower has the ability to repay the loan currently, but may be affected by some unfavourable factors, according to the CBIRC. Non-performing loans (NPL) include loans that are classified as substandard, doubtful or loss, which are loans that are unlikely to be fully repaid and banks would thus suffer losses of different degrees.

banks, especially rural commercial banks, increased visibly in the second quarter of 2018 (Chart 2.26).

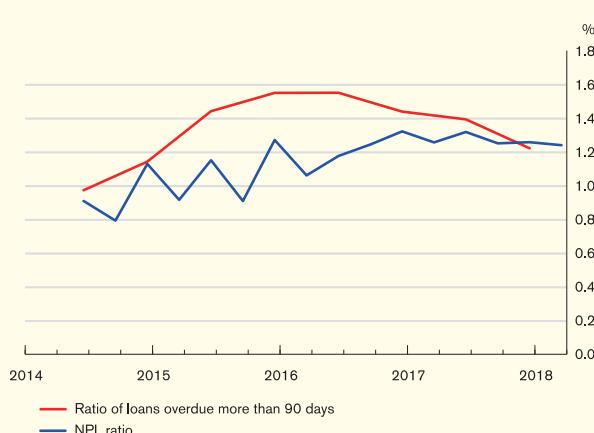
**Chart 2.26**  
**Mainland China: NPL ratio by bank types**



Source: CEIC.

The increase in the NPL ratio of these smaller banks was likely a result of a more stringent enforcement in the NPL reporting standard to include all loans more than 90 days overdue. For instance, data from the listed city and rural commercial banks suggest that while the share of loans more than 90 days overdue in total loans continued to decline in recent quarters, the gap between this and the NPL ratio significantly narrowed (Chart 2.27).

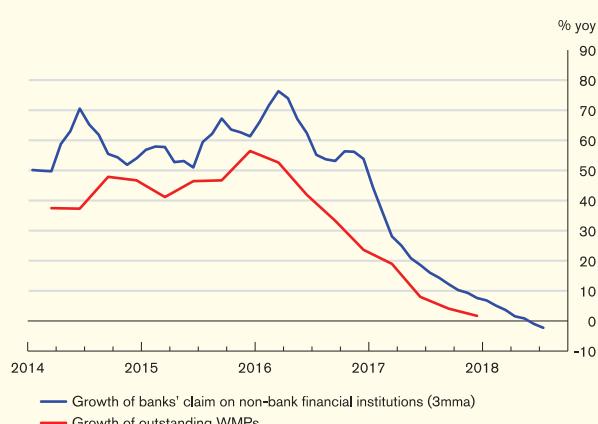
**Chart 2.27**  
**Mainland China: Listed city and rural commercial banks' NPL ratios and ratio of loans overdue more than 90 days**



Sources: Wind and HKMA staff estimates.

During the review period, authorities continued to push ahead with financial deleveraging to limit the involvement of banks in shadow banking activities. As a result, banks' claims on non-bank financial institutions have started to decline since June 2018 (Chart 2.28), with the share of such claims in the total bank assets stabilising at 10.4% at the end of July 2018.

**Chart 2.28**  
**Mainland China: Growth of bank's claim on non-bank financial institutions and outstanding wealth management products (WMPs)**

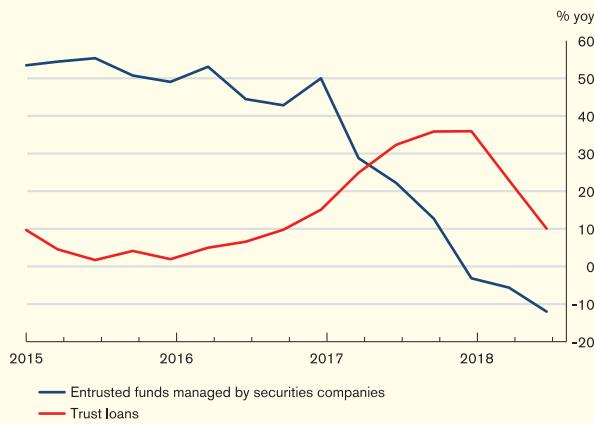


Sources: CEIC, WIND and HKMA staff estimates.

In addition, the authorities further tightened regulations on the WMPs issued or distributed by banks, as WMPs are also a major funding source for shadow banking activities. Following the decline in the involvement of banks in shadow banking activities, as suggested by the stabilisation in banks' exposure to non-bank financial institutions as well as tightened regulations on WMP issuance, shadow banking activities, such as trust lending and entrusted funds managed by securities companies, declined notably in the first half of 2018 (Chart 2.29).

**Chart 2.29**

**Mainland China: Growth of trust loans and entrusted funds managed by securities companies**



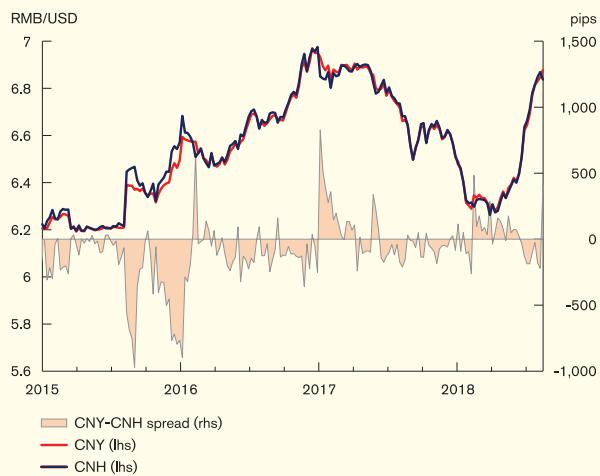
Sources: CEIC and Securities Association of China.

### Exchange rate and cross-border capital flows

The onshore renminbi (CNY) exchange rate strengthened by 2.8% in the first four months of 2018, but depreciated by 7.3% against the US dollar in the following four months amid rising uncertainty surrounding the US-China trade conflict (Chart 2.30). In comparison, the offshore renminbi (CNH) exchange rate was traded weaker against the US dollar most of time in recent months, with the CNY-CNH spread widening notably to over 400 pips on 11 July before narrowing towards the end of August. In response, the PBoC on 24 August announced to reintroduce the counter-cyclical factor to the CNY fixing formation mechanism, in order to mitigate the impact of pro-cyclical market behaviour and help stabilise market expectations.

**Chart 2.30**

**Mainland China: The CNY and CNH exchange rates against the US dollar**

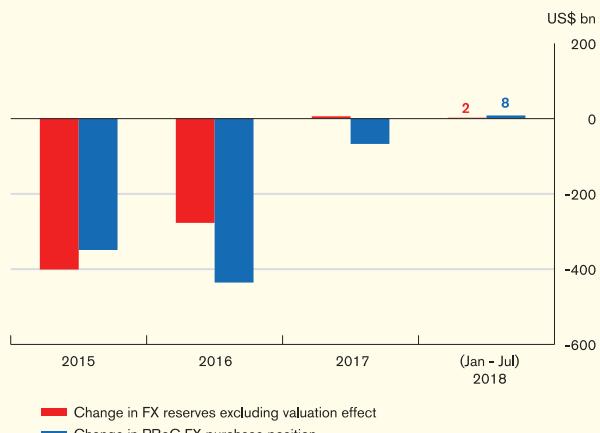


Sources: CEIC and HKMA staff estimates.

Despite the depreciation of the renminbi exchange rate, the two most commonly-used measures for cross-border capital flows – the changes in foreign reserves excluding valuation effects, as well as in the PBoC foreign exchange (FX) purchase position – both remained muted in the first seven months of 2018 (Chart 2.31). As a result, the Mainland headline foreign reserves remained largely stable at US\$3,118 billion in July 2018 compared to seven months ago.

**Chart 2.31**

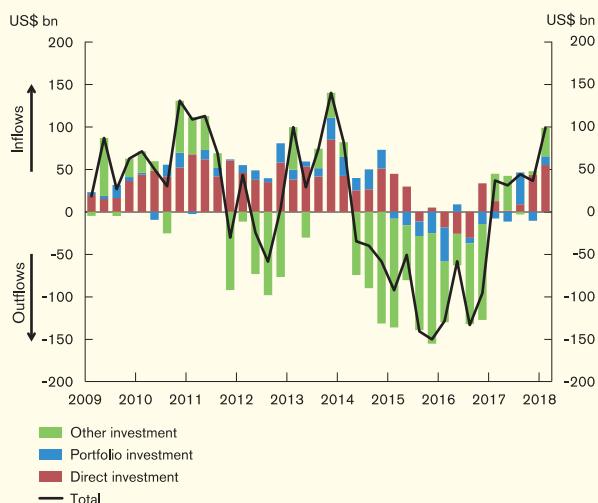
**Mainland China: Changes in PBoC FX purchase position and foreign reserves**



Sources: CEIC, SAFE and HKMA staff estimates.

The latest statistics on the balance of payments also pointed to limited capital outflows, with net cross-border capital inflows staying positive recently (Chart 2.32). In particular, while net capital inflows through direct investment remained robust in the first quarter of 2018, underpinned by strong inward investment, net capital inflows through other investment increased notably amid stronger cross-border borrowing than lending by Mainland residents. Meanwhile, net outflows through portfolio investment in the fourth quarter of 2017 turned into net capital inflows in the first quarter of 2018, mainly reflecting an increased holding of Mainland bonds by international investors.

**Chart 2.32**  
**Mainland China: Net cross-border capital flows by type of flows**



Sources: CEIC, SAFE and HKMA staff estimates.

Looking ahead, stable economic conditions should continue to help contain capital outflow pressures over the short term, although rising uncertainty amid the escalating US-China trade conflict, as well as expectations for future movements in renminbi exchange rates, could also affect the outlook for cross-border capital flows in Mainland China.

### Fiscal and monetary policy

On the monetary policy front, while the PBoC continued to maintain a prudent and neutral

policy stance during the review period, it relied more on targeted easing measures to support business expansion in the real sector. In particular, to alleviate the financing difficulties facing small firms amid the recent declines in informal financing activities, the PBoC cut RRR three times, in January, April and July, to encourage banks to better support small firm financing. In addition to the RRR cuts, the central bank increased the funding support to banks by allowing banks to use high-quality small firm loans and bonds as collateral to borrow through the MLF. To further shore up bank lending to small firms, the PBoC also announced in June an increase in the weight of lending to small firms in its macro-prudential assessment for banks.

Following these monetary easing measures, liquidity conditions in the interbank market improved, with the 3-month Shanghai Interbank Offered Rate (SHIBOR) subsiding to around 2.9% in August from around 4.9% at the end of 2017 (Chart 2.33). Alongside the lower interbank market rates, the 10-year treasury yield fell from the peak of 4.0% in January to around 3.6% in August. Improved liquidity conditions should lower the funding costs of banks, and in turn may help lower the borrowing costs for the corporate sector in the period ahead.

**Chart 2.33**  
**Mainland China: Major market interest rates**

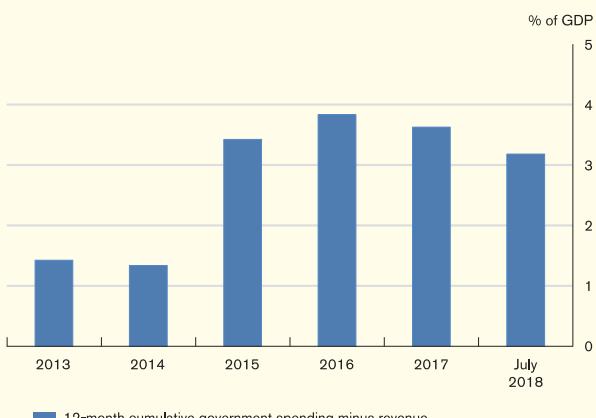


Source: CEIC.

On fiscal policy, the authorities adopted a more proactive stance to boost domestic demand. In an effort to foster business spending, the government lowered the value added tax rate in May. And, to specifically alleviate the tax burden on smaller business owners, the authorities raised the annual sales thresholds for firms in industrial, wholesale and retail trade industries that would be qualified as small-scale value-added tax payer, from around RMB0.5–0.8 million to RMB5 million in May, and also announced in April an increase in the annual taxable income threshold of small firms that can enjoy a tax advantage from RMB0.5 million to RMB1 million. In addition, to encourage firms to move up the value chain, the authorities expanded the coverage of the R&D tax allowance from small firms to all firms. On the household front, the government announced a new tax plan to raise the personal income tax threshold to ease the tax burden on consumers.

Despite these tax cutting initiatives, public revenue increased by 10.0% year on year in the first seven months of 2018, likely due to an expansion in the tax base amid improved business conditions. As government expenditure increased at a relatively slower rate during the period, the gap between government spending and revenue over the past 12 months narrowed to 3.2% of GDP at the end of July, from 3.6% at the end of December last year (Chart 2.34).<sup>10</sup>

**Chart 2.34**  
**Mainland China: Difference between government spending and revenue**



Sources: Wind and HKMA staff estimates.

Reflecting this proactive fiscal policy, the liability of the Mainland government increased further. In the first seven months of 2018, Mainland local government debt expanded by 3.9% to RMB17.2 trillion, compared with an increase of 7.5% in 2017. Due to stronger nominal GDP growth, the debt to GDP ratio for local governments actually declined slightly from 20% in 2017 to 19.8% at the end of July 2018.

Despite the decline in debt to GDP ratio, the risk associated with local government debt should not be ignored especially debt financed by irregular financing channels. In an effort to crack down on irregular financing activities of local governments, the authorities, as of 23 April 2018, had removed some existing public-private partnership (PPP) projects totalling RMB 1.8 trillion, or equivalent to around 10% of the total registered PPP projects at end-2017, while another RMB3.1 trillion worth of projects were subject to rectification.

Amid the tightened restrictions on local government financing activities, the credit risks of local government financing platforms (LGFPs) seem to have increased, particularly those with lower credit ratings. For instance, while the yield spreads between LGFP bonds and treasury bonds generally increased in the past few months, the yield spreads of lower-rated LGFP bonds

<sup>10</sup> Government spending and revenue include the expenditure and revenue in the government's general public budget and government-managed funds.

increased more notably (Chart 2.35). To alleviate the financing difficulties of LGFPs, the state council noted in July that the policy should encourage financial institutions to meet the appropriate financing needs of the LGFPs.

**Chart 2.35**  
**Mainland China: Yield spread between LGFP bonds and treasury bonds of 10-year tenor by credit rating**



Sources: Wind and HKMA staff estimates.

**Box 1****Property prices and corporate default likelihood in Mainland China\******Introduction***

Real estate cycles can have significant impact on financial stability. Over the past few decades, the experience of developed countries clearly shows that the bursting of property bubbles has major repercussions for financial stability.

In recent years, property prices in Mainland China, the largest emerging economy in the world, have picked up notably. In first-tier cities, including Beijing, Shanghai, Guangzhou and Shenzhen, property prices have, on average, increased by 60% since 2015. With buoyant market conditions, property prices in second-tier cities have also recorded substantial rises in the same period. As a result, housing affordability on the Mainland has worsened notably, and some first-tier cities such as Beijing and Shanghai have been named among the least affordable housing markets in the world<sup>11</sup>.

Policymakers as well as some market analysts have voiced concerns about this development, given the potential impact of property price declines on the real economy and financial stability as suggested by the experience of developed economies.

Understanding whether Mainland financial stability is susceptible to real estate cycles is crucial to policy making. This study adds to the debate by exploring the extent to which changes in Mainland property prices may affect the credit risk of corporate borrowers. We view the health of the corporate sector as a key barometer of Mainland financial stability as around 80% of bank loans have been granted to the corporate sector, a significant part of which are secured by

real estate<sup>12</sup>. That is not to mention the credit risk of highly leveraged property developers and the strong linkages between the real estate sector and other economic segments as well.

One difficulty facing researchers studying the credit risk of Mainland corporate borrowers is the paucity of information publicly available on corporate defaults. Therefore, this study uses a forward-looking measure of market-perceived default probability, which is estimated based on the stock prices and balance-sheet data of around 2,000 listed non-financial firms in Mainland China during the period from the first quarter of 2007 to the third quarter of 2016.

***Empirical framework***

To test to what extent real estate cycles may affect the credit risk of corporate borrowers in Mainland China, we regress a default risk index of Mainland firms, following Altman, Fargher, and Kalotay (2011), on the Mainland quarterly property price changes and a set of macro and firm-level variables, as follows:

$$\text{Risk Index} = f(\text{Property price changes}, \text{Firm characteristics}, \text{Macro variables}, \text{Other controlling variables}) \quad (1)$$

The dependent variable *Risk Index* is a quarterly default risk index of an individual firm and defined as  $\ln\left(\frac{1-DL}{DL}\right)$ , where *DL* is the stock-price-implied, one-year-ahead default likelihood for the firm. In essence, *DL* captures the market-perceived probability that the asset value of the firm will fall below its liabilities at the end of the following year. Therefore, higher *DL* means greater market-perceived default risk. We extend *DL* calculated by Han and Zheng (2016), which runs from the first quarter of 2007 to the second

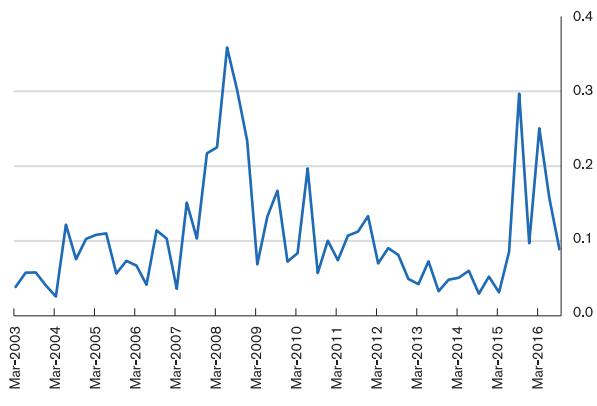
\* This box is based on Cheng, Ng, Chan, and Han (2018), "Property prices and corporate default likelihood in Mainland China", *HKMA Research Memorandum 06/2018*.

<sup>11</sup> The Bloomberg global city housing affordability index, 2017.

<sup>12</sup> IMF (2011), "People's Republic of China: Financial System Stability Assessment", *IMF Country Report No. 11/321*, Washington DC.

quarter of 2013, to the third quarter of 2016 using the same methodology. Our sample consists of around 2,000 Mainland listed non-financial firms.

**Chart B1.1**  
**Estimated market-perceived default likelihood of Mainland listed non-financial firms**



Note: This index is a simple average of the estimated market-perceived default likelihood of all listed Mainland firms in our sample.

Sources: Han and Zheng (2016) and HKMA staff estimates.

Chart B1.1 shows that the market-perceived default likelihood used in our study peaked during the Global Financial Crisis in 2008 and 2009, increased during the European Debt Crisis in 2011 and 2012, and picked up notably in 2015 and 2016 amid strong renminbi depreciation and rising concerns about a hard landing for the Mainland economy. This suggests that *DL* as an ex ante measure of default risk tracks well the events that might have triggered a greater credit risk of Mainland firms in our sample period.

In Equation (1), *Property price changes* is the quarter-on-quarter percentage change of a moving average of property prices. In particular, property prices are derived from the national sales value and area of residential commodity building. Financial information of firms extracted from quarterly financial reports, *Firm characteristics* such as profitability, liquidity position and size of a firm, are also included into the specification to control for their potential impacts on the perceived default likelihood of the firm. In addition, to control for the potential impact of macroeconomic and monetary

conditions on firms' default risk, we include a set of variables (*Macro variables*), which consist of real GDP growth and an estimate of the monetary condition index (MCI), in the regression.<sup>13</sup>

By construction, the estimated market-perceived default likelihood of firms (*DL*) hinges on stock market volatility, which can be affected not only by the fundamentals of listed firms but also by broad-based factors. To control for this, we include in the specification *Other controlling variables*, such as the Mainland stock market valuation, proxied by the lagged price-to-book value of the CSI 300 Index<sup>14</sup>. In addition, since stock market volatility on the Mainland increased significantly following the authorities' crackdown on margin-based trading in 2015 and 2016, a dummy variable that is equal to 1 from the first quarter of 2015 to the second quarter of 2016 is added to control for the potential distortions to *DL*.

### Data and empirical results

To estimate Equation (1), we employ a panel dataset consisting of the financial data of around 2,000 listed non-financial firms in Mainland China during the sample period from the first quarter of 2007 to the third quarter of 2016.

The estimation results of Equation (1) suggest most of the estimated coefficients of the control variables carry the expected signs. For example, faster GDP growth helps lower the perceived default likelihood of firms. In addition, firms with larger size, better liquidity positions, and greater profitability have a lower perceived default likelihood.

<sup>13</sup> The MCI is estimated using the same methodology as in "Box 1. How tight are monetary conditions in Mainland China?", *Half-yearly Monetary and Financial Stability Report*, September, 2011.

<sup>14</sup> The CSI 300 Index consists of the 300 largest and most liquid A-share stocks listed in Mainland China.

In terms of the effects of property prices, Column (a) in the upper panel of Table B1.1 shows that when the market stress dummy is not included in the specification, changes in property prices are found to have a statistically significantly negative impact on firms' default likelihood as perceived by the market. However, such impact becomes significantly positive when the market stress dummy is added to the specification. Because this period coincides with increases in property prices, the sign flip suggests that some asymmetry may be at play. That is, the sensitivity of default likelihood on property prices may depend on whether property prices are going up or going down. To test this, we re-estimate Equation (1) by adding into the specification the interaction term between *Property price changes* and a dummy variable, *Up*, that is equal to 1 if *Property price changes* are larger than zero.

**Table B1.1**  
**Estimated impact of property price changes on market-perceived default likelihood of Mainland firms**

	Without stock market stress dummy (a)	With stock market stress dummy (b)
<b>Linear effect</b>		
<i>Property price changes</i>	-0.057***	0.039***
<b>Asymmetric linear effect</b>		
<i>Property price changes</i>	-0.534***	-0.284***
<i>Property price changes* Up</i>	0.691***	0.443***
<b>Non-linear effect</b>		
<i>Property price changes</i>	-0.152***	-0.100***
<i>Property price changes</i> <sup>2</sup>	0.021***	0.031***

Note: \*\*\*, \*\* and \* denote the estimated coefficient is statistically significant at 1%, 5% and 10% respectively. To facilitate a more convenient interpretation of the result, the coefficients of the explanatory variables reported in the table are multiplied by -1, as *Risk Index* is a monotonically decreasing function of *DL*.

Source: HKMA staff estimates.

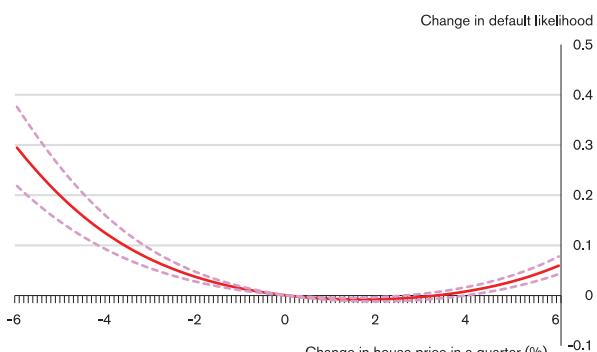
The estimation results reported in the middle panel of Table B1.1 confirm the existence of asymmetric impacts between property price increase and decrease, as the coefficient of the interaction term is statistically different from zero. More specifically, property price declines tend to increase the perceived default likelihood of firms, as suggested by the statistically

significantly negative coefficient of *Property price changes*. By contrast, however, property price increases are likely to lead to a greater rather than lower default likelihood, as the coefficients of *Property price changes* and the interaction term are jointly significantly positive, especially when the market stress dummy is included.

In the next step, we relax the linear restriction on the impact of property price changes and examine whether our findings still hold. In this regard, we re-estimate Equation (1) by adding squared property price changes into the specification. The estimation results are reported in the lower panel in Table B1.1. The coefficients of the squared property price changes are found to be statistically significantly positive across all specifications, pointing to a non-linear impact of property price changes on firms' default likelihood as perceived by the market. In addition, the sensitivity of default likelihood to property prices is qualitatively the same whether or not the market stress period is included.

The non-linear effect of changes in property prices derived from the estimated coefficient in Column (b) in the lower panel of Table B1.1 is plotted in Chart B1.2. This chart confirms our previous findings that the impact of declines and increases in property prices is asymmetric. In particular, Chart B1.2 shows that while property price declines seem to significantly increase the perceived default likelihood of Mainland firms, property price increases appear to do little to decrease the perceived default likelihood of Mainland firms. Instead, property price increases faster than 3% per quarter will make the perceived default likelihood start to rise. This is probably due to the fact that a property price rally on the Mainland usually leads to a faster increase in corporate leverage (Cheung et al, 2017), which in turn worsens the debt-servicing ability of firms.

**Chart B1.2**  
**Non-linear effect of changes in property prices on firms' default likelihood**



Note: The non-linear effect is derived from the estimation results of Column (b) in the lower panel of Table B1.1, assuming the perceived default likelihood of firms is at the sample average.

Source: HKMA staff estimates.

Chart B1.2 also highlights that abrupt declines in property prices may lead to much larger increases in the perceived default likelihood of Mainland firms. In particular, while on average a decline of two percentage points in property prices in one quarter will lead to an increase of four percentage points in the perceived corporate default likelihood, a decline of four percentage points will lead to an increase of 12 percentage points in perceived corporate default likelihood. Our finding of the non-linear effect of changes in property prices is in line with the general perception that abrupt corrections in property markets can jeopardise financial stability by inducing a vicious cycle between falling property prices and borrower defaults.

Our findings that property price changes can affect corporate default likelihood are unlikely to be driven by reverse causality for several reasons. First, the impacts of property prices on the default probability of firms are found to be asymmetric as both property price declines and increases may lead to a greater default probability. Indeed, if reverse causality plays a role here, we should, instead, probably detect a symmetric effect, as property price decreases are more associated with a greater default probability of firms and property price increases with a lower default likelihood. Secondly, in our study we use

national property prices to explain the default probability of individual firms. In this sense, changes in the default likelihood of an individual firm are unlikely to affect national property prices.

### Conclusion

By exploring the extent to which changes in Mainland property prices may affect the credit risk of corporate borrowers, this study adds to our understanding of the issue and finds that real estate cycles do have a bearing on financial stability in Mainland China.

Using financial data from some 2,000 listed non-financial firms in Mainland China between the first quarter of 2007 and the third quarter of 2016, this study finds that changes in property prices have an asymmetric and non-linear impact on corporate default likelihood as perceived by the Mainland stock market investors. Specifically, after controlling various firm-level factors, we find that while property price increases do little to decrease the perceived default likelihood, property price declines significantly increase it, highlighting the asymmetry. Also, the impact on the perceived corporate default likelihood tends to be much larger if property price declines are abrupt.

Our findings highlight the risks associated particularly with sharp corrections in property prices. Therefore, policymakers may want to strike a balance between cooling down an overheated real estate market and maintaining financial stability.

One caveat to our study is that the corporate default likelihood we employ is the expected default risk derived from stock prices and financial data of listed firms rather than estimated from actual default cases. Therefore caution is required when interpreting the empirical results.

### References

Altman, E. I., Fargher, N., and Kalotay, E. (2011), "A Simple Empirical Model of Equity-Implied Probabilities of Default," *Journal of Fixed Income*, 20(3), pp. 71-85.

Cheng, A., Ng, B., Chan, S. and Han, G. (2018), "Property Prices and Corporate Default Likelihood in Mainland China", *HKMA Research Memorandum 06/2018*.

Cheung, L., Ng, B., Cheng, A., and Chan, S. (2017), "Real Estate Prices and Corporate Borrowing in Mainland China", *HKMA Research Memorandum 15/2017*.

Han, G., and Zheng, S. (2016), "How do Housing Purchase Limits Affect Firm Default Risks in Mainland China?", *HKIMR Working Paper no. 17/2016*.

HKMA (2011), "Box 1. How Tight are Monetary Conditions in Mainland China?", *Half-yearly Monetary and Financial Stability Report*, September 2011.

IMF (2011), "People's Republic of China: Financial System Stability Assessment", *IMF Country Report No. 11/321*, Washington DC.

### 3. Domestic economy

Economic growth in Hong Kong remained robust for the first half of 2018 as a whole, but showed more volatility within the half-yearly period. The economy is expected to expand further in the second half, but at a more moderate pace. Downside risk to growth has increased as the US-China trade conflict escalated. While still within a moderate range, local inflation is likely to edge up further in the near term, although there are potential risks on either side.

#### 3.1 Real activities

Compared with the second half of 2017, economic growth in Hong Kong remained robust for the first half of 2018 as a whole (Table 3.A). Real Gross Domestic Product (GDP) grew at an above-par rate of 2.4% over the preceding half year. On a year-on-year comparison, real GDP growth was also strong, at 4.6% in the first quarter and 3.5% in the second, faster than the average of 3.5% in the preceding two quarters.

**Table 3.A**  
**Real GDP growth**

	Half-yearly growth rate (%)*		Year-on-year growth rate (%)	
2017	H1	1.8	Q1	4.4
			Q2	3.9
	H2	1.6	Q3	3.6
			Q4	3.4
2018	H1	2.4	Q1	4.6
			Q2	3.5
10-year average	(2008 H1 – 2017 H2)	1.3	(2008 Q1 – 2017 Q4)	2.7

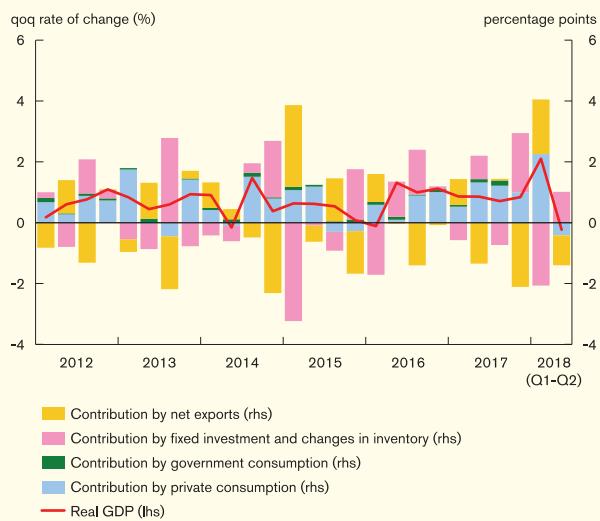
\* Based on seasonally adjusted volume index of expenditure-based GDP.

Source: C&SD.

On a quarter-on-quarter basis, economic activities showed more volatility within the first half of 2018, with extraordinary growth performance followed by a slight contraction (Chart 3.1). This is in sharp contrast to roughly stable growth in the second half of 2017. More specifically, seasonally adjusted real GDP growth reached a multi-year high of 2.1% in the first quarter, driven by an outsized increase in private

consumption and a pick up in net exports. In the second quarter, with market sentiments worsening amid US-China trade tensions, private consumption slowed from a high base and the external trade performance deteriorated (Chart 3.2). Consequently, real GDP contracted slightly despite a pick up in aggregate investment spending.

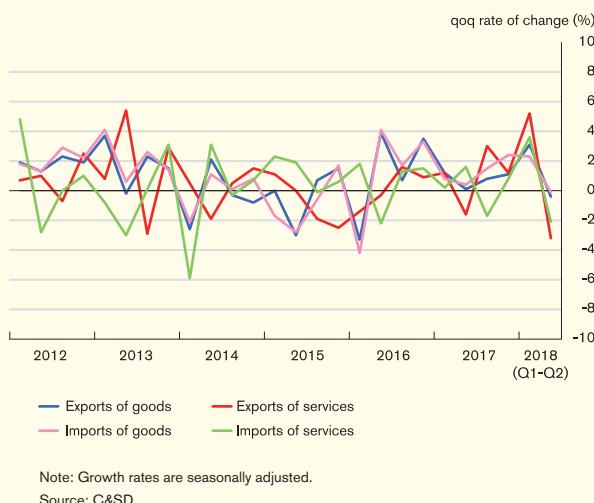
**Chart 3.1**  
**Real GDP growth and contribution by major expenditure components**



Note: Growth rates are seasonally adjusted.

Sources: C&SD and HKMA staff estimates.

**Chart 3.2**  
**Exports and imports in real terms**



The broadly robust economic performance helped create more jobs in the first half of 2018. Total employment expanded by around 0.8% during the period, to some 3,870,000, led by increases in the public administration, social and personal services sector, and the financial and business services sector. As real output grew at a faster pace than employment, labour productivity showed signs of further improvement.

Looking ahead, economic growth is expected to continue for the remainder of 2018, but at a more moderate pace compared with the first half of the year. Externally, while the rise of trade protectionism, especially between the US and Mainland China, could weigh on Hong Kong's export performance, exports of services are likely to be supported by active cross-border financial activities and the continued recovery of inbound tourism. On the domestic front, private consumption is anticipated to hold up mainly because of the robust labour market conditions. As for fixed capital formation, building and construction activities should progress steadily on the back of the continued rise in the supply of housing and ongoing infrastructure projects. The outlook for business capital spending, however, is more uncertain due to potential increases in interest rates and various external

uncertainties. In addition, the recent weakening in sentiment indicators, such as the Purchasing Managers' Index for Hong Kong, signals a further decline in year-on-year GDP growth momentum in the third quarter based on their historical positive relationship. For 2018 as a whole, the Government forecasts real GDP growth in the range of 3–4%, while the latest growth forecasts by private-sector analysts averaged 3.6%.

Although the local economy is expected to remain on an expansionary path in the baseline scenario, downside risk to growth has increased along with the intensification of the US-China trade conflict. In particular, while the short-term impact on Hong Kong is estimated to be limited through the conventional trade channel<sup>15</sup>, the local economy could be affected through other channels with a greater overall negative impact. For example, trade tensions may increase stock market volatility and tighten financial market conditions, thereby weighing on economic growth. As these trade protectionist policies are still unfolding, increased economic uncertainty could also affect macro-financial conditions (see Box 2).

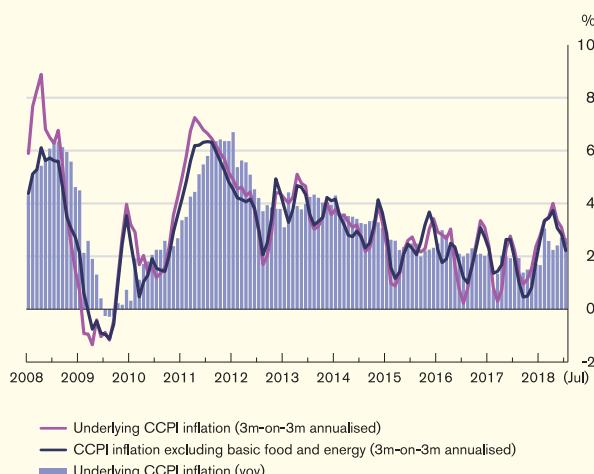
Besides trade protectionism, other major uncertainties or risks concerning the baseline economic outlook include those arising from major central banks' monetary policy normalisation, Mainland's economic performance amid its continued financial deleveraging, and potential volatility in international capital flows.

<sup>15</sup> For example, in a speech given by the Financial Secretary at the 2018 Hong Kong-ASEAN Summit on 9 July, he said the impact of the US' tariff measures implemented in early July on Hong Kong's economic growth this year would be a drag of around 0.1–0.2 percentage points.

### 3.2 Inflation and unemployment

After declining to a low in 2017, local inflation edged up recently and settled around a moderate level. On a year-on-year comparison, the underlying Composite Consumer Price Index (CCPI) rose by 2.4% in both the first and second quarters, slightly higher than the average increase of around 1.7% over the preceding two quarters. Inflation momentum, as measured by the annualised three-month-on-three-month underlying inflation rate, also generally picked up in the first half of the year, to 2.5% in July 2018 from 2.4% in December 2017 (Chart 3.3). The slight increase in inflation momentum reflected both external and domestic price pressures. Within tradables, the price of basic food stuffs increased faster partly due to adverse weather conditions. As for services items, the price of meals away from home and other miscellaneous services, such as package tours, also saw accelerated increases amid favourable labour market and income conditions. More importantly, the earlier rises in fresh-letting private residential rentals continued to push up inflation momentum (Chart 3.4). However, labour cost pressures remained largely in check recently (Chart 3.5).

**Chart 3.3**  
Different measures of consumer price inflation



Sources: C&SD and HKMA staff estimates.

**Chart 3.4**  
CCPI rental component and market rental



Sources: C&SD and Rating and Valuation Department.

**Chart 3.5**  
Unit labour cost and payroll per person



Sources: C&SD and HKMA staff estimates.

In the remainder of 2018, local inflationary pressures are expected to increase slightly, reflecting higher global inflation and the continued feed-through of earlier rises in fresh-letting private residential rentals. That said, inflation should stay within a moderate range for 2018 as a whole. The Government projects the underlying inflation rate to be 2.5% for 2018 and market consensus predicts the headline inflation rate at a still-moderate level of 2.3%.

This outlook for inflation is subject to risks on both sides. On the upside, faster-than-expected increases in global inflation could lift local inflation momentum further. Domestically, the

labour market continued to tighten, with the seasonally adjusted unemployment rate edging down from 2.9% in the first quarter to 2.8% in the second quarter, the lowest level in more than 20 years (Chart 3.6). If the labour market strengthens much further, additional upward pressures on inflation may emerge, given that the current output gap is estimated to be slightly positive. On the downside, should the risks of slower-than-expected economic growth materialise, this could dampen local inflation. Meanwhile, the recent fluctuations in the US dollar and the renminbi may cloud the outlook for Hong Kong's import price inflation.

**Chart 3.6**  
**Unemployment rate**



Source: C&SD.

## Box 2

### Macroeconomic effects of uncertainty – implications of rising trade tensions for Hong Kong

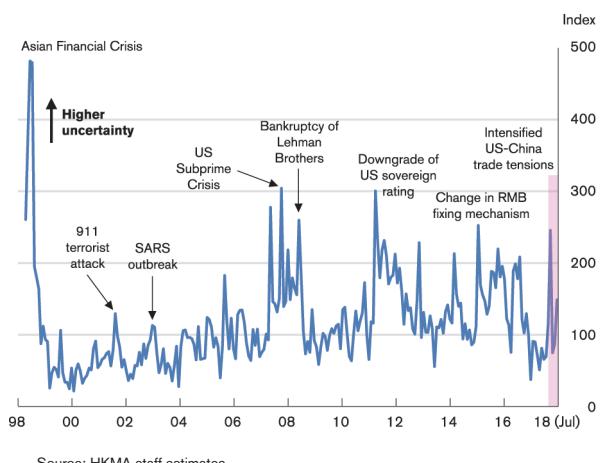
#### *Introduction*

Despite the broadly robust economic performance in the first half of 2018, downside risks facing the Hong Kong economy have increased significantly compared with several months ago as the trade war rhetoric materialised into actions. Although some assessments find that the direct impact of the US-China trade conflicts on Hong Kong will be moderate, the trade conflicts could have a much broader and bigger impact on the Hong Kong economy through other channels. In particular, if the trade tensions persist or escalate, the resulting rising uncertainty could weigh on the economy. This box attempts to broaden our understanding of this transmission channel. We first discuss ways to quantify economic uncertainty and to identify the macroeconomic effects of uncertainty empirically. Based on the empirical findings, we will then draw implications of rising trade tensions for the Hong Kong economy.

***The uncertainty index and the empirical model***  
 We follow the literature to compile a monthly news-based economic uncertainty index for Hong Kong. We first identify all news articles that are related to the Hong Kong economy from ten major local Chinese newspapers for the period between April 1998 and July 2018. We then compute the share of monthly news articles containing terms relating to uncertainty for each newspaper. We standardised the ten time series to unit standard deviation, and averaged across the ten series by month. The resulting time series is expressed in an index form with a mean of 100 for the period between April 1998 and December 2009. We use the seasonally adjusted index for analysis. By construction, a higher value of the index implies a higher level of uncertainty.<sup>16</sup>

The movement of the index is found to be largely driven by the external environment (Chart B2.1), which is consistent with the fact that Hong Kong is a small open economy. In particular, large spikes in the index were usually associated with major external shocks. Domestic shocks, such as the outbreak of Severe Acute Respiratory Syndrome (SARS) in 2003, are also a source of economic uncertainty for Hong Kong.

**Chart B2.1**  
**The economic uncertainty index for Hong Kong**



Source: HKMA staff estimates.

The economic effect of uncertainty about Hong Kong's macro-financial conditions can be analysed using the uncertainty index. Specifically, we estimate a simple Vector Autoregressive model with six endogenous variables: the year-on-year growth rates of GDP, private investment and consumption in real terms, the growth rate of private sector job vacancies, a financial condition index<sup>17</sup> and the economic uncertainty index for Hong Kong. To control for the influence from the external economic environment, the model includes world GDP growth rate as an exogenous variable.

<sup>16</sup> Details of the methodology can be found in Wong et al. (2017), "Measuring Economic Uncertainty and its Effect on the Hong Kong Economy", *HKMA Research Memorandum 11/2017*.

<sup>17</sup> A higher value indicates a loosening of financial conditions and vice versa. Here, the index is derived using the weighted-sum approach from Chan et al. (2016), "Financial Conditions Indexes for Hong Kong", *HKMA Research Memorandum 09/2016*.

The simple model can identify the channels through which economic uncertainty will affect Hong Kong's real sector. Theoretically, higher economic uncertainty could lead firms to hold off their investment or economic activities due to the presence of adjustment costs or irreversibility.<sup>18</sup> Labour may also face larger search friction in the labour market as firms reduce their job openings during periods with high economic uncertainty.<sup>19</sup> So, higher economic uncertainty is expected to reduce investment and consumption growth, and thus GDP growth.

Economic uncertainty can also affect the real economy through the financial channel. In particular, amid rising economic uncertainty, lenders may reduce credit supply and/or charge higher credit spreads, and asset markets may be subject to stronger downward adjustment pressures. The tighter financial conditions could generate a ripple effect to the real sector. This financial channel implies a negative empirical relationship between the economic uncertainty index and the financial condition index.

### *Empirical findings*

We estimate the model using quarterly data from the third quarter of 1998 to the first quarter of 2018. The lag length is set to one based on the Schwartz Information Criterion and the consideration of the small sample size. Chart B2.2 shows the reaction of selected economic variables to higher economic uncertainty by the estimated generalised impulse response functions<sup>20</sup>. The empirical results are consistent with economic intuition. In particular, as expected, higher economic uncertainty weighs on economic growth through its dampening impact on private consumption and investment growth.

<sup>18</sup> See Bernanke (1983), "Irreversibility, Uncertainty, and Cyclical Investment", *Quarterly Journal of Economics*, 98(1), pp. 85–106.

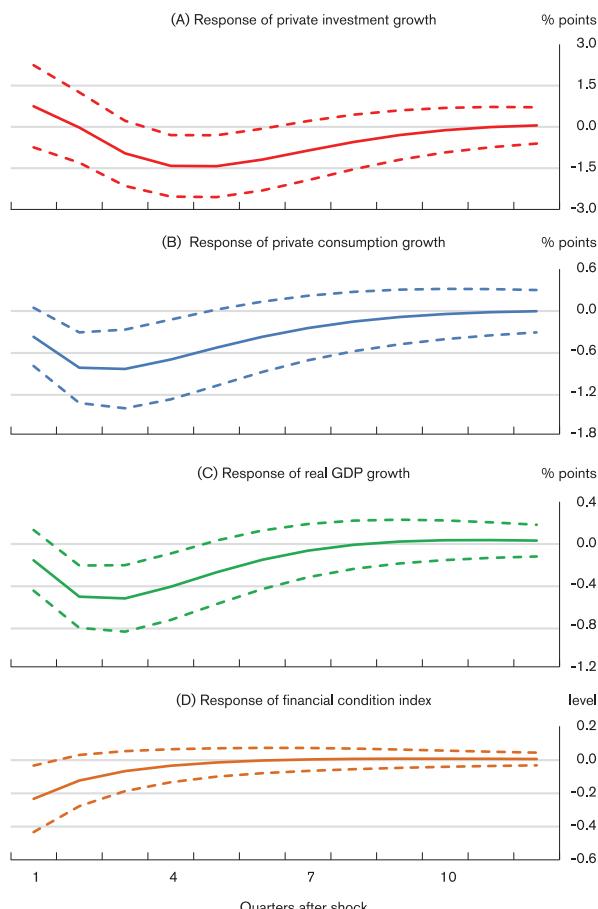
<sup>19</sup> See Guglielminetti (2016), "The Labour Market Channel of Macroeconomic Uncertainty", *Bank of Italy Temi di Discussione Working Paper No. 1068*.

<sup>20</sup> The generalised impulse response function is used as it avoids the problem of ordering dependence of the impulse response function.

The estimated impulse response functions show two noteworthy features of the transmission of a shock to economic uncertainty. First, while the immediate response of the real sector will be relatively mild, the longer-term response tends to be stronger and prolonged. Specifically, the private investment response will be most notable in three to six quarters after the initial shock. The response of private consumption follows a similar pattern, with the maximum impact about two to three quarters after the shock. These findings suggest that it may take a longer time for the full impact of a shock to economic uncertainty to be felt by the real sector (Panel A-C, Chart B2.2).

**Chart B2.2**

### **Responses of selected economic variables to a shock to economic uncertainty**



Note: The shock to selected economic variables pertains to a one-standard-deviation increase in the uncertainty index. The solid lines refer to the impulse response functions and the dashed lines show the standard error bands.

Source: HKMA staff estimates.

Secondly, rising economic uncertainty will produce a rapid but short-lived impact on financial conditions, as revealed from the impulse response of the financial condition index (Panel D, Chart B2.2).

#### *Implications of rising trade tensions for Hong Kong*

This analysis shows that Hong Kong's financial conditions and real sector could be subject to significant increase in downside risks if the trade tensions cause persistent and high economic uncertainty.

Although the direct impact of trade tensions has remained mild, extra vigilance on the development of this issue is required, as the economic uncertainty index for Hong Kong has increased and the magnitude of indirect impacts remains highly uncertain for three reasons. First, as shown by our empirical findings, it may take a longer time for the real sector to feel the full impact of economic uncertainty arising the trade tensions. Secondly, while our analysis can shed light on how the risk of rising trade tensions transmits through one specific indirect channel, the uncertainty channel, the transmission mechanisms through other potential channels and the size of their impacts are far from being fully understood. Finally, a further escalation of trade conflicts is hard to predict.

## 4. Monetary and financial conditions

### Exchange rate, capital flows and monetary developments

Mainly reflecting increased interest carry trade activities, the Hong Kong dollar spot exchange rate eased gradually from March and the weak-side Convertibility Undertaking was triggered 27 times in April, May and August. Despite this, the Hong Kong dollar remained traded in a smooth and orderly manner near the weak side Convertibility Undertaking rate of 7.85. Hong Kong Interbank Offered Rates broadly picked up since the second quarter, reflecting the reduced interbank liquidity following the triggering of the weak-side Convertibility Undertaking, initial public offering-related funding demand, and seasonal liquidity needs. Looking ahead, fund flow volatility is likely to increase amid tensions over the US-China trade dispute and the associated risk-off sentiment. Meanwhile, the outflow of funds from Hong Kong dollar is a normal and inevitable process for Hong Kong dollar interest rate normalisation under the Linked Exchange Rate System. The banking sector is holding a vast amount of Exchange Fund papers, which can be used by banks to obtain HKD liquidity via the discount window, serving as an effective cushion against any excessive volatility in interest rates. The HKMA also stands ready to calibrate the issuance of Exchange Fund papers to release liquidity in order to deal with possible sharp outflow from the Hong Kong dollar.

#### 4.1 Exchange rate and capital flows

Mainly reflecting increased interest carry trade activities, the Hong Kong dollar eased gradually since March, with the spot exchange rate trading in a narrow range between 7.815 and 7.850 against the US dollar in the first eight months of 2018 (Chart 4.1). The weak-side Convertibility Undertaking (CU) was triggered 13 times between 12 and 18 April and 6 times between 15 and 18 May. Thereafter, the Hong Kong dollar firmed against the US dollar since late May, in part underpinned by seasonal demand for the Hong Kong currency (e.g. corporate demand for dividend payments) and interbank funding demand in preparation for sizable initial public offering (IPO) activities. Moving into July and

August, the Hong Kong dollar remained broadly stable and traded close to the weak-side CU, with the weak-side CU being triggered 8 times in August amid increased carry trade activities, repatriation of funds raised in recent IPOs and equity-related outflows.

Overall, the weak-side CU was triggered 27 times in April, May and August. Since the first instance of the weak-side CU being triggered on 12 April, the HKMA has purchased a total of HK\$103.5 billion (as at the end of August) on request from banks at the weak-side CU of 7.8500 according to the design of the Linked Exchange Rate System (LERS). As a result of these purchases, which ranged from HK\$800 million to HK\$10.2 billion each time,

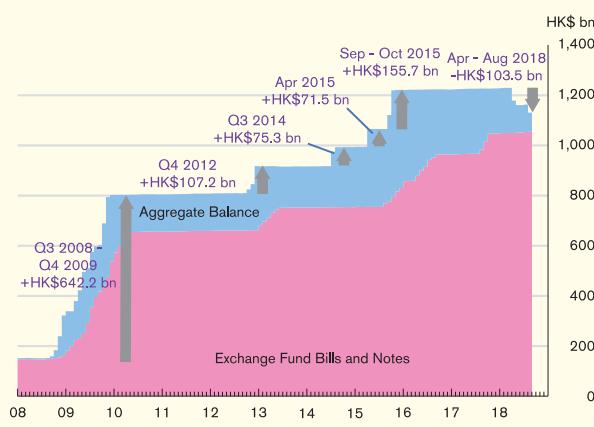
the Aggregate Balance of the banking system declined from HK\$179.7 billion at the end of March to HK\$76.4 billion at the end of August (Chart 4.2).

**Chart 4.1**  
Hong Kong dollar exchange rate



Source: HKMA.

**Chart 4.2**  
Fund flow indicators



Source: HKMA.

Broadly consistent with the movements of the US dollar, the Hong Kong dollar nominal effective exchange rate index (NEER) moved sideways between March and mid-April, but strengthened thereafter (Chart 4.3). The Hong Kong dollar real effective exchange rate index (REER) showed a similar trend as the NEER, as the small inflation differential between Hong Kong and its trading partners had only a limited impact on the movement of the REER.

**Chart 4.3**  
Nominal and real effective exchange rates



Note: REER is seasonally adjusted and only available on a monthly basis.  
Sources: C&SD and HKMA staff estimates.

Portfolio investment saw outflows in the first quarter of 2018. According to the latest Balance of Payments (BoP) statistics, the equity portfolio investment outflows by residents accelerated while the inflows for non-residents turned into outflows in the first quarter amid weak market sentiment across the region (Table 4.A).<sup>21</sup> As for debt securities, the BoP statistics registered outflows by residents which more than offset the inflows by non-residents. Data based on a global mutual funds survey also pointed to a broad-based outflow picture (Chart 4.4). While the equity market experienced some inflows in the first five months, before seeing outflows since June, bond-related investment outflows were evident from the beginning of the year, which was largely similar to capital flow developments in the Asia region.

<sup>21</sup> At the time of writing, the second-quarter BoP statistics were not yet available.

**Table 4.A**  
**Cross-border portfolio investment flows**

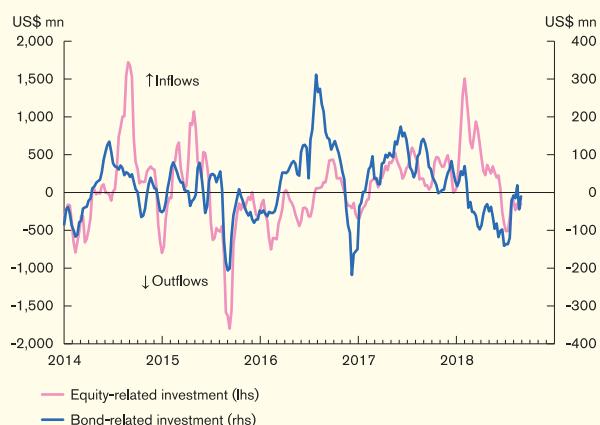
(HK\$ bn)	2015		2016		2017			2018	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
By Hong Kong residents									
Equity and investment fund shares	-420.2	-354.7	-64.1	-17.3	0.6	-22.7	-101.2		
Debt securities	-241.0	-175.5	108.0	128.0	-68.3	-41.0	-108.0		
By non-residents									
Equity and investment fund shares	-329.7	19.3	14.2	28.1	27.2	19.3	-77.3		
Debt securities	20.0	41.3	44.9	90.4	27.0	30.8	40.9		

Note: A positive value indicates capital inflows.

Source: C&SD.

Looking ahead, fund flow volatility may increase given the heightened uncertainties related to the US-China trade tensions and risk-off sentiments. In addition, as the US Federal Reserve (Fed) is expected to continue to increase interest rates, the possibility of a further widening of spreads between the Hong Kong dollar and the US dollar interest rates will again encourage interest carry trade activities and lead to capital outflows. The outflow of funds from Hong Kong dollar is a normal and inevitable process for Hong Kong dollar interest rate normalisation under the LERS. Since the massive inflows into the Hong Kong dollar over the past years have been invested by the Exchange Fund in highly liquid US dollar assets, funds would be readily available for meeting the triggering of weak-side CU by market participants in the event of capital outflows.

**Chart 4.4**  
**Market survey of equity and bond-related flows**



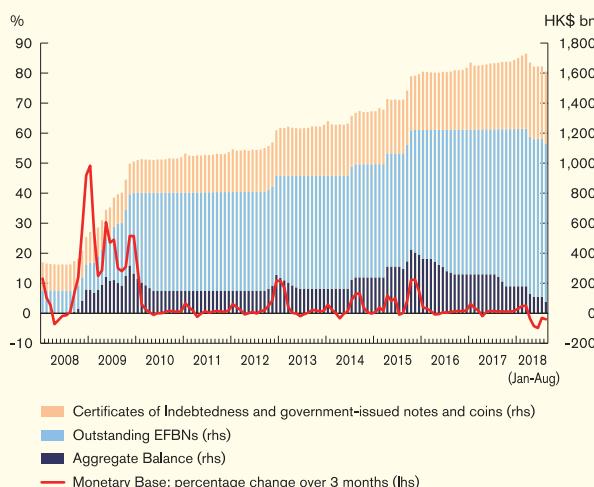
Note: Data refer to moving four-week sums.

Source: EPFR Global.

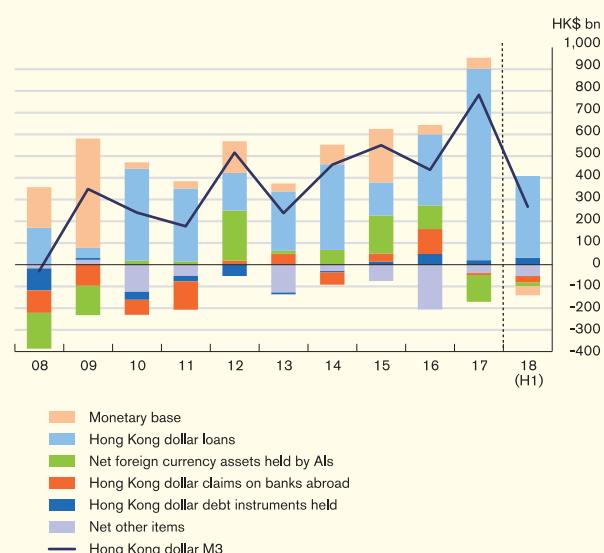
## 4.2 Monetary environment and interest rates

Despite the ongoing US monetary policy normalisation and the repeated triggering of the weak-side CU, Hong Kong's monetary environment remained accommodative in the first half of 2018, and in recent months. While the Hong Kong dollar Monetary Base decreased by 2.5% during the first half, it remained sizeable at HK\$1,644.8 billion at the end of June (Chart 4.5). Reflecting the HKMA's purchase of Hong Kong dollars under the weak-side CU in accordance with LERS, the Aggregate Balance declined from HK\$179.8 billion at the end of December 2017 to HK\$109.5 billion at the end of June 2018. As for other components of the Monetary Base, the outstanding Exchange Fund Bills and Notes (EFBNs) were little changed, while Certificates of Indebtedness and government-issued notes and coins increased moderately. Stepping into the second half, the Hong Kong dollar Monetary Base decreased moderately, with the Aggregate Balance declining further to HK\$76.4 billion at end-August amid the triggering of the weak-side CU.

**Chart 4.5**  
Monetary Base components



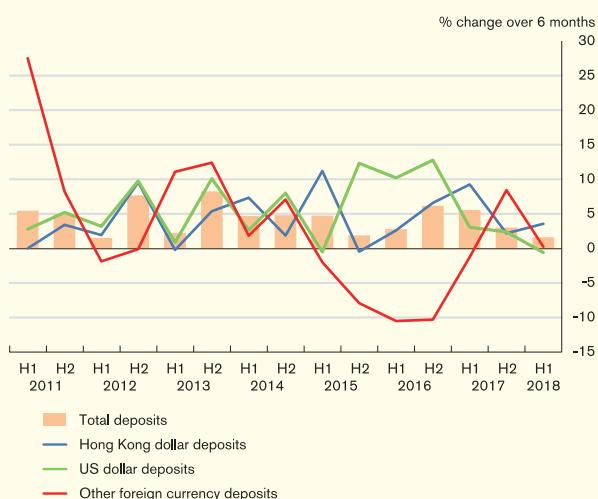
**Chart 4.6**  
Changes in the HK\$M3 and the asset-side counterparts



Regardless of the decline in the Monetary Base, the Hong Kong dollar monetary aggregate continued to record relatively steady growth, underpinned by favourable domestic economic conditions. The Hong Kong dollar broad money (HK\$M3) increased moderately by 3.6% in the first half, faster than the 2.5% increase recorded in the preceding half-year period. Correspondingly, Hong Kong dollar deposits, as a major component of the HK\$M3, grew by 3.6% during the first half, with Hong Kong dollar time deposits rebounding as banks raised their preferential interest rates for these deposits. Analysed by the asset-side counterparts, the increase in HK\$M3 mainly reflected the expansion in the Hong Kong dollar loans (Chart 4.6), while the decline in the Monetary Base arising from the triggering of the weak-side CU exerted a drag on the HK\$M3.

On the other hand, movement in foreign currency deposits was rather mixed. In contrast to the steady increase in Hong Kong dollar deposits, US dollar deposits saw a slight decline of 0.6% during the first half (Chart 4.7), partly due to the reduction of US dollar deposits held by Hong Kong residents. After seeing a strong rebound in the second half of 2017, other foreign currency deposits increased by a decelerated pace of 0.2% in the first half, reflecting slower growth in the non-renminbi component, while renminbi deposits registered a strong increase. Overall, total deposits with authorized institutions (AIs) continued to grow modestly by 1.6% in the first half compared with a 3.0% increase in the preceding half-year period.

### Chart 4.7 Deposit growth

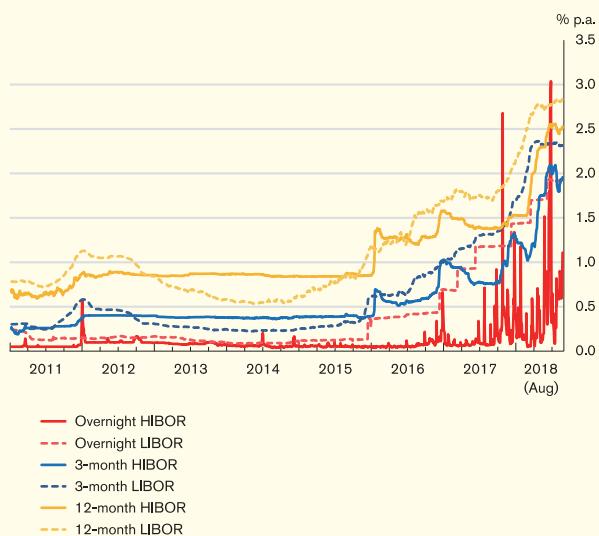


Source: HKMA.

While the Hong Kong dollar Monetary Base and deposits remained sizeable, Hong Kong dollar interbank interest rates (HIBOR) witnessed more upward pressure since the second quarter. This reflected market expectations of US interest rate hikes, as well as the reduced interbank liquidity following the triggering of the weak-side CU. IPO-related funding demand and seasonal liquidity needs occasionally drove short-term interbank rates<sup>22</sup> significantly higher, with the overnight HIBOR fixing rising notably to 3.0% during Xiaomi's IPO subscription period (Chart 4.8). On the other hand, the HIBOR at longer maturities was less volatile, but gradually caught up with its US counterpart, which narrowed the HIBOR-London Interbank Offered Rate (LIBOR) spreads. Compared with six months ago, the three-month and 12-month HIBOR fixings moved up by 72 and 93 basis points to 1.98% and 2.45% (monthly average term) respectively in June.

Moving into the second half, short-term Hong Kong dollar interest rates declined subsequent to the completion of a few large-scale IPO activities at the end of June. The overnight HIBOR once eased back to a recent low of 0.08% in mid-July before picking up to around 0.9% at the end of August. The HIBOR at longer maturities remained broadly stable. Overall, the three-month and 12-month HIBOR fixings averaged 1.88% and 2.49% in August.

### Chart 4.8 Hong Kong dollar and US dollar interbank interest rates



Source: CEIC.

Broadly tracking the movements of the US dollar yield curve, the Hong Kong dollar yield curve shifted upwards and flattened during the first half. The yield of the 10-year Hong Kong Government Bond picked up by 36 basis points to 2.19% at the end of August (Chart 4.9), while the yield of the three-year Government Bond posted a larger increase of 54 basis points, reaching 2.06% at the end of August.

<sup>22</sup> As measured by the overnight and one-week Hong Kong Interbank Offered Rates (HIBORs).

**Chart 4.9**

**Yields of Government Bonds, the composite interest rate, and the average lending rate for new mortgages**



Sources: HKMA and staff estimates.

At the retail level, the composite interest rate, which measures the average Hong Kong dollar funding costs of retail banks, saw more upward pressure since the second quarter alongside the pick-up in HIBORs. Underpinned by rises in both interbank and deposit funding costs, the composite interest rate moved up to 0.63% at the end of July from 0.38% at the end of March (Chart 4.9). During the first half, the average lending rate for new mortgages was relatively stable at around 2.15%, as the average interest rate of HIBOR-based mortgages stayed at the prevailing Prime-based cap despite a pick-up in HIBORs. Stepping into August, banks have increased their effective mortgage rates by raising the cap for newly approved HIBOR-based mortgages.

Looking ahead, as the monetary policy normalisation continues in the US, the Hong Kong dollar interest rates will inevitably continue to rise, with the pace depending crucially on the path of US dollar interest rates, fund flow patterns and domestic market activities (e.g. IPOs). Given that the Hong Kong dollar Monetary Base remained sizeable with the banking sector holding vast amounts of Exchange Fund papers, it is expected that the pace of interest rate increases should not be too rapid as banks can use the Exchange Fund papers as collateral to obtain Hong Kong dollar liquidity via the discount window. Moreover, the HKMA also stands ready to calibrate the issuance of Exchange Fund papers to release liquidity in order to deal with possible sharp outflow from the Hong Kong dollar.

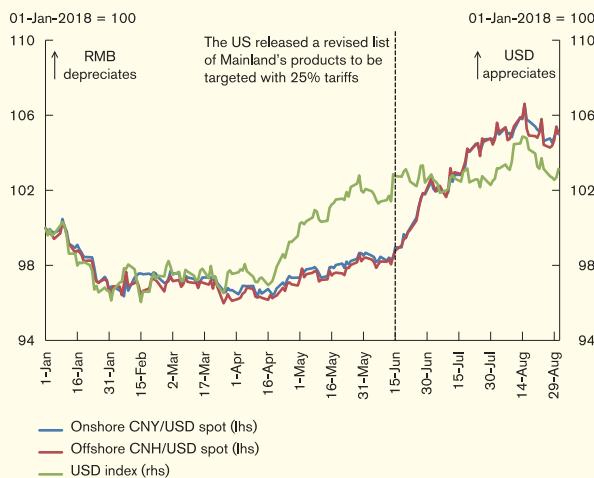
*(With a view to streamline the Report, the discussion on bank credit, including household debt, has been moved to Chapter 5 – Banking Sector Performance. Please refer to Section 5.3 on credit risk.)*

#### *Offshore renminbi banking business*

As the trade tensions between the US and Mainland China intensified, the offshore (CNH) and the onshore (CNY) renminbi depreciated sharply against the US dollar since the middle of June (Chart 4.10). This interrupted the stable relationships of the CNH and CNY with the US dollar as observed during the first five months of 2018. The exchange rate stabilised again in August after the counter-cyclical factor was re-instated gradually in the daily fixing of the CNY<sup>23</sup>. The depreciation pressure since mid-June also saw the CNH being mostly traded at a discount against its onshore counterpart (Chart 4.11). Nevertheless, the spread remained moderate by historical standards.

<sup>23</sup> Details can be referred to the press release by China Foreign Exchange Trade System (Chinese version only), '<http://www.chinamoney.com.cn/chinese/rdgz/20180824/1154562.html?cp=rdgz>

### Chart 4.10 Renminbi and US dollar exchange rates in 2018

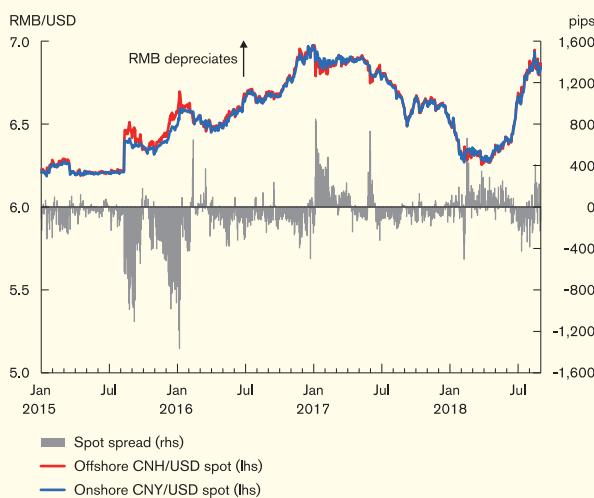


Notes:

1. CNY/USD, CNH/USD and USD index are normalised with value at 1 January 2018 equals 100.
2. USD index is a trade-weighted index which measures USD against a basket of currencies of its major trading partners. A higher value of the index indicates USD is strengthening against these currencies.

Source: Bloomberg.

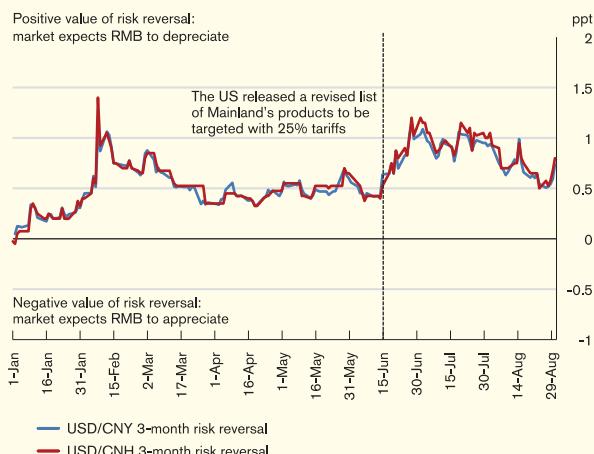
### Chart 4.11 CNY and CNH exchange rates



Source: Bloomberg.

As uncertainty over the US-China trade tensions remains, the depreciation expectation on the renminbi has intensified since mid-June, as reflected by the rising risk reversal of both the CNY and CNH against the US dollar, before easing somewhat in August (Chart 4.12).

### Chart 4.12 Risk reversal of renminbi against US dollar in 2018



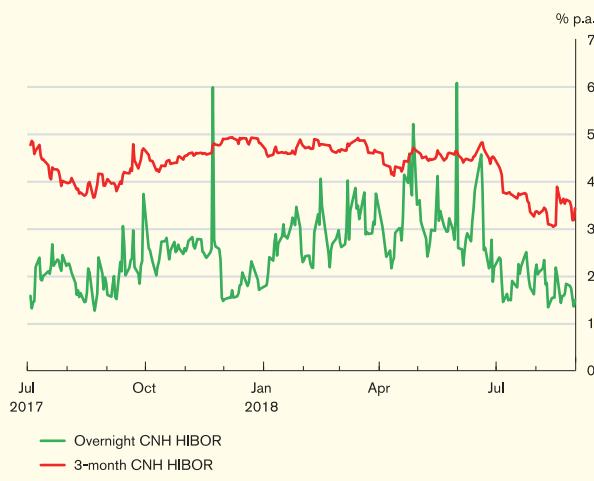
Note: The risk reversal quote refers to the implied volatilities of a 3-month 25-delta USD call option minus the implied volatilities of a 3-month 25-delta USD put option. A positive (negative) value of risk reversal indicates market is expecting a higher likelihood of depreciation (appreciation) of the renminbi against the USD.

Sources: Bloomberg and JP Morgan.

Despite the sharp movement in the spot exchange rate market, the US-China trade tensions have not had an adverse impact on the funding condition in the offshore interbank market. The overnight CNH HIBOR mostly traded below 4% in the first eight months of 2018 (Chart 4.13), with only occasional pick-ups due to seasonal factors. The 3-month CNH HIBOR hovered around 4.5% between January and June, before easing to 3.4% at the end of August 2018, which may reflect the latest monetary easing measures by the People's Bank of China.<sup>24</sup> Looking ahead, it remains to be seen how the development of the US-China trade relationship will affect the CNH interbank market liquidity in the coming months.

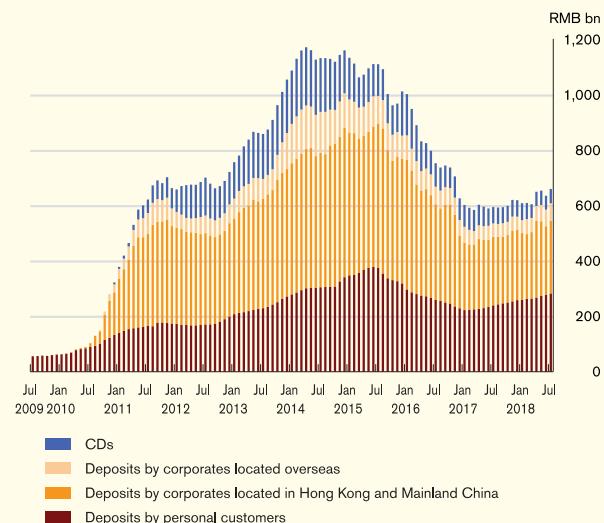
<sup>24</sup> For details of the measures, please see the section "Fiscal and Monetary policy" under Chapter 2.2 in this Report.

**Chart 4.13**  
**The overnight and the three-month CNH HIBOR fixings**



Hong Kong's CNH liquidity pool continued to pick up during the review period. The total outstanding amount of renminbi customer deposits and certificates of deposit (CDs) increased by 2.6% during the first half of 2018 to RMB634.2 billion at the end of June (Chart 4.14 and Table 4.B). The renminbi customer deposits grew by 4.5% in total, but its contribution to the liquidity pool was partially offset by a contraction in the outstanding amount of CDs, which saw a decline of 16.2% in the first half of 2018. The growth in renminbi customer deposits was contributed by both personal and corporate customers, which grew by 7.3% and 2.2% respectively.

**Chart 4.14**  
**Renminbi deposits and CDs in Hong Kong**



**Table 4.B**  
**Offshore renminbi banking statistics**

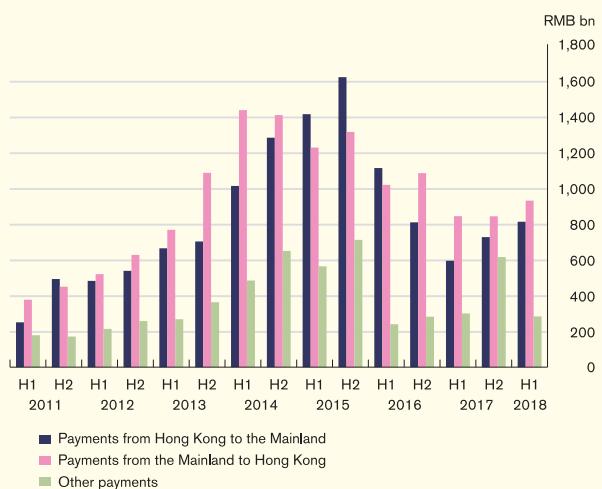
	Dec 2017	Jun 2018
Renminbi deposits & CDs (RMB bn)	618.4	634.2
Of which:		
Renminbi deposits (RMB bn)	559.1	584.5
Share of renminbi deposits in total deposits (%)	5.3	5.3
Renminbi CDs (RMB bn)	59.3	49.7
Renminbi outstanding loans (RMB bn)	144.5	123.3
Number of participating banks in Hong Kong's renminbi clearing platform	203	200
Amount due to overseas banks (RMB bn)	95.4	106.3
Amount due from overseas banks (RMB bn)	131.3	147.8
<b>Jan - Jun 2018</b>		
Renminbi trade settlement in Hong Kong (RMB bn)	2,021.6	
Of which:		
Inward remittances to Hong Kong (RMB bn)	928.1	
Outward remittances to Mainland China (RMB bn)	810.5	
Turnover in Hong Kong's RMB RTGS system (Daily average during the period; RMB bn)	935.0	

Source: HKMA.

Hong Kong's renminbi financing activities moderated further during the first half of 2018, albeit at a slower pace, with the outstanding amount of renminbi bank loans declining by 14.7% in the first half to RMB123.3 billion. Meanwhile, Hong Kong's renminbi trade settlement consolidated after a strong rebound in the second half of 2017. Transactions handled by banks in Hong Kong amounted to RMB2,021.6 billion during the first half of 2018, down by 7.3% compared with the preceding half-year period (Chart 4.15). The average daily

turnover of the renminbi real time gross settlement system stayed at a high level of RMB935.0 billion, compared with RMB886.2 billion in the same period in 2017.

**Chart 4.15**  
**Flows of renminbi trade settlement payments**



Source: HKMA.

Going forward, the development of the CNH market in Hong Kong will depend on market expectations on the renminbi exchange rate due to the US-China trade tensions and Mainland's macro-financial conditions. Nevertheless, Hong Kong's offshore renminbi business is expected to benefit from the progress of Mainland's capital account liberalisation, the development of the Stock and Bond Connect schemes, and enhanced regional economic co-operation under the Belt and Road and Guangdong-Hong Kong-Macao Bay Area initiatives.

## Asset markets

*The Hong Kong equity market came under pressure during the review period amid heightened concerns over the effects of trade wars and tightening monetary conditions in major advanced economies. The Hong Kong dollar debt market expanded at a steady pace during the first half of 2018, despite an increasingly difficult external environment. The residential property market remained buoyant in the first half of the year amid robust economic conditions. Property prices increased further and the volume of transactions remained robust. But signs of moderation emerged stepping into the third quarter.*

### 4.3 Equity market

The Hong Kong equity market came under pressure amid escalated trade conflicts and a faster-than-expected pace of monetary normalisation in advanced economies (Chart 4.16). While geopolitical tensions on the Korean Peninsula eased after the North Korean authorities reaffirmed their commitment to de-nuclearisation in June, global equity markets were quickly overshadowed by intensifying trade tensions between the US and its major trading partners. In particular, the local market corrected sharply in July and August after the US introduced several rounds of punitive tariffs on Mainland exports, and Mainland China responded with equivalent retaliatory measures, igniting concerns that tougher action might follow, thus making the conflict harder to resolve.

The improving economic outlook for developed economies also prompted major central banks to tighten their monetary policies faster than expected. The Federal Open Market Committee meeting in June saw the summary of economic projections predicting a total of four rate hikes this year instead of three previously. The Governing Council of the European Central Bank also planned to end net asset purchases in December 2018, while the Bank of England

announced a 25 basis points hike in August, lifting the policy rate to its highest since March 2009. As monetary policy expected to become less accommodative, bond yields gradually climbed worldwide, rendering riskier asset classes less attractive. This dampened the appetite for the Hong Kong stocks, as reflected in the retreating net inflow in the Hong Kong equity funds (Chart 4.17). During the review period, the local stock market also recorded mild outflows from Mainland investors via the Shanghai-Hong Kong Stock Connect and the Shenzhen-Hong Kong Stock Connect, with cumulative southbound net buying edging down by 5% compared with the level at the end of February (Chart 4.18).

While market risk aversion as measured by option-implied volatilities declined from their earlier peak in February, the SKEW Index (sometimes referred to as the “Black Swan Index”, a measure of the tail risk for the US market) soared towards the end of the review period.<sup>25</sup> This reflected that investors were

---

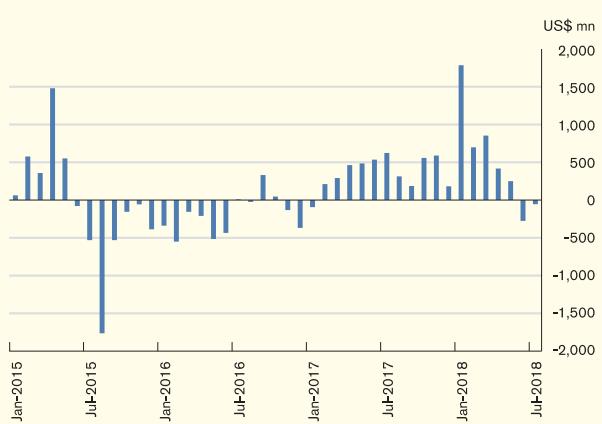
<sup>25</sup> The SKEW Index is calculated by the Chicago Board Options Exchange from the prices of the S&P 500 out-of-the-money options. A SKEW value of 100 means that the probability of outlier negative returns at a 30-day horizon is negligible. As SKEW rises above 100, the left tail of the S&P 500 returns distribution acquires more weight, suggesting that the probability of outlier negative returns become more significant. For details, see <https://www.cboe.com/products/vix-index-volatility/volatility-indicators/skew>.

increasingly conscious about rising tail risk and hence were willing to pay more for downside protection (Chart 4.19). Overall, the Hang Seng Index (HSI) and the Hang Seng China Enterprises Index, also known as the H-share index, decreased by 10.2% and 12.5% respectively from March to August 2018.

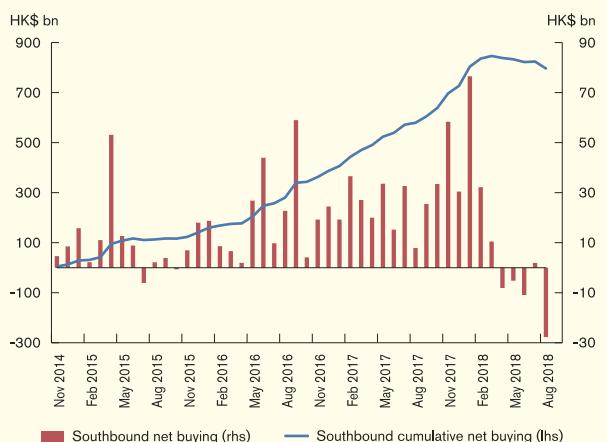
**Chart 4.16**  
**Equity prices in Hong Kong**



**Chart 4.17**  
**Equity fund flows into Hong Kong**



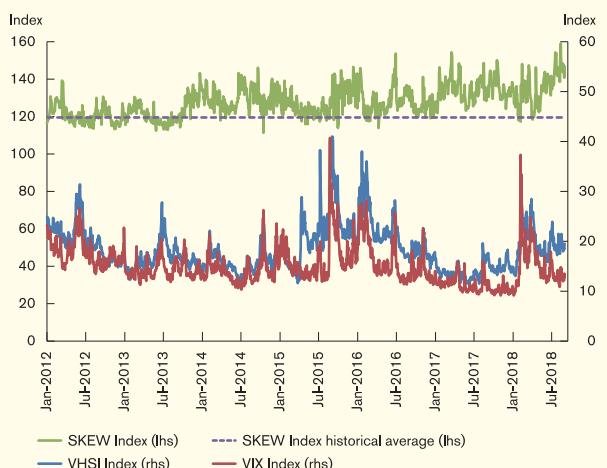
**Chart 4.18**  
**Cumulative southbound net buying from Stock Connect schemes**



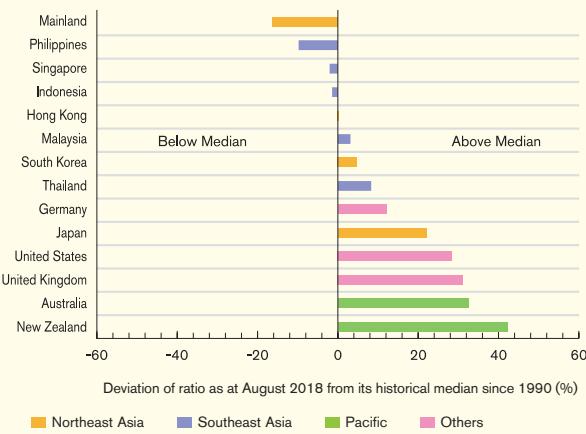
Note: The southbound net buying represents a sum of the southbound net buying from the Shanghai-Hong Kong Stock Connect and that of the Shenzhen-Hong Kong Stock Connect

Sources: CEIC, HKEx and HKMA staff estimates.

**Chart 4.19**  
**Option-implied volatilities of the HSI and S&P 500, and the SKEW Index**



**Chart 4.20**  
**Cyclically-adjusted price-earnings (CAPE) ratios  
of Asia Pacific and other major markets**



Sources: Bloomberg, CEIC and HKMA staff estimates.

Looking ahead, the local market remains highly susceptible to external factors, particularly the ever-evolving trade conflict and the pace at which major central banks tighten monetary policy. As outturns for earnings generally fell within market expectations over the past six months, the valuation after the recent correction has actually improved for most stocks.

According to the CAPE metric, the Hong Kong equity market continued to be attractive compared with other major markets, rendering it more resilient to external shocks (Chart 4.20). The relatively more attractive valuation may trigger value-driven purchases by long-term institutional investors (LTIIIs), providing a cushion to the market, especially if further correction occurs from the current levels. Box 3 discusses the participation of these investors in the local equity market and the implications for the financial stability of Hong Kong.

### Box 3

## Do long-term institutional investors contribute to financial stability in Hong Kong?

### *Introduction<sup>26</sup>*

The contributions of LTIIs to financial stability are debatable in literature. On the one hand, the LTIIs rebalance their portfolios away from safer assets and towards riskier ones to chase for long-term investment returns during market downturns. Such a value-trading strategy can temper movements in asset prices, contributing a counter-cyclical impact to financial systems. On the other hand, the LTIIs will behave pro-cyclically (i.e., rebalancing their portfolios away from riskier assets and towards safer ones) in the face of financial market turbulence to meet regulatory requirements or short-term liquidity needs. Such a flight-to-quality strategy can overvalue short-term investment returns and undervalue long-term investment returns, which could cause or exacerbate financial instability.

Over the past decades, the LTIIs have managed a substantial part of global financial assets that could have a profound impact on financial market sentiment, particularly during periods of financial turmoil. Since 2009, their assets appear to have grown robustly, with average growth rates of 6% and 18% for AEs and EMEs respectively.<sup>27</sup>

As a result, this box studies the investment behaviour of LTIIs that invest in the Hong Kong stock market, with the aim of shedding light on the potential impact these investors' portfolio rebalancing activities have on Hong Kong.

### *Methodology and data*

One way of identifying the investment behaviour of LTIIs in the literature is to check whether the LTIIs will increase or decrease their equity investment substantially when equity prices decline.<sup>28</sup> If the LTIIs increase (decrease) their equity investments during a stock market slump, changes in the LTIIs' exposures will be negatively (positively) correlated with the stock market returns, and thus, the contribution of LTIIs is regarded as counter-cyclical (pro-cyclical) to the stock market.

To measure changes in their exposure to Hong Kong equities, we use the percentage change in the LTIIs' total net assets invested in the stock market in excess of the market return. This measure reflects changes in quantity (i.e., fund flows that rule out the price effect) which is more in line with changes in the funds' asset allocation. Thus, a positive (negative) change in the fund flow of the LTIIs means they increase (decrease) their exposure to Hong Kong equities.

Our full sample consists of 6,872 pension and insurance funds that have equity exposures to the Hong Kong stock market between the first quarter of 2001 and the first quarter of 2017. After screening out a large number of small funds to avoid overwhelming the final results, we consider a total of 1,010 funds, which already hold 95% of the total assets. These then constitute the final sample. At the end of 2016, these funds had two-thirds of their assets invested in global equities (Chart B3.1), reflecting that equities are their primary investment assets. Of these global equities, Hong Kong's share is

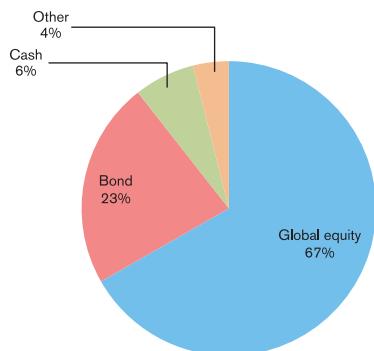
<sup>26</sup> The detailed results in this box are in Fong et al. (2018) "Do long-term institutional investors contribute to financial stability? – Evidence from equity investment in Hong Kong and international markets", *HKIMR working paper* (forthcoming).

<sup>27</sup> The growths are according to the Financial Stability Board's global shadow banking monitoring report 2017. In 2016, the financial assets of insurance corporations and pension funds in 29 reporting jurisdictions totalled US\$60 trillion, some 18% of global financial assets.

<sup>28</sup> The method is also employed by Abbassi et al. (2016) "Security trading by banks and credit supply: micro-evidence from the crisis", *Journal of Financial Economics*, 121, 569-594; and Timmer (2018) "Cyclical investment behavior across financial institutions", *Journal of Financial Economics*, 129, 268-286.

about 1%. This is a small share, but the asset size is comparable to the stock market's daily turnover in Hong Kong. As of the fourth quarter of 2016, the asset size represented 79% of the average daily turnover of stocks listed on the Main Board of the Hong Kong Stock Exchange.<sup>29</sup>

**Chart B3.1**  
**LTIIs' exposure to global financial markets**

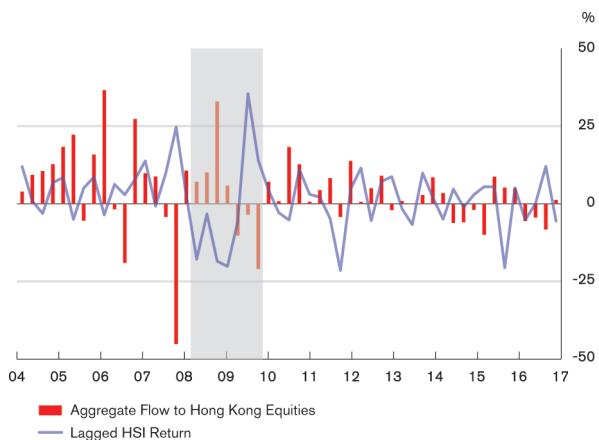


Source: Morningstar<sup>30</sup>.

### Empirical evidence

Chart B3.2 depicts the fund flows in aggregate and the lagged HSI return in quarterly frequency during 2004-2017<sup>31</sup>. As shown in the chart, the two variables appear to move in opposite directions very often throughout the whole period, with a simple correlation of -0.32. Their negative correlation appears to be more apparent during the global financial crisis from 2008 to 2009 (the shaded area), with a correlation of -0.44. The negative correlation preliminarily suggests that declines in the Hong Kong stock market in the previous quarter are associated with an increase in LTIIs' exposures to Hong Kong equities in aggregate in the current quarter.

**Chart B3.2**  
**Aggregate flows and lagged market return of Hong Kong**



Note: The correlation between aggregate flow and lagged market return are -0.32 for the whole sample period and -0.44 for crisis period.

Sources: Morningstar, Bloomberg and HKMA staff calculation.

We also test the negative relationship more rigorously in two steps: (i) filtering out the effects of major fund-specific variables<sup>32</sup> and macro factors<sup>33</sup> from the fund flows ; and (ii) building a fixed-effect panel data regression model of this adjusted fund flows on past market returns. To differentiate the effects between normal market periods and market downturns, we introduce a dummy variable based on the VIX<sup>34</sup> to the regression as a proxy for global stock market uncertainty.

<sup>29</sup> Sourced from *HKEx Securities and Derivatives Markets Quarterly Report*, the average daily turnover is HK\$63.9 billion during the quarter.

<sup>30</sup> Morningstar is a private data vendor tracking a vast number of funds invested in global financial markets. Morningstar's data providers do not guarantee the accuracy, completeness or timeliness of any information provided by them and shall have no liability for their use.

<sup>31</sup> Aggregate flow is defined by the percentage change in aggregate Hong Kong equity assets in the sample in excess of the return of HSI.

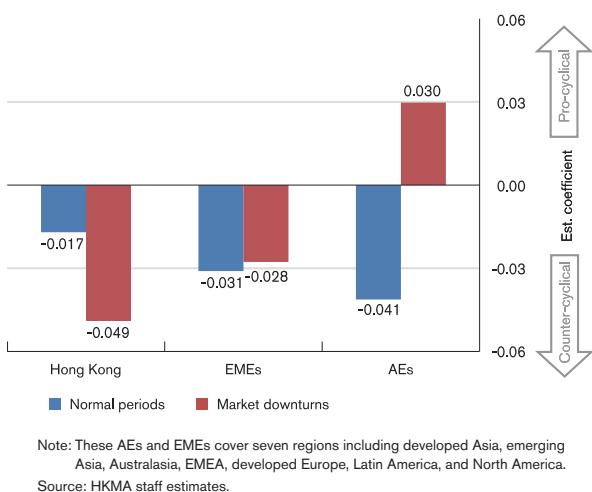
<sup>32</sup> Fund-specific variables include individual fund return, cash ratio, debt-to-capital ratio and fund size.

<sup>33</sup> Macro factors include the regional weighted average of the 10-year government bond yield, inflation rate, real GDP growth and short term interbank rate.

<sup>34</sup> The index is the implied volatility of the S&P 500 index options over the next 30 day period. It also reflects global liquidity conditions. Details can be found in Bruno and Shin (2014) "Cross-border banking and global liquidity", *The Review of Economic Studies*, 82(2), 535-564.

Chart B3.3 summarises the regression coefficients of the past stock market return for the two market conditions. For comparison, we also estimate the effects of flows to AEs and EMEs equities based on the sample funds' global equity exposures in the same portfolios.<sup>35</sup> All the variables are in normalised scale, thus we can compare the relative importance of the variables based on the magnitude of the coefficients.

**Chart B3.3**  
**Responsiveness of the fund flows to stock market returns in Hong Kong, AEs and EMEs**



Focusing on Hong Kong, we find that the coefficient is estimated to be negative in a normal period, with the coefficient being -0.017. In times of market downturns, the coefficient is -0.049, significantly larger in magnitude than that during the normal period.<sup>36</sup> These suggest that LTIIs increase their equity exposures to Hong Kong when the stock market declines in any period, other things being equal.

<sup>35</sup> The original data source covers 56 AEs and 181 EMEs. Instead of individual economies, we use the regional data grouped by the data provider, including developed Asia, emerging Asia, Australasia, Emerging Europe, Middle East and Africa (EMEA), developed Europe, Latin America, and North America.

<sup>36</sup> The estimated fund flows are 0.9% and 2.5% respectively during the two market conditions, given a one-standard-deviation (SD) decline in the stock market (i.e., by around 10%) in one quarter. They are obtained by multiplying the estimated coefficients concerned by the SD of the flows to Hong Kong equities, given all the variables in the regression are normalized in estimation, and so, the coefficients represent the number of SDs of the fund flows when the stock market declines by one SD.

Considering the two economy groups, we consistently find that all estimated coefficients during the normal period are negative (i.e., -0.031 and -0.041 for EMEs and AEs respectively). Nevertheless, during a stressful period, the estimated coefficient for AEs is positive (i.e., 0.030), suggesting that the LTIIs decrease their equity exposures to AEs, *ceteris paribus*, when stock markets slump.

### Summary and discussion

In summary, our empirical findings show that the LTIIs contribute a counter-cyclical effect to stock markets in Hong Kong and EMEs in general. This effect could be significantly stronger during financial turmoil. Such a value-trading strategy could temper drastic movements in asset prices and have a positive contribution to financial stability in these economies.

In comparison, the LTIIs will be pro-cyclical for equities in AEs in times of financial turbulence, which is also evidenced in several studies.<sup>37</sup>

Given that these economies were at the epicentre of several major stock market crashes triggered by recessions in Europe and the US in the early 2000s, the 2008 global financial crisis and the European debt crisis, our findings suggest the pro-cyclical effect depends on where the shock originates from. In addition, the influence of pro-cyclicality is reinforced by the LTIIs' herding

<sup>37</sup> For examples, the effect is found apparent in pension funds of the US, Portugal, and Spain, and in insurers of the US, France, and the UK, although LTIIs in some Organisation for Economic Co-operation and Development (OECD) countries (e.g. Norway, Italy, Poland, Turkey, etc.) behaved counter-cyclically during 2008-2009. Details can be seen in IMF (2013) "Pro-cyclical behavior of institutional investors during the recent financial crisis: causes, impacts, and challenges", *IMF Working Paper WP/13/193*; and OECD (2015) "OECD Business and Finance Outlook 2015".

behaviour. In some AEs, the herding effect could be the result of similar industry practices for the LTIIIs' asset allocation decisions.<sup>38</sup>

In conclusion, this study underscores the potential outcomes of the investment behaviour of these investors, which could be important for individual investors and policyholders as well as for the economy as a whole. How these investors contribute to financial stability should, therefore, come under careful scrutiny.

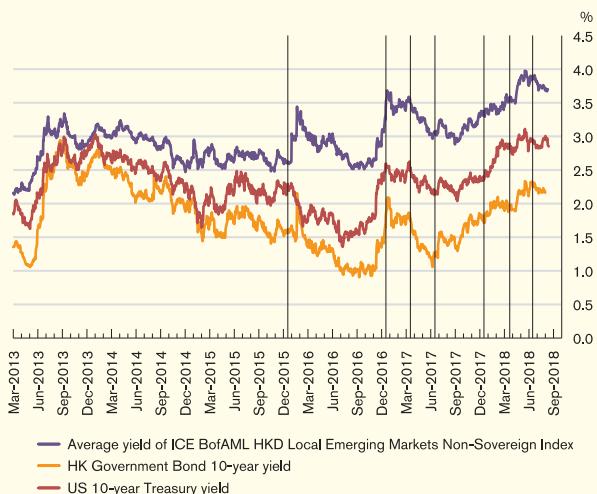
---

<sup>38</sup> Based on UK's experience, these practices include: (i) the LTIIIs have similar liability structure; (ii) the LTIIIs use asset managers who manage LTIIIs assets as agents according to specific mandates which may include benchmarks that reference either other asset managers in the industry or industry-wide indices; (iii) the investment decisions of LTIIIs are influenced by investment consultants who could have a significant effect on institutional asset allocation; and (iv) the LTIIIs may face similar regulatory constraints. Details can be seen in Bank of England (2014) "Pro-cyclicality and structural trends in investment allocation by insurance companies and pension funds", *Bank of England Discussion Paper*.

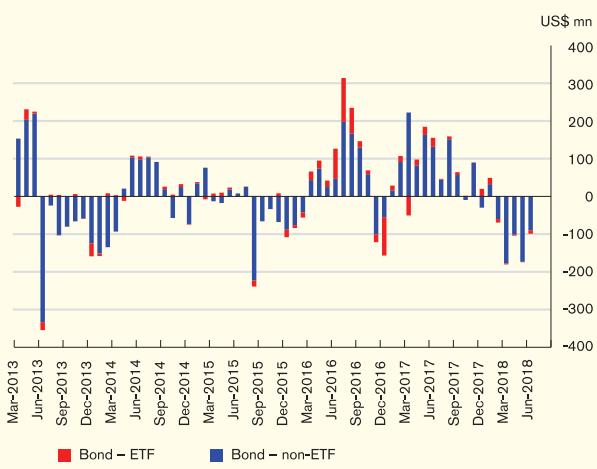
#### 4.4 Debt market

The Hong Kong dollar debt market registered robust growth in the first half of 2018 despite an increasingly difficult external environment. As monetary normalisation gained further momentum in the US, bond yields continued to rise across the board. For Hong Kong, given the LERS, the review period saw yields in both the sovereign and non-sovereign sectors move in tandem with their US counterparts (Chart 4.21). This dampened investor appetite, leading to net outflows of bond funds (Chart 4.22).

**Chart 4.21**  
**Hong Kong dollar sovereign and non-sovereign bond yields and US 10-year Treasury yield**

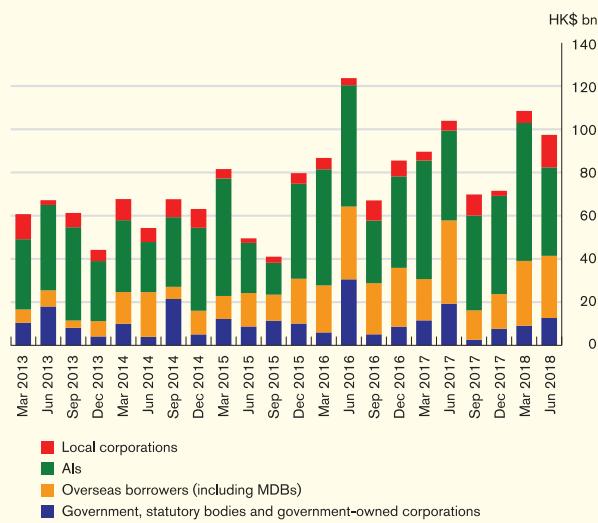


**Chart 4.22**  
**Exchange traded fund (ETF) and non-ETF bond fund flows into Hong Kong**

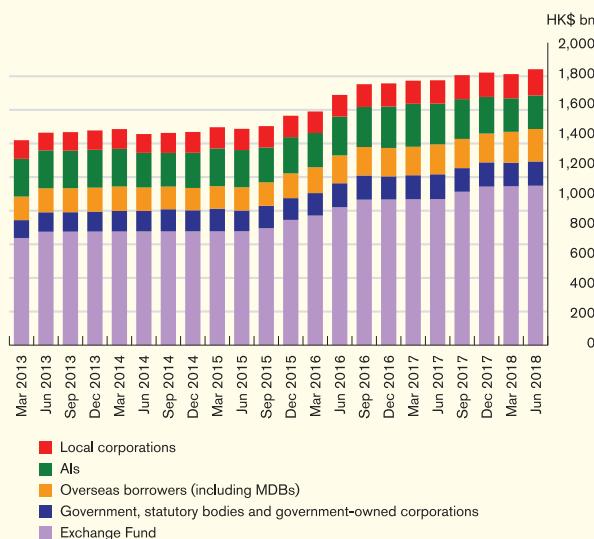


Nevertheless, total issuance of Hong Kong dollar debt rose by 11.2% year on year in the first six months of 2018 to HK\$1,803.2 billion, mainly driven by the 11.9% and 19.4% increase in issuance by the Exchange Fund and the domestic private sector respectively (Chart 4.23). As a result, the outstanding amount of Hong Kong dollar debt rose by 4.2% year-on-year to HK\$1,824.5 billion at the end of June (Chart 4.24). The amount was equivalent to 25.1% of HK\$M3 or 20.4% of Hong Kong dollar-denominated assets of the banking sector. Within the total, overseas borrowers including multilateral development banks (MDBs) saw their debt outstanding increase by 8.4% from a year ago to HK\$214.4 billion, more than offsetting the 6.7% year-on-year decline in outstanding debt by the local private sector, which was due to the reduced amount outstanding by AIs.

**Chart 4.23**  
**New issuance of non-Exchange Fund Bills and Notes Hong Kong dollar debt**



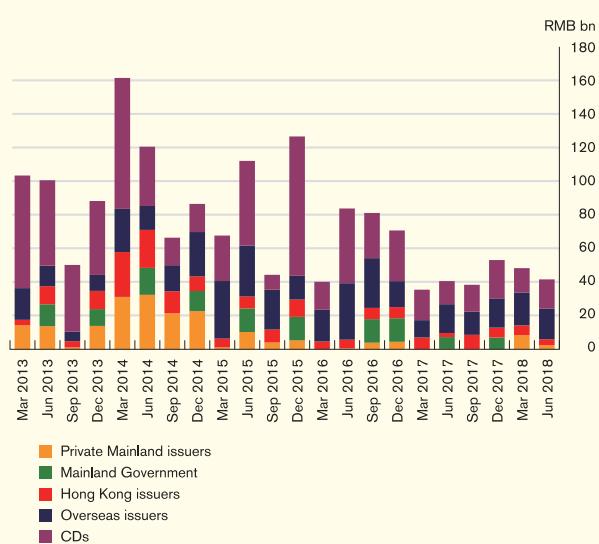
**Chart 4.24**  
**Outstanding Hong Kong dollar debt**



Source: HKMA.

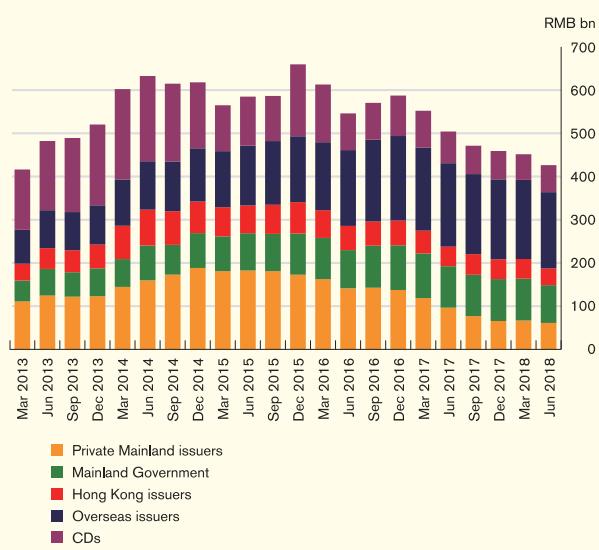
The primary offshore renminbi debt market in Hong Kong showed signs of stabilisation in the first half of 2018, despite a continuous downward trend in total outstanding amount. In the primary market, total issuance increased by 18.2% year on year to RMB89.9 billion over the first half of 2018, mainly driven by a rebound in the issuance by private Mainland issuers as well as overseas issuers (Chart 4.25). However, the total outstanding amount of offshore renminbi debt securities in Hong Kong has declined for six quarters in a row, registering a 15.4% year-on-year decline to RMB426.3 billion at the end of June 2018 (Chart 4.26). Meanwhile, the cost of funding onshore remained below its offshore counterpart during the review period (Chart 4.27).

**Chart 4.25**  
**New issuance of offshore renminbi debt securities**



Sources: Newswires and HKMA staff estimates.

**Chart 4.26**  
**Outstanding amount of offshore renminbi debt securities**



Sources: Newswires and HKMA staff estimates.

**Chart 4.27**  
**Average yields of onshore vs. offshore renminbi bond indices**



Sources: Bloomberg, Hang Seng Indexes Company Ltd, and China Central Depository & Clearing Co., Ltd.

Looking ahead, the near-term development of the local bond market, including offshore renminbi debt, is subject to headwinds from the potential escalation of the US-China trade war, because of Hong Kong's close economic and financial ties with Mainland China as well as the international market.

However, in the medium term, a number of policy initiatives are in place to promote market development. In particular, a three-year Pilot Bond Grant Scheme was launched in May to encourage first-time corporate issuers to issue bonds in Hong Kong. And, to enhance Hong Kong's profile in green finance globally, the Government plans to launch the Government Green Bond Programme with a borrowing ceiling of HK\$100 billion. While the local green bond market is relatively small in its current phase, it is strategically positioned to attract issuances denominated in multiple currencies, capitalising on Hong Kong's strengths as an international financial centre.<sup>39</sup>

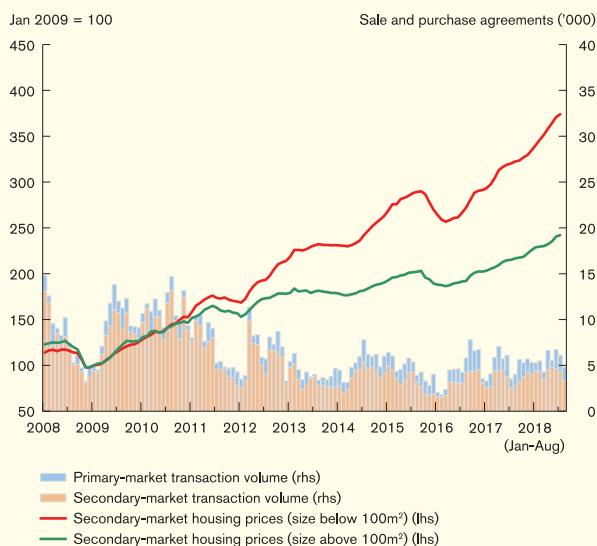
<sup>39</sup> According to Dealogic, green bonds listed in Hong Kong totalled US\$5.9 billion at the end of June 2018, with nearly all of them denominated in foreign currencies, such as the US dollar (74.2%), euro (19.6%) and renminbi (5.5%).

## 4.5 Property markets

### Residential property market

The residential property market remained buoyant in the first half of the year. Compared with the second half of 2017, average monthly housing transactions increased by 15% to 5,649 units (Chart 4.28) amid robust economic conditions and the low mortgage rate environment. Positive market sentiment was partly supported by a record price for the sale land in Kai Tak in May. Housing price growth accelerated to 10.7% in the first half of 2018, compared with 4.9% growth in the second half of 2017 (Chart 4.28). But signs of moderation emerged stepping into the third quarter. Prices for small and medium-sized flats (with a saleable area of less than 100m<sup>2</sup>) continued to increase faster than that for large flats (with a saleable area of at least 100m<sup>2</sup>).

**Chart 4.28**  
**Residential property prices and transaction volume**



Sources: Rating and Valuation Department (R&VD) and Land Registry.

As housing price growth outpaced that of household incomes during the review period, housing affordability was stretched further. The housing price-to-income ratio climbed to 18.2 years in the second quarter of 2018 compared with the previous peak in 1997 of 14.6, while the income-gearing ratio was at 81.3%, much higher

than the long-term average of about 50% (Chart 4.29).<sup>40</sup> The buy-rent gap, a measure of relative costs between buying and renting a typical housing unit<sup>41</sup>, remained at a high level of 188.4% as the residential rental yields were low at 2.0–2.6% in July (Chart 4.30).

**Chart 4.29**  
**Indicators of housing affordability**



Sources: R&VD, C&SD and HKMA staff estimates.

**Chart 4.30**  
**Buy-rent gap**



Note: This indicator is calculated as the ratio of the cost of purchasing and maintaining a 50m<sup>2</sup> flat with that of renting it.

Sources: R&VD, C&SD and HKMA staff estimates.

<sup>40</sup> The price-to-income ratio measures the average price of a typical 50m<sup>2</sup> flat relative to the median income of households living in private housing. The income-gearing ratio compares the amount of mortgage payment for a typical 50m<sup>2</sup> flat (under a 20-year mortgage scheme with a 70% loan-to-value (LTV) ratio) to the median income of households living in private housing. The income-gearing ratio is not the same as a borrower's actual debt-servicing ratio (DSR), which is subject to a maximum cap by the HKMA's prudential measures.

<sup>41</sup> The buy-rent gap estimates the cost of owner-occupied housing (under a 20-year mortgage scheme with a 70% LTV ratio) relative to rentals.

Nevertheless, the eight rounds of macroprudential measures implemented by the HKMA since late 2009 have helped to enhance the banking sector's resilience to property market shocks. The average LTV ratio for newly approved mortgages declined to 47% in July from 64% before the measures were first introduced, and the DSR also decreased to 34.7% from 40.8%.

Reflecting the Government's efforts in addressing land and housing supply issues, the government-appointed Task Force on Land Supply launched a five-month public engagement exercise in late-April to invite stakeholders to offer views on land supply options and other land supply-related issues. In late June, the Government announced six new housing initiatives. These include revising the pricing policy for subsidised sale flats to make them more affordable. To increase the supply of public housing, some private housing sites will be reallocated for public housing in order to provide more than 10,000 units in the coming four years. To encourage a more timely supply of private flats in the primary market, the Government proposed "special-rates" on vacant first-hand private residential units.

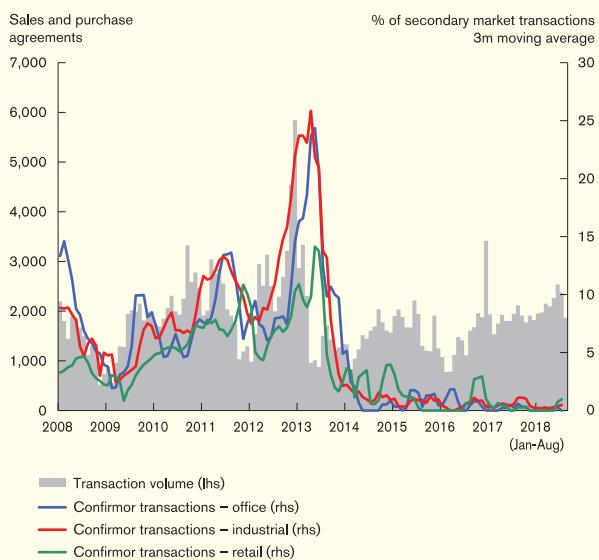
A variety of factors make the outlook for the residential property market uncertain. On the one hand, the current favourable employment and income conditions might provide some support for the demand for property. On the other hand, the property market is likely to face a number of headwinds. In particular, if the US-China trade tensions persist or intensify, the positive market sentiments could turn quickly. Furthermore, as the US monetary policy normalisation process continues, domestic mortgage rates are set to increase along with the rising funding costs of the banks. Indeed, banks increased their effective mortgage rates by raising the cap for newly approved HIBOR-based mortgages in August. In addition, the supply-demand gap is expected to narrow in the longer term, as the supply of residential property is likely to increase on the back of the

Government's effort to address land and housing shortages.

### *Non-residential property market*

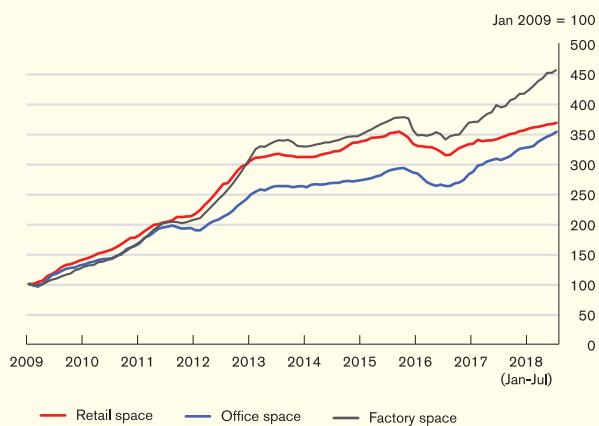
The non-residential property market saw robust activity in the first half of 2018. The average monthly transactions rose to 2,163 units, the highest level since the doubling of ad valorem stamp duties on non-residential properties in 2013. Nevertheless, speculative activities, as indicated by confirmor transactions, remained low (Chart 4.31). Along with the increase in transactions, prices of office space, factory space and retail premises rose by 8.2%, 9.6% and 3.5% respectively in the seven months through July (Chart 4.32). The growth of rentals in non-residential properties also accelerated compared with the second half of 2017. The overall rental yields across segments remained at a low range of 2.4–2.7%.

**Chart 4.31**  
**Transactions in non-residential properties**



Sources: Land Registry and Centraline Property Agency Limited.

**Chart 4.32**  
**Non-residential property price indices**



Source: R&VD.

Regarding the outlook for non-residential property, a number of offsetting forces are at play. For example, steady growth in retail sales and inbound tourism may support the demand for retail premises in the near term. The demand for office space may be sustained by continuing business expansion in some high value-added services, such as financial and professional services sectors. However, the uncertainty arising from the US-China trade tensions and the risk of rising domestic interest rates could restrain the overall demand for non-residential properties.

## 5. Banking sector performance

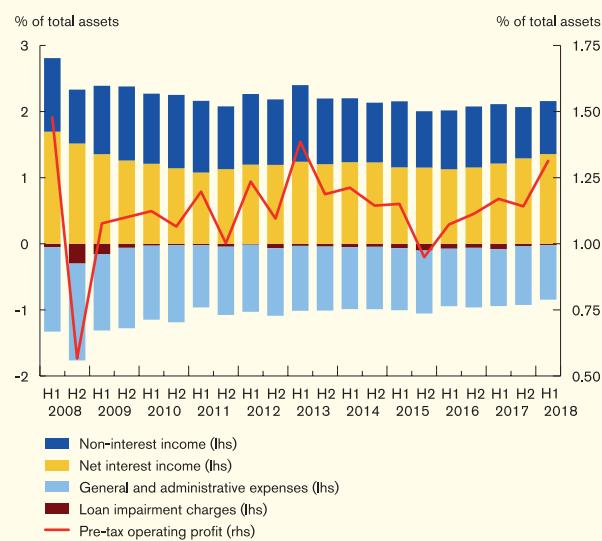
The profitability of retail banks improved notably in the first half of 2018 compared with the same period in 2017 mainly due to higher net interest income and lower loan impairment charges. Capital and liquidity conditions remained sound and robust. Alongside the rise in Hong Kong dollar interbank interest rates following the triggering of the weak-side Convertibility Undertaking, the overall Hong Kong dollar funding costs of retail banks increased notably, albeit remaining relatively low. Credit continued to grow steadily and asset quality remained healthy by historical standards. However, in view of rising uncertainties in global trade tensions, the pace of US interest rate hikes, and geopolitical risks, banks should remain vigilant against the risks of more volatile capital outflows and their impact on local interest rates. In particular, given the rising corporate leverage, banks should also carefully assess the longer-term impact of the US-China trade tensions and the potentially faster-than-expected rise in US interest rates on the credit risk of these exposures.

### 5.1 Profitability and capitalisation

#### Profitability

The aggregate pre-tax operating profit of retail banks<sup>42</sup> increased substantially by 24.8% in the first half of 2018, compared with the same period last year. As such, the return on assets of retail banks increased markedly to 1.31% in the first half of 2018 from 1.17% in the same period of 2017 (the red line in Chart 5.1). The improvement in profitability was mainly driven by a significant increase in net interest income boosted by higher net interest margin (NIM) (which widened further to 1.57% in the first half from 1.41% in the same period of 2017 (Chart 5.2)) and a reduction in loan impairment charges, which more than offset a slight decline in non-interest income.

**Chart 5.1**  
**Profitability of retail banks**



Note: Semi-annually annualised figures.  
Source: HKMA.

<sup>42</sup> Throughout this chapter, figures for the banking sector relate to Hong Kong offices only unless otherwise stated.

### Chart 5.2 NIM of retail banks



Note: Quarterly annualised figures.

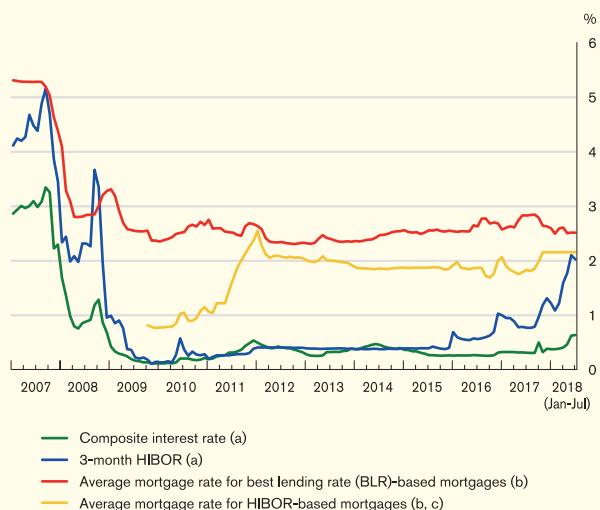
Source: HKMA.

Short-term Hong Kong Interbank Offered Rates (HIBORs) picked up significantly, largely reflecting the reduced Hong Kong dollar interbank liquidity following the triggering of the weak-side Convertibility Undertaking (CU), along with Initial Public Offering (IPO)-related funding demand and seasonal funding demand near the quarter and half-year end.<sup>43</sup> Specifically, the three-month HIBOR rose markedly by 79 basis points from the end of December 2017 to the post-crisis high of 2.10% at the end of June 2018. Latest data show that the short-term HIBORs decreased slightly in July after the IPO-related and seasonal demand factors receded.

On the retail front, market information showed that some banks have started lifting their time-deposit rates to secure more long-term Hong Kong dollar stable funding. However, with Hong Kong dollar saving deposit rates still hovering at low levels, the increase in the average retail deposit interest rates was relatively mild. Given retail deposits are the major funding source of retail banks, their overall Hong Kong dollar funding cost, as indicated by the composite interest rate, remained low by historical standards, despite a notable increase of 24 basis points to 0.62% at the end of June 2018, from

0.38% at the end of 2017 (the green line in Chart 5.3).<sup>44</sup>

### Chart 5.3 Interest rates



Notes:

(a) End of period figures.

(b) Period-average figures for newly approved loans.

(c) Recent flat movement reflected a capped rate for the HIBOR-based mortgages in the market as the rate is usually protected by the interest rate cap linked with the BLR offered.

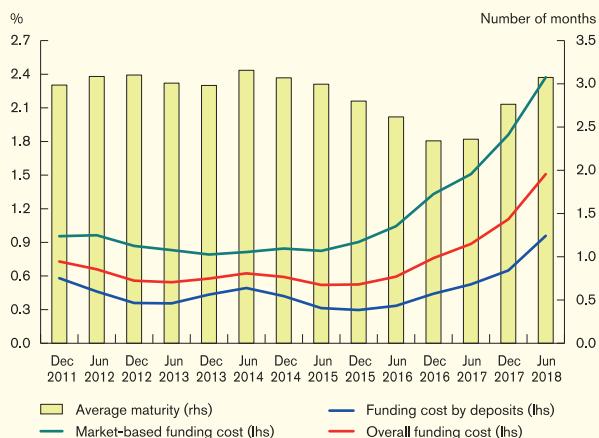
Sources: HKMA and staff estimates.

More broadly, the aggregate Hong Kong dollar and US dollar funding cost of licensed banks in Hong Kong also showed a similar picture. The banks' average market-based Hong Kong dollar and US dollar funding cost increased notably by 51 basis points during the first half of 2018, while their average deposit funding cost also saw an increase of 31 basis points. Overall, their average overall Hong Kong dollar and US dollar funding cost increased by 40 basis points (the red line in Chart 5.4).

<sup>43</sup> The weak-side CU was triggered repeatedly in April, May and August, accumulating capital outflows of HK\$103.5 billion.

<sup>44</sup> The composite interest rate edged up by one basis point to 0.63% at the end of July 2018, after the tangible rise in June.

**Chart 5.4**  
**Hong Kong dollar and US dollar funding cost and maturity of licensed banks**



Source: HKMA.

The faster rise in HIBORs than the overall funding cost of banks in Hong Kong would likely benefit banks' margins on HIBOR-based assets. However, the improvement in NIMs may be partially offset by the fierce competition in the mortgage market. Market information suggests that some banks had actively promoted fixed rate schemes during the first half of 2018<sup>45</sup>, and offered higher cash rebates to attract new customers even when the average HIBOR-based mortgage rates for new mortgage loans were effectively capped flat at 2.15% during the first half of 2018 (the yellow line in Chart 5.3).<sup>46</sup> Anecdotal evidence suggests that banks would earn much thinner returns from mortgage business than previously. As signs of upward pressure on banks' funding costs are emerging with further US interest rate hikes anticipated, this could potentially weigh on banks' NIMs if

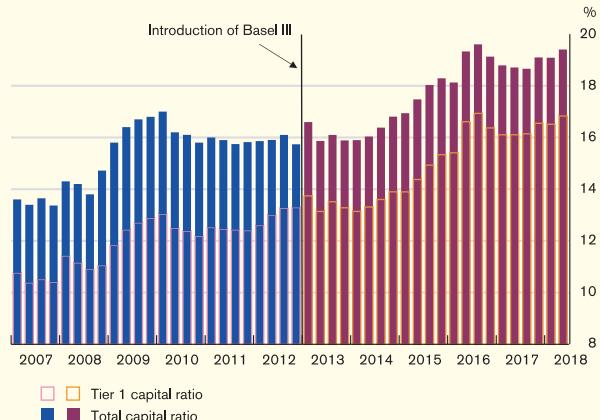
the increased costs are not fully passed on to their customers eventually.<sup>47</sup>

Looking ahead, the more uncertain external environment could create headwinds for Hong Kong banks' profitability. Specifically, heightened uncertainties in business prospects arising from the US-China trade tensions coupled with US monetary policy normalisation, could put a drag on the demand for bank credit. If this translates into a slowdown in credit growth, it could adversely weigh on banks' net interest income.

### Capitalisation

The consolidated total capital ratio of locally incorporated authorized institutions (AIs) edged up to 19.4% at the end of June 2018 (Chart 5.5). The Tier 1 capital ratio also increased to 16.8%, whereby 15.3% was contributed by Common Equity Tier 1 (CET1) capital. Overall, capitalisation of the Hong Kong banking sector continued to be strong and well above the minimum international standards.

**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.

<sup>45</sup> The shares of new loans approved during the month adopting the fixed rate scheme reached 45.4% in March 2018, compared with only 5.5% in December 2017. However, market share of the fixed rate scheme declined to 5.2% in June as HIBORs went up and put weights on banks' funding costs. Many banks halted the scheme since April 2018.

<sup>46</sup> HIBOR-based mortgage is usually protected by an interest rate cap linked with the BLR (often in the form of a fixed spread below the BLR). So far, during the review period, there has been no movement for the BLRs of banks in Hong Kong since the 2008 global financial crisis.

<sup>47</sup> Probably reflecting higher funding cost pressures for banks, many banks have raised their interest rates for new mortgage loan applications by 10 and 20 basis points on BLR-based and HIBOR-based mortgages respectively in early August 2018.

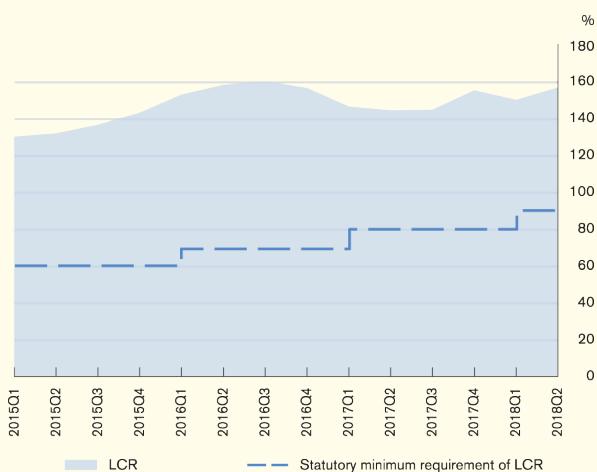
## 5.2 Liquidity and interest rate risks

### Liquidity and funding

The liquidity position of the banking sector, as measured by the Basel III Liquidity Coverage Ratio (LCR)<sup>48</sup> requirement, remained sound during the review period. The average LCR of category 1 institutions increased to 156.6% in the second quarter of 2018, from 155.1% in the fourth quarter of 2017 (Chart 5.6), which were well above the statutory minimum requirement of 90% applicable in 2018. The average LMR of category 2 institutions increased slightly to 51.3% in the second quarter of 2018 from 49.4% in the fourth quarter of 2017, which were well above the statutory minimum requirement of 25%.

The Net Stable Funding Ratio (NSFR), as a part of the Basel III liquidity requirements, came into effect on 1 January 2018. As of June 2018, designated AIs had complied with the minimum requirements of NSFR and the local Core Funding Ratio (CFR)<sup>49</sup>, reflecting a stable funding position in the Hong Kong banking sector. The strong liquidity and stable funding positions of AIs suggest the Hong Kong banking sector will be able to withstand a variety of liquidity shocks.

**Chart 5.6**  
Liquidity Coverage Ratio



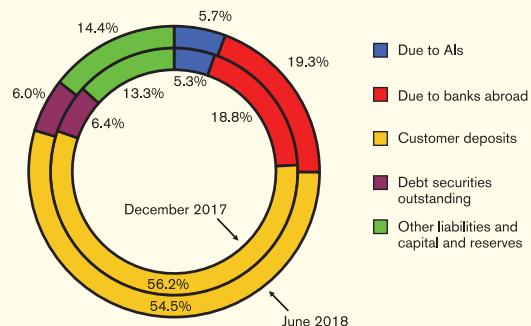
Notes:

1. Consolidated positions.
2. Quarterly average figures.

Source: HKMA.

Customer deposits continued to be the primary funding source for AIs, underpinning a stable funding structure in the banking system. At the end of June 2018, the share of customer deposits to all AIs' total liabilities declined marginally to 54.5% from 56.2% six months ago (Chart 5.7).

**Chart 5.7**  
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.

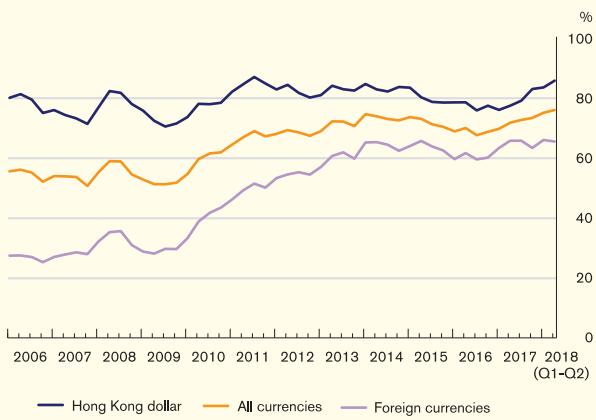
On a half-yearly basis, the average Hong Kong dollar loan-to-deposit (LTD) ratio of all AIs increased to 85.4% at the end of June 2018 from 82.7% at the end of December 2017, due to faster growth in Hong Kong dollar loans and advances than Hong Kong dollar deposits. Similarly, the

<sup>48</sup> The Basel III LCR requirement, phased-in from 1 January 2015, 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 Liquidity Maintenance Ratio (LMR). For details, see the HKMA's Supervisory Policy Manual (SPM) LM-1, "Regulatory Framework for Supervision of Liquidity Risk".

<sup>49</sup> 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. According to the Banking (Liquidity) Rules, a category 1 institution must at all times maintain an NSFR of not less than 100%. A category 2A institution must maintain a CFR of not less than 50% on average in each calendar month of the year. The minimum CFR will rise to 75% on 1 January 2019. For details, see Banking (Liquidity) Rules (Cap. 155Q).

average foreign currency LTD ratio of all AIs rose to 65.2% from 63.1% during the same period. Signs of stabilisation in the foreign currency LTD ratio were observed in the second quarter of 2018, as foreign currency-denominated loans declined slightly in the second quarter of 2018, while foreign currency deposits continued to grow. Overall, the average all-currency LTD ratio increased to 75.7% from 73.0% six months ago. Given heightened uncertainties in the external environment related to trade tensions, banks should continue to assess how rises in the LTD ratios affect their liquidity management.

**Chart 5.8**  
**Average LTD ratios of all AIs**



Note: Quarter-end figures.  
Source: HKMA.

### Interest rate risk

The interest rate risk exposure of locally incorporated licensed banks remained stable at a low level. It is estimated that under a hypothetical shock of an across-the-board 200-basis-point increase in interest rates, the economic value of locally incorporated licensed banks' interest rate positions could be subject to a decline equivalent to 3.15% of their total capital base at the end of June 2018 (Chart 5.9).<sup>50</sup> Nevertheless, with expected further US interest rate hikes and the Federal Reserve's balance sheet reduction, banks should assess the implications for their interest rate risk management.

<sup>50</sup> This estimation does not take into account the effects of any mitigating action by banks in response to the shock. The impact will be smaller if mitigating action is taken.

**Chart 5.9**  
**Impact of an interest rate shock on locally incorporated licensed banks**



Notes:

1. Interest rate shock refers to a standardised 200-basis-point parallel rate shock to institutions' interest rate risk exposure.
2. The impact of the interest rate shock refers to its impact on the economic value of the banking and trading book<sup>51</sup>, expressed as a percentage of the total capital base of banks.

Source: HKMA.

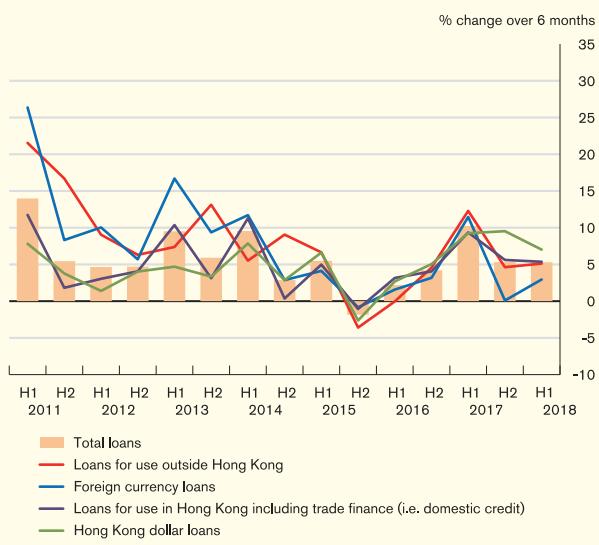
## 5.3 Credit risk

### Overview

Despite rising uncertainties in the global environment, total loans and advances of all AIs continued to grow at a steady pace of 5.3% in the first half of 2018, the same as six months ago (Chart 5.10). In particular, both domestic loans (comprising loans for use in Hong Kong and trade financing) and loans for use outside Hong Kong grew by 5.4% and 5.1% respectively, compared with 5.6% and 4.6% in the preceding six months.

<sup>51</sup> Locally incorporated AIs subject to the market risk capital adequacy regime are required to report positions in the banking book only. Other locally incorporated AIs exempted from the market risk capital adequacy regime are required to report aggregate positions in the banking book and trading book.

### Chart 5.10 Loan growth



Source: HKMA.

The expectations of credit growth in the near term have turned less optimistic, possibly reflecting the heightened uncertainties over the trade tensions between the US and Mainland China, the geopolitical risks and the pace of US interest rate normalisation. The results of the HKMA Opinion Survey on Credit Condition Outlook in June 2018 showed that the share of surveyed AIs expecting loan demand to be higher in the next three months had decreased to 18% from 29% in December 2017, while the remaining 82% were expecting loan demand to remain the same (Table 5.A).

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

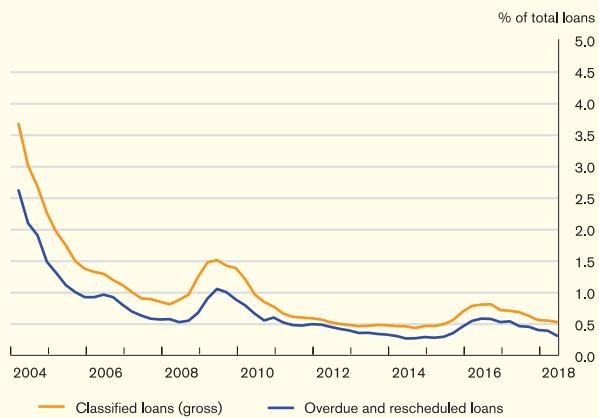
% of total respondents	Sep-17	Dec-17	Mar-18	Jun-18
Considerably higher	0	0	0	0
Somewhat higher	24	29	18	18
Same	71	71	82	82
Somewhat lower	5	0	0	0
Considerably lower	0	0	0	0
Total	100	100	100	100

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

Source: HKMA.

The asset quality of banks' loan portfolios remained sound and healthy in the first half of 2018. The gross classified loan ratio and the ratio of overdue and rescheduled loans of all AIs declined to 0.61% and 0.40% at the end of June 2018 respectively, compared with 0.68% and 0.52% at the end of 2017. For retail banks, both the gross classified loan ratio and the ratio of overdue and rescheduled loans also fell to 0.53% and 0.31% respectively (Chart 5.11). Both ratios stayed at low levels by historical standards.

### Chart 5.11 Asset quality of retail banks



Notes:

1. Classified loans are those loans graded as "sub-standard", "doubtful" or "loss".
2. Figures prior to December 2015 are related to retail banks' Hong Kong offices and overseas branches. Starting from December 2015, the coverage was expanded to include the banks' major overseas subsidiaries as well.

Source: HKMA.

One of the important debates in banking research that remains inconclusive is the effect of loan concentration on the credit risk of banks' loan portfolio. Due to the possible trade-off between concentration risks and specialisation gains, the potential effect of loan concentration on the credit risk of banks' loan portfolio is theoretically ambiguous. To shed light on this, Box 4 empirically investigates the net effect of loan concentration based on banks in Hong Kong. Our empirical results suggest that banks acquire sector-specific knowledge to improve their selection and monitoring abilities, which buffer the associated concentration risks by focusing lending to certain loan sectors. However, the net impact on the credit risk of banks' loan portfolios depends on how far the

banks allocate their loan portfolio towards riskier sectors. Therefore, changes in both the sectoral concentration and the composition of banks' loan portfolios should be monitored jointly in order to have a more balanced assessment of the credit risk of banks' loan portfolios.

### Household exposure<sup>52</sup>

On a half-yearly basis, growth in household debt slowed to 5.3% in the first half of 2018 from 6.5% in the second half of last year. The slower growth in household debt was largely due to a decelerated growth in personal loans (which comprise credit card advances and loans for other private purposes), which offset the pick up in growth for residential mortgage loans (Table 5.B).

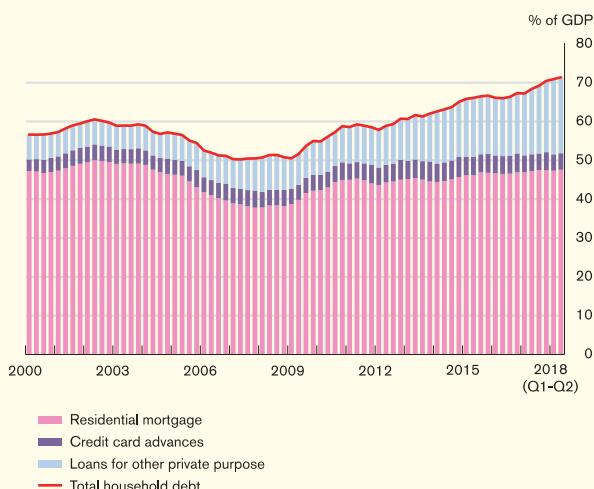
**Table 5.B**  
**Half-yearly growth of loans to households of all AIs**

(%)	2015		2016		2017		2018
	H1	H2	H1	H2	H1	H2	H1
Residential mortgages	4.5	4.0	1.0	3.1	4.1	3.8	4.2
Personal loans	6.2	2.5	-0.5	7.2	7.2	12.4	7.5
of which:							
Credit card advances	-5.5	7.1	-5.7	8.7	-7.8	11.0	-5.0
Loans for other private purposes	10.5	1.1	1.2	6.8	11.9	12.7	10.7
Total loans to households	5.0	3.6	0.5	4.3	5.0	6.5	5.3

Source: HKMA.

Despite the slower growth, household debt still grew faster than the nominal Gross Domestic Product (GDP) in Hong Kong during the review period. As a result, the household debt-to-GDP ratio edged up to 71.2% in the second quarter of 2018 from 70.3% in the fourth quarter last year (Chart 5.12).

**Chart 5.12**  
**Household debt-to-GDP and its components**



Notes:

- Only borrowings from AIs are covered.
- GDP refers to the annualised GDP, which is the sum of the quarterly GDP in the trailing four quarters.

Source: HKMA.

While household debt-to-GDP ratio has been a widely used indicator in evaluating household financial vulnerability, one cannot come to a conclusion about an economy's vulnerability by relying solely on this simple measure without taking into account the entirety of household balance sheet, risks to lenders and the associated macroeconomic imbalance.

In order to provide a full assessment by considering all these factors, we recently developed a framework for understanding the conditions under which rising household debt-to-GDP poses risks to the economy, and where Hong Kong stands when evaluated under such a framework. The assessment finds that rising household debt should not pose a major threat to Hong Kong's financial and macroeconomic stability. The conceptual framework and full assessment result can be found in Cheung et al. (2018).<sup>53</sup>

Our findings suggest that from a borrower's perspective, the household sector as a whole has a strong buffer to cushion potential financial and

<sup>52</sup> Loans to households constitute lending to professional and private individuals, excluding lending for other business purposes. Mortgage lending accounts for a major proportion of household loans, while the remainder comprises mainly unsecured lending through credit card lending and other personal loans for private purposes. At the end of June, the share of household lending in domestic lending was 28.7%.

<sup>53</sup> For more details, see Cheung et al. (2018), "Understanding household indebtedness in Hong Kong", *HKMA Research Memorandum*, 07/2018.

economic shocks associated with rising household debt.<sup>54</sup> In particular, Hong Kong's households on aggregate have a high net-worth-to-liabilities ratio and safe-assets-to-liabilities ratio based on our broad-brush estimates.<sup>55</sup>

Specifically, household assets have grown at a much faster rate than liabilities after the global financial crisis. As such, households' net worth (the difference between assets and liabilities) has increased considerably since 2009, with the household net worth-to-liabilities ratio rising from about 10 times in 2009 to 12.6 times in 2016 (Chart 5.13). In fact, the household net worth-to-liabilities ratio was much higher in Hong Kong than in major advanced economies and other Asian economies, where it was mostly found to be only around 5–6 times (Chart 5.14).

**Chart 5.13**  
**Household net worth-to-liabilities ratio for Hong Kong**

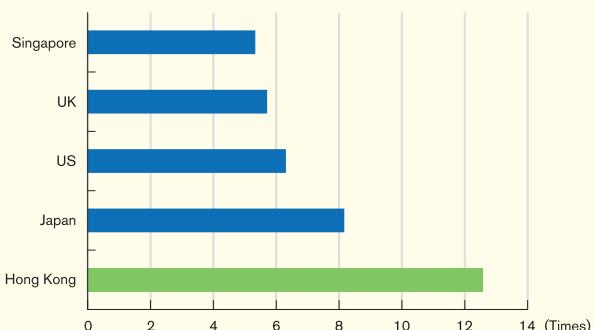


Source: HKMA staff estimates.

<sup>54</sup> The finding is based on an analysis of aggregate ratios of household balance sheet. One limitation is that it cannot reveal the extent of risks stemming from the distribution of household debt among households. Such risks have been examined by Cheung et al. (2018), and the findings suggest that such risks should be low.

<sup>55</sup> The ratios are compiled using a macro approach, in which estimates of households' assets are compiled by multiplying the aggregate value of assets by the percentage share of household ownership. Data on the aggregate values of property and financial assets (e.g. deposits, debt securities, stocks, life insurance and pension funds) are obtained from various sources through surveys or relevant administrative data. However, in most cases the percentage shares owned by households in these aggregate values are not readily available. As such, estimations and assumptions are made. For the liabilities of households (mainly mortgage and personal loans), estimates are obtained from banking statistics by the HKMA, supplemented by estimates of credit extended by non-banks obtained through surveys. For details, see Cheung et al. (2018).

**Chart 5.14**  
**Household net worth-to-liabilities ratio for selected economies**

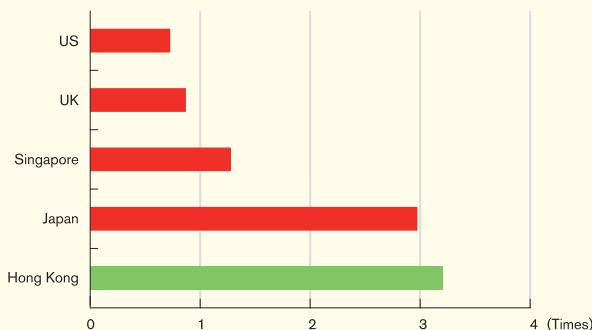


Note: Hong Kong, Japan and the UK figures refer to those at end-2016, while the US and Singapore figures refer to those at end-2017.

Sources: HKMA staff estimates, and statistical agencies or central banks of selected economies.

Given that for Hong Kong's households, residential property is the main form of asset for the storage of wealth, a natural question arises as to whether, in the event of a sharp drop in property prices, households on aggregate should still be able to have a strong buffer to cover the rising debt. A conservative approach to assess households' resilience to a shock in the asset market is to look at their holdings of safe assets. We find that even if we consider a very narrow definition of safe assets to include only deposits, the safe assets-to-liabilities ratio for Hong Kong's household sector was very high at around 3.2 times in 2016. This implies that even in the event of a sharp deterioration in households' asset position due to asset price corrections, Hong Kong's households on aggregate still have sufficient safe assets to cover their outstanding debts. Therefore, the risk of a systemic insolvency problem would be low. In addition, the safe assets-to-liabilities ratio of households in Hong Kong is far higher than other economies, including those with relatively wealthy households such as Singapore and Japan (Chart 5.15).

**Chart 5.15**  
**Safe assets-to-liabilities ratio for selected economies**

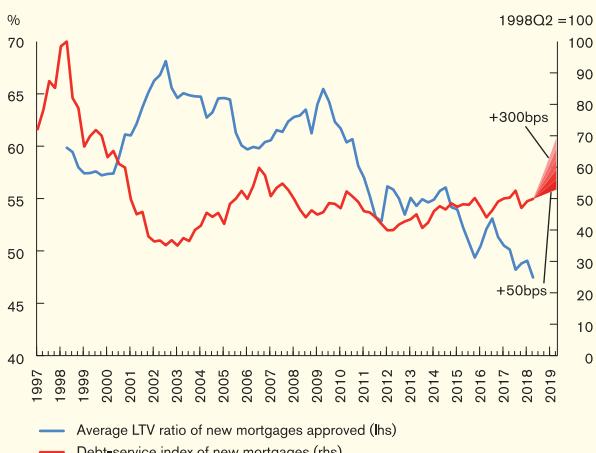


Note: Safe assets comprise deposits, as well as currency if data are available. In the case of Hong Kong, deposits only. Hong Kong, Japan and the UK figures refer to those at end-2016, while the US and Singapore figures refer to those at end-2017.

Sources: HKMA staff estimates, and statistical agencies or central banks of selected economies.

From a lender's perspective, the credit risk of household loans also stayed low during the review period. In particular, banks' mortgage portfolios remained healthy, with the delinquency ratio hovering at a low level of 0.02% at the end of June 2018. The average loan-to-value (LTV) ratio of new mortgage loans approved edged down to 47.5% in the second quarter of 2018 from 48.8% in the fourth quarter of 2017 (Chart 5.16), staying well below the ratio of 64% in September 2009, just before the implementation of the first round of countercyclical macro-prudential measures by the HKMA.

**Chart 5.16**  
**Average LTV ratio and household debt-servicing burden for new mortgage loans**

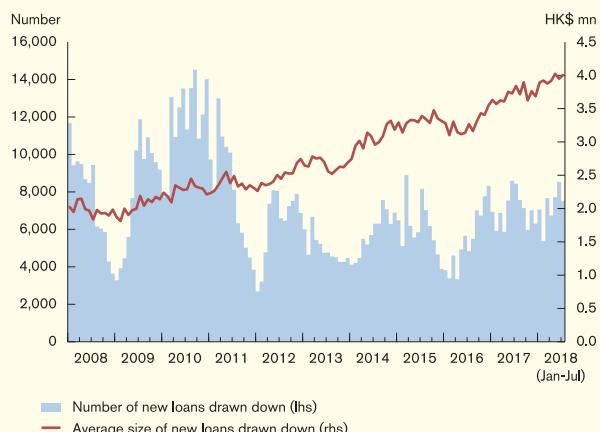


Note: The calculation of the index is based on the average interest rate for BLR-based mortgages.

Sources: HKMA and staff estimates.

However, the debt-service index of new mortgages<sup>56</sup> edged up to 49.9 in the second quarter of 2018 from 47.0 in the fourth quarter of 2017 (the red line in Chart 5.16), mainly due to an increase in the average size of new mortgage loans (Chart 5.17). Going forward, the continuing US rate hikes and the potential pass through to domestic interest rates could weigh on the household debt-servicing burden. In particular, a sensitivity test suggests that the index could rise significantly to 69.4 in a four-quarter period if interest rates were to increase by 300 basis points<sup>57</sup>, other things being constant. Therefore, the affordability of some households could be under significant pressure if interest rates were to rise rapidly. Banks should stay alert to the risks associated with a rising level of household debt-servicing burden.

**Chart 5.17**  
**New mortgage loans of surveyed AIs**



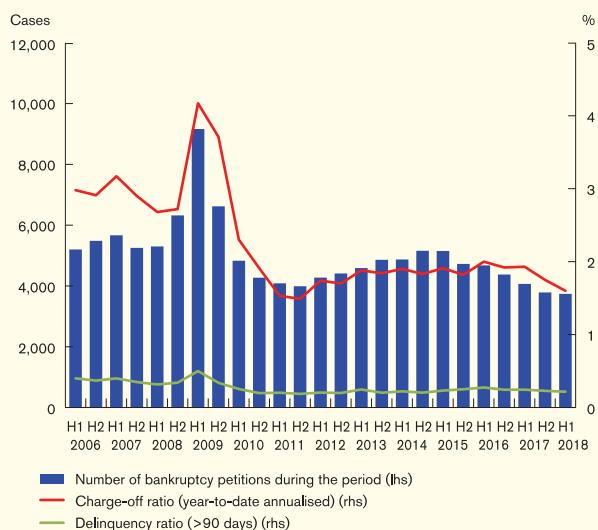
Source: HKMA Residential Mortgage Survey.

<sup>56</sup> A higher value of the debt-service index indicates there is either a drop in household income, or an increase in interest rates, or an increase in the average mortgage loan amount drawn by households. Historical movements in the index suggest that a sharp rise in the index may lead to a deterioration in the asset quality of household debt.

<sup>57</sup> The assumption of a 300-basis-point rise in interest rates is consistent with the prudential measure that requires AIs to have a three-percentage-point mortgage rate upward adjustment for stress testing property mortgage loan applicants' debt servicing ability.

The credit risk of unsecured household exposure remained contained. The annualised credit card charge-off ratio declined to 1.60% in the first half of 2018 and the delinquency ratio was stable at 0.22% at the end of June 2018 (Chart 5.18). In addition, the number of bankruptcy petitions continued to fall.

**Chart 5.18**  
**Charge-off ratio and delinquency ratio for credit card lending and bankruptcy petitions**



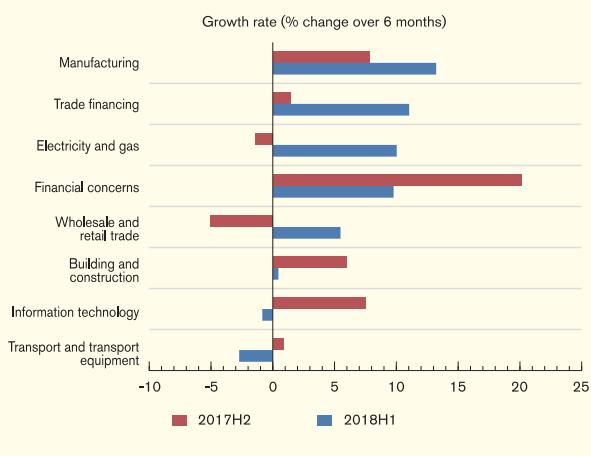
Sources: Official Receiver's Office and HKMA.

### Corporate exposure<sup>58</sup>

Domestic corporate loans (including trade finance) grew by 5.4% (on a half-yearly basis) in the first half of 2018, which was similar to that observed in the second half of last year. Analysed by economic sectors, faster growth in trade financing, loans to manufacturing, and loans to wholesale and retail trade were the major contributors for the steady growth of domestic corporate loans in the first half of 2018 (Chart 5.19). By contrast, loans to financial concerns grew at a slower pace during the first half of 2018 after last year's rapid expansion. The growth in loans to building, construction and property development continued to slow down, partly reflecting the effect of the

strengthened risk management for lending to property developers since June 2017.<sup>59</sup>

**Chart 5.19**  
**Growth in domestic corporate loans by selected sectors**



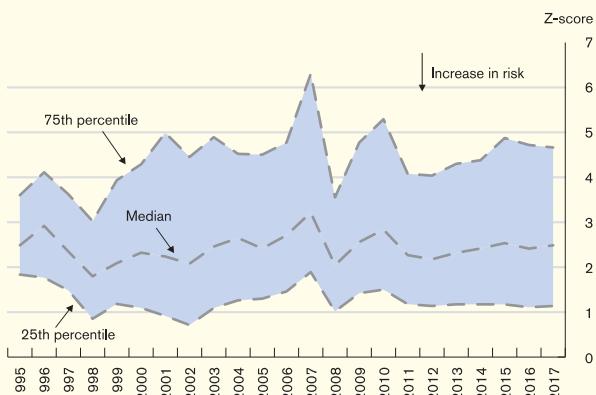
Source: HKMA.

The credit risk environment for banks' corporate exposures remained stable during the review period. The number of compulsory winding-up orders of companies was largely unchanged at 149 in the first half of 2018, compared with 150 six months ago. In addition, the latest reading of Altman's Z-score, a credit risk measure for the non-financial corporate sector based on accounting data, showed signs of improvement with the median value picking up marginally, while the score at the 25th percentile (i.e. corporates with higher default risk) remained stable (Chart 5.20). The slight decline in the default risk for the non-financial corporates listed in Hong Kong could be partly due to the improvement in their debt-servicing abilities, as indicated by the increase in interest coverage ratios across both local and non-local corporates (Chart 5.21).

<sup>58</sup> Excluding interbank exposure. At the end of June, the share of corporate loans in domestic lending was 71.2%.

<sup>59</sup> For details, see "Circular on Risk management for lending to property developers" issued by the HKMA on 12 May 2017.

**Chart 5.20**  
**Altman's Z-score of listed non-financial corporates in Hong Kong**

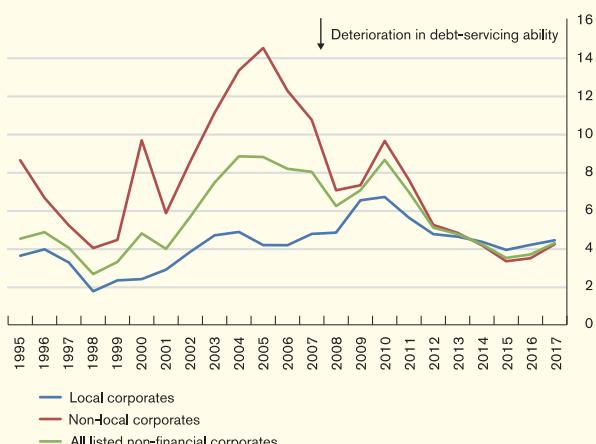


Notes:

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 2018.

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 interest coverage ratio is calculated by the earnings before interest and tax divided by the 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 2018.

Source: HKMA staff estimates based on data from Bloomberg.

However, banks should stay alert to the credit risk of their corporate exposure, as the leverage ratio (measured by the weighted average of debt-to-equity ratio) for the corporate sector continued to trend upwards (Chart 5.22).

**Chart 5.22**  
**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 2018.

Source: HKMA staff estimates based on data from Bloomberg.

In addition, the credit risk outlook is expected to be clouded by the heightened uncertainties over the US-China trade tensions and the continuing US interest rate normalisation. An escalation in trade conflicts between the two countries will inevitably add downside risks to the financial conditions of corporates with significant exposures in the US and Mainland China. The negative impact arising from the trade imbroglio could also spillover to other corporates through the global supply chain channel. This could put the debt-servicing ability of these corporates under significant pressure if the situation intensifies and persists in the longer term. Therefore, banks should carefully assess how escalation in trade conflicts and the potentially faster-than-expected rise in interest rates will affect the credit risk in relation to their corporate exposures.

Corporates' currency mismatches are another key factor that warrants close monitoring. If the trade conflict triggered abrupt capital outflows in the region and resulted in significant volatilities in foreign exchange markets, it could translate

into significant losses for corporates that have excessive foreign currency denominated liabilities, but without sufficient foreign currency denominated cash inflow. Banks should therefore stay attentive to corporates' currency mismatch risk.

### Mainland-related lending and non-bank exposures

The banking sector's total Mainland-related lending increased by 5.4% to HK\$4,414 billion (16.9% of total assets) at the end of June 2018, from HK\$4,189 billion (16.7% of total assets) at the end of 2017 (Table 5.C).

Other non-bank exposures also edged up by 0.2% to HK\$1,333 billion (Table 5.D).

**Table 5.C**  
**Mainland-related lending**

HK\$ bn	Sep 2017	Dec 2017	Mar 2018	Jun 2018
Mainland-related loans	4,073	4,189	4,409	4,414
Mainland-related loans excluding trade finance	3,755	3,880	4,068	4,064
Trade finance	318	310	341	350
By type of AIs:				
Overseas incorporated AIs	1,785	1,853	1,943	1,936
Locally incorporated AIs*	1,663	1,692	1,768	1,819
Mainland banking subsidiaries of locally incorporated AIs	625	644	699	658
By type of borrowers:				
Mainland state-owned entities	1,672	1,711	1,799	1,818
Mainland private entities	972	1,016	1,123	1,140
Non-Mainland entities	1,429	1,462	1,486	1,456

Notes:

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

Source: HKMA.

**Table 5.D**  
**Other non-bank exposures**

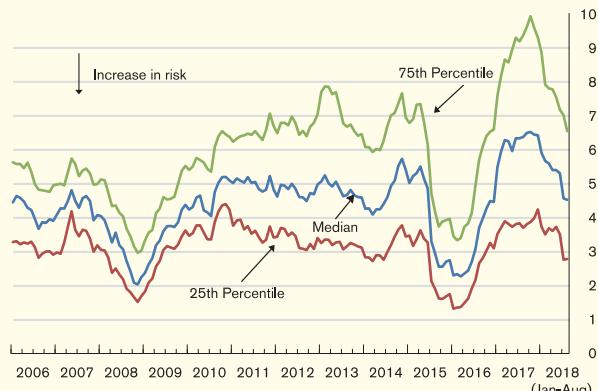
HK\$ bn	Sep 2017	Dec 2017	Mar 2018	Jun 2018
Negotiable debt instruments and other on-balance sheet exposures	871	920	950	916
Off-balance sheet exposures	503	411	415	417
<b>Total</b>	<b>1,374</b>	<b>1,331</b>	<b>1,365</b>	<b>1,333</b>

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

Despite the rising share of banks' Mainland-related lending, the associated credit risks should remain manageable. The gross classified loan ratio of Mainland-related lending of all AIs<sup>60</sup>, also decreased further to 0.62% at the end of June 2018 from 0.67% at the end of 2017.

The recent turbulence in the Mainland stock markets, stemming from rising concerns over the US-China trade tensions, may signal a deterioration in the credit risk associated with Mainland-related exposure of banks. The distance-to-default index<sup>61</sup>, a market-based default risk indicator, points to a broad-based increase in the credit risk of the Mainland corporate sector since April 2018 (Chart 5.23). Nevertheless, the level of the distance-to-default index remained higher than that during the global financial crisis, suggesting that the likelihood of a large-scale default in the Mainland corporate sector should not be high in the near term.

**Chart 5.23**  
**Distance-to-default index for the Mainland corporate sector**



Note: Distance-to-default index is calculated based on the non-financial constituent companies (i.e. excluding investment companies and those engaged in banking, insurance and finance) of the Shanghai Stock Exchange 180 A-share index.

Source: HKMA staff estimates based on data from Bloomberg.

<sup>60</sup> Figures cover AIs' Hong Kong offices and Mainland branches and subsidiaries.

<sup>61</sup> The distance-to-default is a market-based default risk indicator based on the framework by R. Merton (1974), "On the pricing of corporate debt: the risk structure of interest rates", *Journal of Finance*, Vol. 29, pages 449 – 470, in which equity prices, equity volatility, and companies' financial liabilities are the determinants of default risk. In essence, it measures the difference between the asset value of a firm and a default threshold in terms of the firm's asset volatility.

Nevertheless, the overall corporate leverage in Mainland China was still at a relatively high level (the blue line in Chart 5.24), despite the progress of deleveraging in overcapacity sectors since mid-2016.<sup>62</sup> Therefore, banks are reminded to maintain prudent credit risk management for their Mainland-related lending.

**Chart 5.24**  
**Leverage ratio for the Mainland Corporate sector**



Notes:

1. The leverage ratio is defined as the ratio of total liabilities to total assets.
2. It is calculated based on all non-financial corporates listed on the Shanghai Stock Exchange and the Shenzhen Stock Exchange.
3. Overcapacity industries include glass, cement, steel, photovoltaic, aluminium, shipbuilding and coal chemical.
4. Figures are calculated based on information up to end-August 2018.

Source: HKMA staff estimates based on data from Bloomberg.

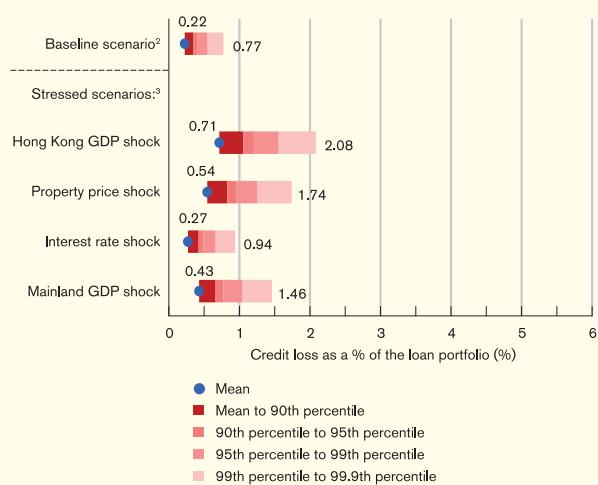
### Macro stress testing of credit risk<sup>63</sup>

Results of the latest macro stress testing on retail banks' credit exposure suggest that the Hong Kong banking sector remains resilient and should be able to withstand rather severe macroeconomic shocks similar to those experienced during the Asian financial crisis. Chart 5.25 presents the simulated future credit loss rate of retail banks in the second quarter of 2020 under four specific

macroeconomic shocks<sup>64</sup> using information up to the second quarter of 2018.

Taking account of tail risk, banks' credit losses (at the confidence level of 99.9%) under the stress scenarios range from 0.94% (Interest rate shock) to 2.08% (Hong Kong GDP shock), which are significant, but smaller than the loan loss of 4.39% following the Asian financial crisis.

**Chart 5.25**  
**The mean and value-at-risk statistics of simulated credit loss distributions<sup>1</sup>**



Notes:

1. The assessments assume the economic conditions in 2018 Q2 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 2.3%, 2.8%, 1.6%, and 1.5% respectively in each of the four consecutive quarters starting from 2018 Q3 to 2019 Q2.
  - Property price shock:** Reductions in Hong Kong's real property prices by 4.4%, 14.5%, 10.8%, and 16.9% respectively in each of the four consecutive quarters starting from 2018 Q3 to 2019 Q2.
  - Interest rate shock:** A rise in real interest rates (HIBORs) by 300 basis points in the first quarter (i.e. 2018 Q3), followed by no change in the second and third quarters and another rise of 300 basis points in the fourth quarter (i.e. 2019 Q2).
  - Mainland GDP shock:** Slowdown in the year-on-year annual real GDP growth rate to 4% in one year.

Source: HKMA staff estimates.

<sup>62</sup> Overcapacity industries include glass, cement, steel, photovoltaic, aluminium, shipbuilding and coal chemical.

<sup>63</sup> 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 from J. Wong et al. (2006), "A framework for stress testing banks' credit risk", *Journal of Risk Model Validation*, Vol. 2(1), pages 3 – 23. All estimates in the current report are not strictly comparable to those estimates from previous reports.

<sup>64</sup> These shocks are calibrated to be similar to those that occurred during the Asian financial crisis, except the Mainland GDP shock.

## 5.4 Systemic risk

Uncertainties in financial markets have been rising as the global trade tensions, the pace of US interest rate hikes, and geopolitical risks continue to cast a shadow over the global economic outlook. Should these uncertainties and risks intensify and persist into the medium to long term, they could pose challenges for banks in Hong Kong on various fronts.

Firstly, the trade conflict between the US and its major trading partners could affect the economic and inflation outlook in the US, thus raising the uncertainty over the pace of US interest rate hikes. With the US economy now operating at its full potential, an increase in inflationary pressure arising from higher import prices could potentially trigger a faster pace of US interest rate normalisation and result in tighter global liquidity conditions.

Secondly, the faster-than-expected US interest rate hikes alongside rising volatilities in financial markets and swings in market sentiment due to global trade tensions could heighten the risks of a significant reversal of Hong Kong dollar fund flows, which could result in interest rates in Hong Kong overshooting.

Thirdly, intensification in the US-China trade tensions would negatively affect the financial conditions of corporates, particularly those with significant exposure in the US and Mainland China. This, combined with the possible faster-than-expected rises in US interest rates, could put the debt servicing ability of corporates to the test. This could in turn put pressure on banks' credit risk management in view of the rising corporate leverage.

On the back of ample domestic liquidity and strong capital positions, the Hong Kong banking sector has so far remained sound and resilient. Banks, however, should carefully assess the longer-term impact of these risk factors on their liquidity and credit risk management.

Across the Atlantic, heightened uncertainty related to the Brexit negotiations is one of the geopolitical risks that merit close monitoring. If the Brexit negotiations lead to abrupt shifts in cross-border banking flows between the UK and euro-area economies, the subsequent spillover risks to the Hong Kong banking sector could be large, given the unmatched role of the UK banking system in distributing international banking flows and the significant interbank linkage between Hong Kong and the UK.

Despite the rising uncertainties surrounding the Brexit negotiations, there was no major deterioration in interbank funding conditions during the review period. The spread between the three-month US dollar London Interbank Offered Rate (LIBOR) and its corresponding overnight index swap (OIS) rate<sup>65</sup>, a common indicator of systemic liquidity risks in the short-term dollar funding market, declined from the recent peak of around 60 basis points in early April to 22 basis points at the end of August (Chart 5.26).

**Chart 5.26**  
**3-month US dollar LIBOR-OIS spreads**



Source: Bloomberg.

<sup>65</sup> An OIS is an interest rate swap in which the floating leg is linked to an index of daily overnight rates. The two parties agree to exchange at maturity, on an agreed notional amount, the difference between interest accrued at the agreed fixed rate and interest accrued at the floating index rate over the life of the swap. The fixed rate is a proxy for expected future overnight interest rates. As overnight lending generally bears lower credit and liquidity risks, the credit risk and liquidity risk premiums contained in the OIS rates should be small. Therefore, the LIBOR-OIS spread generally reflects the credit and liquidity risks in the interbank market.

### The countercyclical capital buffer (CCyB) for Hong Kong

The 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 associated with excessive aggregate credit growth. Hong Kong is implementing the CCyB in line with the Basel III implementation schedule. The Monetary Authority announced on 10 January 2018 that the CCyB ratio for Hong Kong will increase to 2.5% with effect from 1 January 2019, from the current 1.875%.<sup>66</sup> This reflects the fact that, under the Basel III phase-in arrangements, the maximum CCyB under Basel III will increase to 2.5% of banks' risk-weighted assets on 1 January 2019 from 1.875% effective from 1 January 2018.<sup>67</sup>

In setting the CCyB rate, the Monetary Authority considered a series of indicators (Table 5.E), including an "indicative buffer guide" (which is a metric providing a guide for CCyB rates based on credit-to-GDP and property price-to-rent gaps<sup>68</sup>). Based on the information up to the latest decision date, the credit-to-GDP gap and the property price-to-rent gap were 15.8% and 12.0% respectively. Both gaps remained at elevated levels and a simple mapping from the indicative buffer guide would signal a CCyB rate of 2.5%, which is the current CCyB ratio absent the Basel III phase-in mechanism. The signal from the indicative buffer guide was, in the view of the Monetary Authority, consistent with the information drawn from other reference indicators.<sup>69</sup>

<sup>66</sup> Further details of the decision may be found in the press release, "Monetary Authority Announces Countercyclical Capital Buffer for Hong Kong", issued on 10 January 2018 which is available on the HKMA website.

<sup>67</sup> Under the Basel III phase-in arrangements, the maximum CCyB rate was capped at 0.625% on 1 January 2016, with the cap rising by 0.625 percentage points each subsequent year until it reaches 2.5% on 1 January 2019.

<sup>68</sup> 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.

<sup>69</sup> These included measures of bank, corporate and household leverage; debt servicing capacity; profitability and funding conditions within the banking sector and macroeconomic imbalances.

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

	27-Jan-17	10-Jan-18	Q2-2018
Announced CCyB rate	1.875%	2.5%	
Date effective	01/01/2018	01/01/2019	
Indicative buffer guide	2.4%	2.4%	2.5%
Basel Common Reference Guide	2.5%	2.5%	2.5%
Property Buffer Guide	2.0%	2.0%	2.5%
Composite CCyB Guide	2.4%	2.4%	2.5%
Indicative CCyB Ceiling	None	None	None
<i>Primary gap indicators</i>			
Credit/GDP gap	11.5%	19.3%	15.8%
Property price/rent gap	8.2%	8.3%	12.0%
<i>Primary stress indicators</i>			
3-month HIBOR spread* (percentage points)	0.75%	0.06%	0.60%
Quarterly change in classified loan ratio (percentage points)	0.01%	-0.06%	0.01%

Notes:

1. 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 each quarter end (refer to SPM CA-B-1 for explanations of the variables). If there is a CCyB announcement, the date of the announcement is shown at the top of the respective column. If there is no CCyB announcement, the quarter in which a CCyB review takes place (normally close to quarter end) is shown at the top of the column.
2. \* Following a review of the appropriate risk-free rate benchmark (previously identified as the 3-month OIS rate), the HKMA has decided to amend the definition of the interbank market spread to the difference between the 3-month HIBOR and 3-month Exchange Fund Bill yield, effective from April 2017.

Source: HKMA.

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

**Table 5.F**  
**Key performance indicators of the banking sector<sup>1</sup> (%)**

	Jun 2017	Mar 2018	Jun 2018
<b>Interest rates</b>			
1-month HIBOR fixing <sup>2</sup> (quarterly average)	0.40	0.84	1.23
3-month HIBOR fixing (quarterly average)	0.83	1.16	1.68
BLR <sup>3</sup> and 1-month HIBOR fixing spread (quarterly average)	4.60	4.16	3.77
BLR and 3-month HIBOR fixing spread (quarterly average)	4.17	3.84	3.32
Composite interest rate <sup>4</sup>	0.31	0.38	0.62
		<b>All AIs</b>	
<b>Balance sheet developments<sup>5</sup></b>			
Total deposits	2.4	1.2	0.4
Hong Kong dollar	4.0	3.0	0.5
Foreign currency	0.9	-0.6	0.2
Total loans	5.4	3.6	1.6
Domestic lending <sup>6</sup>	5.2	3.6	1.7
Loans for use outside Hong Kong <sup>7</sup>	5.9	3.7	1.4
Negotiable instruments			
Negotiable certificates of deposit (NCDs) issued	8.1	-5.6	-2.5
Negotiable debt instruments held (excluding NCDs)	-1.7	5.9	1.1
<b>Asset quality</b>			
As a percentage of total loans <sup>8</sup>			
Pass loans	97.71	98.07	98.07
Special mention loans	1.45	1.28	1.31
Classified loans <sup>9</sup> (gross)	0.84	0.65	0.61
Classified loans (net) <sup>10</sup>	0.47	0.34	0.32
Overdue > 3 months and rescheduled loans	0.61	0.48	0.40
Classified loan ratio (gross) of Mainland related lending <sup>11</sup>	0.88	0.60	0.62
<b>Liquidity ratios (quarterly average, consolidated)</b>			
Liquidity Coverage Ratio — applicable to category 1 institutions	144.2	149.9	156.6
Liquidity Maintenance Ratio — applicable to category 2 institutions	49.7	50.3	51.3
		<b>Retail banks</b>	
<b>Profitability</b>			
Loan impairment charges as a percentage of average total assets (year-to-date annualised)	0.08	-0.01	0.02
Net interest margin (year-to-date annualised)	1.41	1.52	1.57
Cost-to-income ratio (year-to-date)	40.7	36.5	37.3
		<b>Surveyed institutions</b>	
<b>Asset quality</b>			
Delinquency ratio of residential mortgage loans	0.03	0.02	0.02
Credit card lending			
Delinquency ratio	0.25	0.22	0.22
Charge-off ratio — quarterly annualised	2.08	1.64	1.65
— year-to-date annualised	1.93	1.64	1.60
		<b>All locally incorporated AIs</b>	
<b>Capital adequacy (consolidated)</b>			
Common Equity Tier 1 capital ratio	15.1	15.0	15.3
Tier 1 capital ratio	16.1	16.5	16.8
Total capital ratio	18.7	19.1	19.4

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-bearing liabilities, which include deposits from customers, amounts due to banks, negotiable certificates of deposit and other debt instruments, and 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

### Implications of loan portfolio concentration for credit risk of banks in Hong Kong

#### *Introduction*

The effects of concentration versus diversification in banks' loan portfolios remain one of the unsettled debates in banking literature. The conventional view in modern finance theory argues that a credit portfolio with higher sectoral concentration tends to increase credit risks due to higher default correlations within those sectors.<sup>70</sup> However, recent studies find that by focusing their lending in certain industries, banks will acquire industry-specific knowledge and thus improve their screening and monitoring abilities, i.e. reducing banks' credit risks.<sup>71</sup> Due to the possible trade-off between concentration risks and specialisation gains, the net effect of loan concentration is therefore ambiguous. To help shed light on this important policy question, this box uses the Hong Kong banking sector as an example and empirically investigates the net effect of loan sectoral concentration on the credit risk of banks in Hong Kong.

#### *Empirical framework and results*

We start the analysis by discussing the measurement of loan concentration for banks. We then estimate econometric models to examine how banks' credit risk (proxied by banks' specific loan loss provision to total loan ratio,  $q_{i,t}$ ) is affected by the measure of loan concentration and other factors.

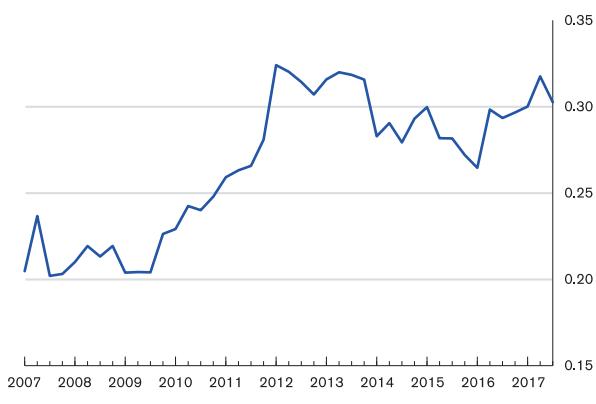
<sup>70</sup> For empirical studies supporting this view, see Bebczuk and Galindo (2007), "Financial crisis and sectoral diversification of Argentine banks, 1999-2004", *Applied Financial Economics*, Vol. 18(3), pages 199–211, and Rossi et al. (2009), "How loan portfolio diversification affects risk, efficiency and capitalization: A managerial behavior model for Austrian banks", *Journal of Banking and Finance*, Vol. 33(12), pages 2218–2226.

<sup>71</sup> For example, Jahn et al. (2016), "Banks' specialization versus diversification in the loan portfolio: New evidence from Germany", *Schmalenbach Business Review*, Vol. 17, pages 25–48, and Tabak et al. (2011), "The effects of loan portfolio concentration on Brazilian banks' return and risk", *Journal of Banking and Finance*, Vol. 35(11), pages 3065–3076.

In this study, we employ the normalised Herfindahl-Hirschman index (HHI), which is a commonly used indicator in literature to measure a bank's loan concentration. To construct the HHI for each bank, we first calculate the share of a bank's loan exposure in each of the sectors to its total loan exposure. Each of the loan shares is then squared and sum across all loan sectors, and the sum is subsequently normalised into a [0, 1] scale.<sup>72</sup> By construction, HHI is equal to 1 if a bank concentrates its loan portfolio solely in one sector. Conversely, HHI will attain its minimum value of 0 for a fully diversified loan portfolio (i.e. all loan sectors have the same loan share). Chart B4.1 shows the median value of HHI for our sampled banks. As can be seen in the chart, the median HHI has exhibited a rising trend since 2010, suggesting that the loan portfolios of banks in Hong Kong, on average, have become more concentrated after the 2008 global financial crisis.

<sup>72</sup>  $HHI_{i,t} = (\sum_j w_{i,j,t}^2 - 1/N)/(1 - 1/N)$ , where  $w_{i,j,t}$  is bank  $i$ 's loan share in sector  $j$  at time  $t$ , and  $N$  is the number of sectors that a bank can lend to. In our dataset,  $N$  is equal to 34 if other loans for use outside Hong Kong is categorised as one of the loan sectors. It is worth noting that a geographical breakdown in loans for use outside Hong Kong is not available. We find that our empirical results remain valid in a robustness analysis which divides the loans for use outside Hong Kong into two sub-groups: (a) loans for use in Mainland China (proxied by external loans to Mainland China) and (b) other loans for use outside Hong Kong and Mainland China. The robustness analysis will be available in a working paper forthcoming in the HKIMR working paper series.

**Chart B4.1**  
**Median HHI of sampled banks**



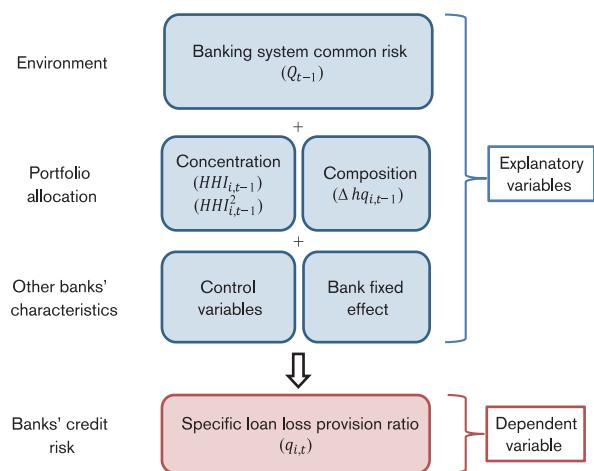
Source: HKMA staff estimates.

To single out the effect of banks' HHI on  $q_{i,t}$ , it is also important to control for differences in sectoral composition among banks' loan portfolios. This is because a bank which specialises lending in riskier sectors is likely to result in a higher  $q_{i,t}$  than another bank that specialises lending in less riskier sectors, even though the two banks have the same level of HHI. To account for this, we follow the empirical strategy in Jahn et al. (2016) by computing a variable that captures the differences in the credit risk that are solely due to differences in the loan composition among banks' loan portfolios. More specifically, the variable is computed in the following steps. First, a loan loss provision ratio of a hypothetical loan portfolio ( $hq_{i,t}$ ) for a bank is constructed based on the bank's actual loan composition, but the banking-sector's average loan loss provision ratio for each loan sector ( $Q_{j,t}$ ) is applied. Second,  $hq_{i,t}$  is subtracted from and scaled by the average overall loan loss provision ratio of the banking sector (i.e. the benchmark portfolio) to construct the composition factor ( $\Delta hq_{i,t}$ ).<sup>73</sup> By construction, a positive value of  $\Delta hq_{i,t}$  implies that the bank tends to overweight (relative to the benchmark portfolio) its loan portfolio more towards sectors with higher risks and vice versa.

<sup>73</sup> As the hypothetical and benchmark portfolio share the same average loan loss provision ratio for each loan sector,  $\Delta hq_{i,t}$  effectively reflects the relative difference in the sectoral composition between the bank's loan portfolio and the benchmark portfolio.

To estimate the net effect of higher loan concentration on  $q_{i,t}$ , the baseline model includes both bank's HHI and the composition factor as explanatory variables. We also include bank fixed effects and the average overall loan loss provision ratio of the banking sector ( $Q_{t-1}$ ). The former captures unobservable time-invariant bank characteristics, while the latter accounts for the common risk factor. Chart B4.2 presents the structure of the regression models.<sup>74</sup>

**Chart B4.2**  
**Structure of empirical models**



Under this baseline model, a negative coefficient for HHI in the regression suggests that a more concentrated loan portfolio is, on average, associated with a lower loan loss provision ratio. This suggests that the specialisation gains arising from improved selection and monitoring abilities more than offset the associated rise in the concentration risk. We also consider a modified model which includes the squared term of HHI to allow for a non-linear relationship between HHI and  $q_{i,t}$ . In both regression models, we lag all explanatory variables by one quarter to alleviate the potential endogeneity problem.

<sup>74</sup> The model also includes some control variables including (1) natural logarithm of bank's total assets, (2) deposits to asset ratio and (3) loans to asset ratio.

The regression models are estimated using a quarterly panel dataset of the largest 100 licensed banks by assets size<sup>75</sup> in Hong Kong, spanning from the first quarter of 2000 to the third quarter of 2017.<sup>76</sup> The bank-level data are constructed using regulatory data filed by banks in Hong Kong to the HKMA. The estimations results are shown in Table B4.A.

**Table B4.A**  
**Estimated impacts of higher loan concentration on  $q_{i,t}$**

Explanatory variables	(I)	(II)
$HHI_{i,t-1}$	-***	-***
$HHP_{i,t-1}$		+***
$\Delta hq_{i,t-1}$	+***	+***
$Q_{t-1}$	+***	+***
Bank control variables	Yes	Yes
Bank fixed effect	Yes	Yes

Note:

1. + (-) refers to an estimated positive (negative) relationship between the variables.
2. \*\*\*, \*\* and \* denote the estimated coefficients are significant at 1%, 5% and 10% levels respectively.

Source: HKMA staff estimates.

Overall, our estimation results indicate that, on average, a bank with a more concentrated loan portfolio tends to have a lower loan loss provision ratio after controlling for differences in loan composition of banks as well as the common risk factor. Meanwhile, the estimated coefficient for the squared HHI is found to be positively significant (i.e. the second column of Table B4.A), suggesting that the marginal impact on the loan loss provision ratio would be smaller if the bank has already held a very concentrated loan portfolio *ex ante*, possibly reflecting a diminishing marginal benefit from improved selection and monitoring abilities.

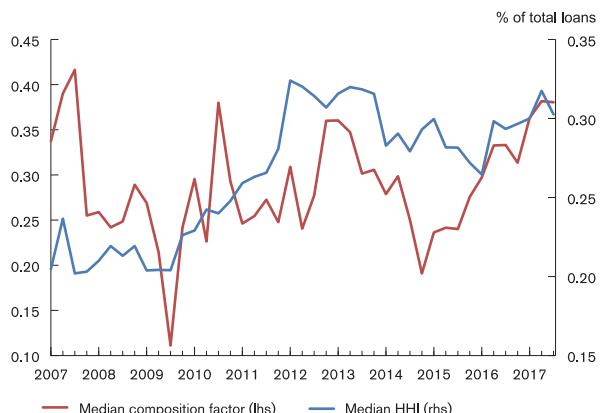
Other explanatory variables are also found to have the expected signs. In particular, a bank that overweights its loan portfolio towards riskier sectors relative to the benchmark portfolio (i.e. a positive value of  $\Delta hq_{i,t-1}$ ) would have a higher loan loss ratio given other things being held constant. The estimation results also suggest the

existence of a significant positive relationship between the common risk factor ( $Q_{t-1}$ ) and loan loss provision ratio, suggesting the overall credit risk environment also plays a key role in affecting the credit risk of individual bank's loan portfolio.

*Net impact of higher loan concentration on bank's loan loss provision ratio after the crisis*

While higher HHI *per se* is found to be negatively related with a bank's loan loss ratio, the net impact is also dependent on how far the bank allocates its loan portfolio in riskier sectors (proxied by the composition factor  $\Delta hq_{i,t}$ ). Chart B4.3 presents the development of a median value of HHI and the composition factor for our sampled banks over time. As can be seen in the chart, the median HHI (i.e. the blue line) increased from 0.23 at the end of March 2010 to 0.30 at the end of September 2017, while the median  $\Delta hq_{i,t}$  (i.e. the red line) rose slightly from 0.30 to 0.38 during the same period. These together suggest that banks in Hong Kong have, on average, increased their loan business focus slightly towards riskier sectors after the global financial crisis.

**Chart B4.3**  
**Median HHI and median composition factor of sampled banks**



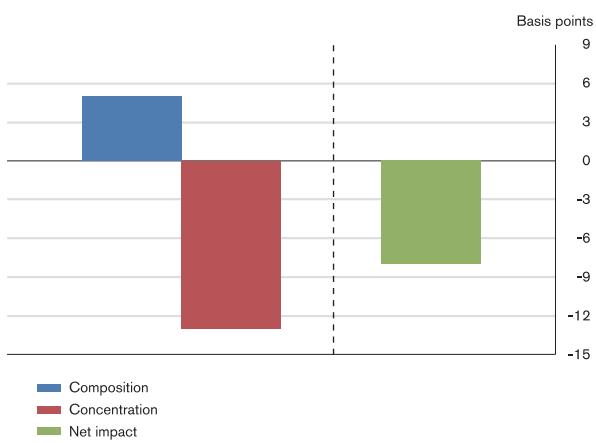
Source: HKMA staff estimates.

<sup>75</sup> Assets size refers to the banks' total assets at the end of 2016.

<sup>76</sup> The sampled banks accounted for 98% of total loans of all AIs at the end of September 2017.

Based on our estimation results, the rise in loan concentration is estimated to decrease  $q_{i,t}$  by 13 basis points which would more than offset the estimated increase in  $q_{i,t}$  of five basis points arising from the increase in  $\Delta h q_{i,t}$ . Overall, the net effect is estimated to decrease  $q_{i,t}$  by about eight basis points (Chart B4.4). Taken together, our empirical estimate suggests that the post-crisis increase in banks' loan concentration has, on average, helped improve their asset quality, partially due to improved screening and monitoring abilities.

**Chart B4.4**  
**Net impact of increased loan concentration and composition factor on loan loss provision ratio from March 2010 to September 2017**



### Conclusion

Our empirical results suggest that there are potential gains of improved screening and monitoring abilities for banks, which buffer the associated concentration risk, by focusing lending to certain loan sectors. A key implication is that the potential specialisation gains from higher loan concentration should be taken into consideration in order to have a more balanced assessment of banks' risks.

While this finding may partly alleviate the concerns about the rising sectoral concentration in banks' loan portfolios after the crisis, it is important to note that the net impact on their loan loss provision ratios depends on how far the

banks allocate their loan portfolios towards riskier sectors. Looking ahead, changes in both the sectoral concentration and the composition in their loan portfolio should be closely monitored. In addition, the common credit risk factor, which is exogenous, is found to be a key driver in affecting the credit risk of the banks' loans. In view of this, it is essential for banks to maintain prudent credit risk management and stringent underwriting standards on their credit businesses.

# Glossary of terms

---

## **Aggregate Balance**

The sum of balances in the clearing accounts and reserve accounts maintained by commercial banks with the central bank. In Hong Kong, this refers to the sum of the balances in the clearing accounts maintained by the banks with the HKMA for settling interbank payments and payments between banks and the HKMA. The Aggregate Balance represents the level of interbank liquidity, and is a part of the Monetary Base.

## **Authorized Institution (AI)**

An institution authorized under the Banking Ordinance to carry on the business of taking deposits. Hong Kong maintains a Three-tier Banking System, which comprises licensed banks, restricted licence banks and deposit-taking companies.

## **Best Lending Rate**

A benchmark interest rate that banks use to price loans. In Hong Kong, the Best Lending Rate is used as a base for quoting interest rates on mortgage loans.

## **Certificates of Indebtedness (CIs)**

Certificates issued by the Financial Secretary under the Exchange Fund Ordinance, to be held by note-issuing banks as cover for the banknotes they issue.

## **Composite Consumer Price Index (CCPI)**

The headline consumer price index (CPI) for Hong Kong. The Census and Statistics Department compiles three separate CPI series relating to households in different expenditure ranges. The CPI(A) relates to about 50% of households in the relatively low expenditure range; the CPI(B) relates to the next 30% of households in the medium expenditure range; and the CPI(C) relates to the next 10% of households in the relatively high expenditure range. The Composite CPI is compiled based on the aggregate expenditure pattern of all of the above households taken together.

## **Composite Interest Rate**

The composite interest rate is a weighted average interest rate of all Hong Kong dollar interest bearing liabilities, which include deposits from customers, amounts due to banks, negotiable certificates of deposit and other debt instruments, and Hong Kong dollar non-interest bearing demand deposits on the books of banks. Data from retail banks, which account for about 90% of the total customers' deposits in the banking sector, are used in the calculation. It should be noted that the composite interest rate represents only average interest expenses. There are various other costs involved in the making of a loan, such as operating costs (e.g. staff and rental expenses), credit cost and hedging cost, which are not covered by the composite interest rate.

## **Convertibility Undertaking (CU)**

An undertaking by a central bank or currency board to convert domestic currency into foreign currency and vice versa at a fixed exchange rate. In Hong Kong, the HKMA operates Convertibility Undertakings on both the strong side and the weak side. Under the strong-side Convertibility Undertaking, the HKMA undertakes

to buy US dollars from licensed banks at 7.75. Under the weak-side Convertibility Undertaking, the HKMA undertakes to sell US dollars at 7.85. Within the Convertibility Zone between 7.75 and 7.85, the HKMA may choose to conduct market operations consistent with Currency Board principles with the aim of promoting the smooth functioning of the money and foreign exchange markets.

### **Convertibility Zone**

The Hong Kong dollar-US dollar exchange rate band, defined by the levels of the strong- and weak-side Convertibility Undertakings, within which the HKMA may choose to conduct market operations consistent with Currency Board principles.

### **Exchange Fund Bills and Notes (EFBNs)**

Debt instruments issued by the HKMA for the account of the Exchange Fund. These instruments are fully backed by the foreign reserves. The HKMA has undertaken that new Exchange Fund paper will only be issued when there is an inflow of funds, thus enabling the additional paper to be fully backed by the foreign reserves. Since 1 April 1999, interest payments on Exchange Fund paper have been allowed to expand the Monetary Base. Additional Exchange Fund paper is issued to absorb such interest payments. This is consistent with the Currency Board discipline since interest payments on Exchange Fund paper are backed by interest income on the US dollar assets backing the Monetary Base.

### **Monetary Base**

A part of the monetary liabilities of a central bank. The monetary base is defined, at the minimum, as the sum of the currency in circulation (banknotes and coins) and the balance of the banking system held with the central bank (the reserve balance or the clearing balance). In Hong Kong, the Monetary Base comprises Certificates of Indebtedness (for backing the banknotes issued by the note-issuing banks), government-issued currency in circulation, the balance of the clearing accounts of banks kept with the HKMA, and Exchange Fund Bills and Notes.

### **Nominal and Real Effective Exchange Rate (NEER and REER)**

An indicator of the overall exchange rate value of the Hong Kong dollar against a basket of currencies of Hong Kong's principal trading partners. The nominal effective exchange rate (NEER) is a weighted average of the exchange rates between Hong Kong and its principal trading partners. The real effective exchange rate (REER) is obtained by adjusting the NEER for relative movements in the seasonally adjusted consumer price indices of those selected trading partners.

---

# Abbreviations

---

<b>1m moving average</b>	One-month moving average
<b>3m moving average</b>	Three-month moving average
<b>3m-on-3m</b>	Three-month-on-three-month
<b>AEs</b>	Advanced economies
<b>AFC</b>	Asian Financial Crisis
<b>ASEAN</b>	Association of Southeast Asian Nations
<b>Als</b>	Authorized institutions
<b>BIS</b>	Bank for International Settlements
<b>bn</b>	Billion
<b>BLR</b>	Best lending rate
<b>BoJ</b>	Bank of Japan
<b>BoP</b>	Balance of Payments
<b>BSD</b>	Buyer's stamp duty
<b>CAPE</b>	Cyclically-adjusted price-to-earnings
<b>CAR</b>	Capital Adequacy Ratio
<b>CBO</b>	Congressional Budget Office
<b>CBRC</b>	China Banking Regulatory Commission
<b>CCPI</b>	Composite Consumer Price Index
<b>CCyB</b>	Countercyclical capital buffer
<b>CDs</b>	Certificates of deposits
<b>CDS</b>	Credit default swap
<b>CET1</b>	Common equity tier-one
<b>CFETS</b>	China Foreign Exchange Trade System
<b>CFR</b>	Core Funding Ratio
<b>ChiNext</b>	The start-ups board in the Shenzhen Stock Exchange
<b>CIs</b>	Certificates of Indebtedness
<b>CNH</b>	Offshore renminbi in Hong Kong
<b>CNY</b>	Onshore renminbi
<b>C&amp;SD</b>	Census and Statistics Department
<b>CPI</b>	Consumer Price Index
<b>CU</b>	Convertibility Undertaking

<b>DF</b>	Deliverable forward
<b>DI</b>	Direct investment
<b>DSD</b>	Doubling of the ad valorem stamp duty rates
<b>DSR</b>	Debt-servicing ratio
<b>EBIT</b>	Earnings before interest and tax
<b>EBITDA</b>	Earnings before interest, taxes, depreciation and amortization
<b>ECB</b>	European Central Bank
<b>EFBNs</b>	Exchange Fund Bills and Notes
<b>EMEAP</b>	Executives' Meeting of East Asia-Pacific Central Banks
<b>EMEs</b>	Emerging Market Economies
<b>EPIFs</b>	External primary income flows
<b>EPU</b>	Economic policy uncertainty
<b>ETFs</b>	Exchange traded funds
<b>EU</b>	European Union
<b>EUR</b>	Euro
<b>FDI</b>	Foreign direct investment
<b>Fed</b>	Federal Reserve
<b>FOMC</b>	Federal Open Market Committee
<b>FSB</b>	Financial Stability Board
<b>FX</b>	Foreign exchange
<b>GBP</b>	British Pound Sterling
<b>GBs</b>	Government Bonds
<b>GDP</b>	Gross Domestic Product
<b>GFC</b>	Global financial crisis
<b>G-SIBs</b>	Global systemically important banks
<b>HHI</b>	Herfindahl-Hirschman index
<b>HIBOR</b>	Hong Kong Interbank Offered Rate
<b>HK</b>	Hong Kong
<b>HKD</b>	Hong Kong dollar
<b>HKEEx</b>	The Hong Kong Exchanges and Clearing Limited
<b>HKMA</b>	Hong Kong Monetary Authority
<b>HK\$M3</b>	Hong Kong dollar broad money supply
<b>HSCEI</b>	Hang Seng China Enterprises Index
<b>HSI</b>	Hang Seng Index
<b>IFC</b>	International Finance Corporation

<b>IMF</b>	International Monetary Fund
<b>IPO</b>	Initial Public Offering
<b>IT</b>	Information technology
<b>JPY</b>	Japanese Yen
<b>LCR</b>	Liquidity Coverage Ratio
<b>LGFPs</b>	Local government financing platforms
<b>LIBOR</b>	London Interbank Offered Rate
<b>LERS</b>	Linked Exchange Rate System
<b>LMR</b>	Liquidity Maintenance Ratio
<b>Ihs</b>	Left-hand side
<b>IRB</b>	Internal Ratings-Based Approach
<b>LAC</b>	Loss-absorbing capacity
<b>LTD</b>	Loan-to-deposit
<b>LTIIS</b>	Long-term institutional investors
<b>LTV</b>	Loan-to-value
<b>mn</b>	Million
<b>MDBs</b>	Multilateral Development Banks
<b>MLF</b>	Medium-term Lending Facility
<b>MPA</b>	Macro Prudential Assessment
<b>MRF</b>	Mutual Recognition of Funds
<b>MSCI</b>	Morgan Stanley Capital International
<b>MTN</b>	Medium-term Note
<b>NAFTA</b>	North American Free Trade Agreement
<b>NBER</b>	National Bureau of Economic Research
<b>NBS</b>	National Bureau of Statistics
<b>NCD</b>	Negotiable certificate of deposit
<b>NEER</b>	Nominal effective exchange rate
<b>NFIB</b>	National Federation of Independent Business
<b>NIE</b>	Newly industrialised economies
<b>NIM</b>	Net interest margin
<b>NPL</b>	Non-performing loan
<b>NSFR</b>	Net Stable Funding Ratio
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>OID</b>	Overnight indexed swap
<b>OMDSR</b>	Outstanding mortgage debt service ratio

<b>OTC</b>	Over-the-counter
<b>p.a.</b>	Per annum
<b>P2P</b>	Peer-to-peer
<b>PBoC</b>	People's Bank of China
<b>PCE</b>	Private consumption expenditure
<b>PMI</b>	Purchasing Managers' Index
<b>PPI</b>	Producer Price Index
<b>PPP</b>	Public-private partnership
<b>qoq</b>	Quarter-on-quarter
<b>qoqa</b>	Quarter-on-quarter annualised
<b>QE</b>	Quantitative Easing
<b>QQE</b>	Quantitative and Qualitative Easing
<b>R&amp;VD</b>	Rating and Valuation Department
<b>R&amp;D</b>	Research and development
<b>REER</b>	Real effective exchange rate
<b>Repo</b>	Repurchase operation
<b>rhs</b>	Right-hand side
<b>RMB</b>	Renminbi
<b>RQFII</b>	Renminbi Qualified Foreign Institutional Investor
<b>RRR</b>	Required reserve ratio
<b>RTGS</b>	Real Time Gross Settlement
<b>SAFE</b>	State Administration of Foreign Exchange
<b>SARS</b>	Severe Acute Respiratory Syndrome
<b>SDR</b>	Special Drawing Rights
<b>SHIBOR</b>	Shanghai Interbank Offered Rate
<b>SKEW</b>	Chicago Board Options Exchange Skew Index
<b>SLO</b>	Short-term Liquidity operation
<b>SMEs</b>	Small and medium-sized enterprises
<b>SOEs</b>	State-owned enterprises
<b>SPM</b>	Supervisory Policy Manual
<b>SSD</b>	Special stamp duty
<b>SSE</b>	Shanghai Stock Exchange
<b>SWIFTs</b>	Society for Worldwide Interbank Financial Telecommunication
<b>S&amp;P</b>	Sale and Purchase Agreements of Building Units
<b>S&amp;P 500</b>	Standard & Poor's 500 Index

<b>TLTRO</b>	Targeted Longer-Term Refinancing Operation
<b b="" twi<=""></b>	Trade Weighted Index
<b>UK</b>	United Kingdom
<b>US</b>	United States
<b>USD</b>	US dollar
<b>VAR</b>	Vector autoregressive
<b>VHSI</b>	HSI Volatility Index
<b>VIX</b>	Chicago Board Options Exchange Market Volatility Index
<b>WMP</b>	Wealth management product
<b>WTO</b>	World Trade Organisation
<b>yoy</b>	Year-on-year

©2018 Hong Kong Monetary Authority  
Reproduction for non-commercial  
purposes is permitted provided that the  
source is properly stated.

Full text of this Report is available on the  
HKMA website at **www.hkma.gov.hk**.

**Hong Kong Monetary Authority**  
55th Floor, Two International Finance Centre,  
8 Finance Street, Central, Hong Kong  
Telephone: (852) 2878 8196  
Fax: (852) 2878 8197  
E-mail: hkma@hkma.gov.hk  
**www.hkma.gov.hk**

Printed in Hong Kong  
ISSN 2221-5727 (Print version)  
ISSN 2222-1514 (Online version)  
HK\$60