4. Monetary and financial conditions

After the triggering of the weak-side Convertibility Undertaking in March, the Hong Kong dollar witnessed some fluctuations, particularly amid seasonal funding demand and sizable initial public offerings in May and June. Despite the fluctuations, the Hong Kong dollar traded in a smooth and orderly manner. While the reduction in the Aggregate Balance since April 2018 has reduced interbank liquidity and may have made Hong Kong dollar interbank rates more sensitive to changes in supply and demand of Hong Kong dollar funding, the Hong Kong dollar money market operated in an orderly fashion. For the first seven months as a whole, both Hong Kong dollar and total broad money supply recorded steady growth. Looking ahead, the direction of fund flows will mainly depend on a number of factors, including developments in the lingering US-China trade tensions and the US monetary policy stance.

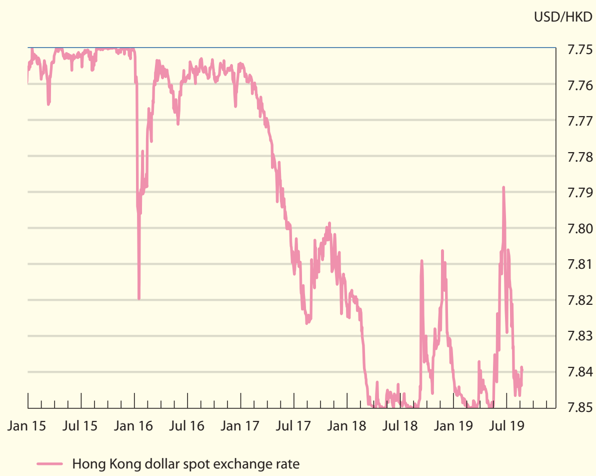
4.1 Exchange rate and capital flows

Driven by the reduced funding demand from banks and substantial and negative Hong Kong dollar-US dollar interest rate spreads in early 2019, carry trade activities pushed the Hong Kong dollar exchange rate towards the weak side of the Convertibility Zone and triggered the weak-side Convertibility Undertaking (CU) eight times between 8 and 29 March (Chart 4.1). The triggering of the weak-side CU reduced the Aggregate Balance (AB) and tightened interbank liquidity, which allowed the Hong Kong dollar to regain some strength in April. However, the weak sentiment in the local stock market in May caused the Hong Kong dollar to weaken gradually. Since late May, the Hong Kong dollar exchange rate rebounded significantly, partly underpinned by the funding demand in preparation for sizable initial public offering (IPO) activities, as well as some seasonal Hong Kong dollar demand arising from dividend payouts by listed companies in Hong Kong and funding demands for half-year closing.

Moving into July and August, the Hong Kong dollar drifted lower against the US dollar as liquidity conditions improved after the half-year end. The Hong Kong dollar closed at 7.843 on 30 August. During the review period, the Hong Kong dollar continued to trade in a smooth and orderly manner.

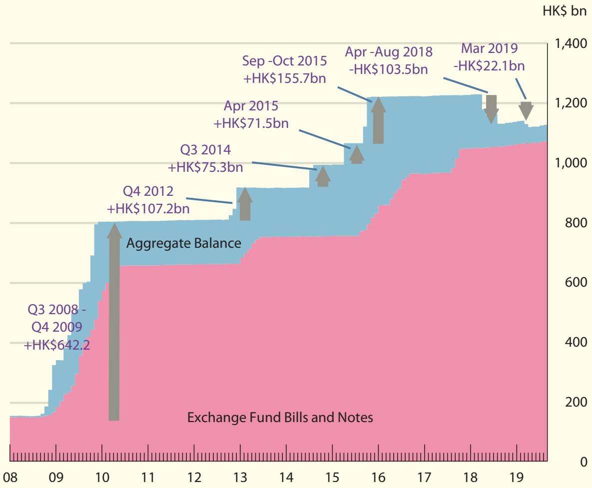
As a result of the triggering of the weak-side CU in March, the AB declined from HK$76.3 billion at the end of February to HK$54.4 billion at the end of August (Chart 4.2).

Chart 4.1
Hong Kong dollar exchange rate



Source: HKMA.

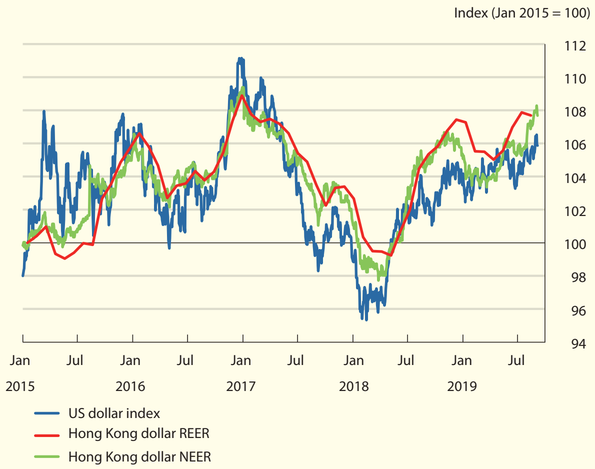
Chart 4.2
Aggregate Balance and Exchange Fund Bills and Notes (EFBNs)



Source: HKMA.

Broadly consistent with the movements of the US dollar, the Hong Kong dollar nominal effective exchange rate index (NEER) moved up during the review period (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 only had a limited impact on the REER.

Chart 4.3
NEER and REER



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

In terms of cross-border fund flows that were recorded in the latest Balance of Payments (BoP) statistics, portfolio investment saw net inflows by non-residents, but net outflows by residents in the first quarter of 2019 (Table 4.A).[32] Net outflows by residents in both equity and debt securities accelerated in the first quarter of 2019 as they picked up investment activities on assets abroad, which more than offset the inflows by non-residents.

Table 4.A
Cross-border portfolio investment flows

(HK$ bn)	2017	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1
By Hong Kong residents						
Equity and investment fund shares	-109.8	-101.2	-64.6	-134.5	-27.6	-53.0
Debt securities	54.5	-108.0	-140.7	6.1	-87.2	-221.0
By non-residents						
Equity and investment fund shares	80.4	-77.3	-1.3	31.7	7.6	35.2
Debt securities	239.1	40.9	48.5	19.5	0.5	15.9

Note: A positive value indicates capital inflows.
Source: C&SD.

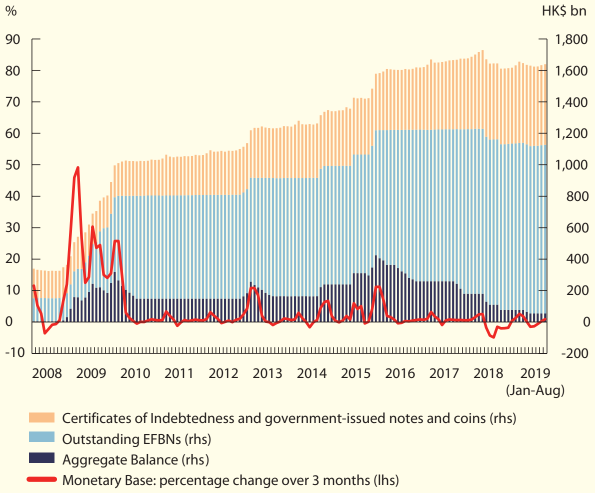
Looking ahead, the directions of Hong Kong dollar fund flows remain highly uncertain in view of the increased uncertainties in the monetary policy direction of the US Federal Reserve (Fed) and other major central banks, developments in the US-China trade tensions, and global economic growth. Meanwhile, possible fund raising activities (e.g. IPOs) in the second half of 2019 may increase fund flow volatility. On one hand, these activities may attract funds to flow into the Hong Kong dollar, but on the other hand the funds raised may be switched back to other currencies afterwards. As an international financial centre, fund flows into and out of Hong Kong can at times be quite large. Nonetheless, Hong Kong has maintained a sound fiscal position, substantial foreign reserves and a robust banking sector, which makes it resilient to abrupt reversals of fund flows.

[32] At the time of writing, the second-quarter BoP statistics were not yet available.

4.2 Monetary environment and interest rates

Despite macroeconomic uncertainties and the triggering of the weak-side CU, the monetary environment in Hong Kong continued to stay relatively loose thus far in 2019. The Hong Kong dollar Monetary Base remained sizeable and broadly stable, standing at HK$1,639.2 billion at the end of August and edging up by 0.4% in the first eight months (Chart 4.4). Non-AB components of the Monetary Base, including Certificates of Indebtedness, government-issued notes and coins, and outstanding EFBNs, increased steadily during the same period.

Chart 4.4
Monetary Base components

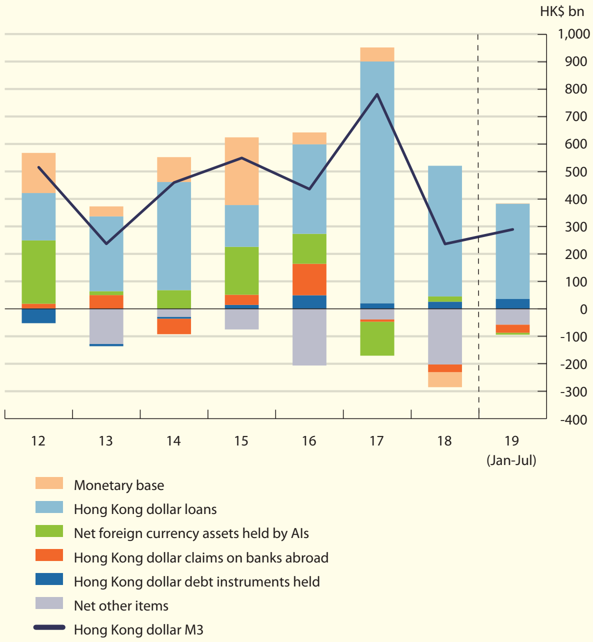


Source: HKMA.

During the first seven months of 2019, the Hong Kong dollar Monetary Aggregates witnessed moderate expansion after some consolidation in the second half of 2018. For the first seven months as a whole, the Hong Kong dollar broad money (HK$M3) rose by 3.3%. Analysed by the asset-side counterparts, the expansion of HK$M3 in that period was mainly led by money creation through Hong Kong dollar loans[33] (Chart 4.5).

Correspondingly, Hong Kong dollar deposits, a major component of HK$M3, picked up by 3.6% (Chart 4.6). Within Hong Kong dollar deposits, time deposits recorded a relatively strong increase, partly reflecting higher Hong Kong dollar deposit rates.

Chart 4.5
Changes in the HK$M3 and the asset-side counterparts



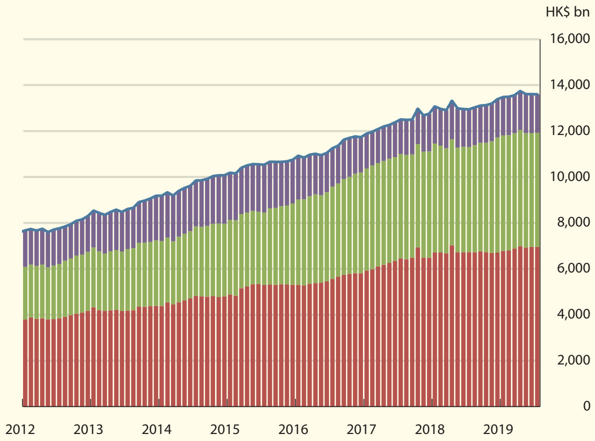
Note: The HK$M3 in the monetary survey has been adjusted to include foreign currency swap deposits and to exclude government deposits and Exchange Fund deposits with licensed banks.

Source: HKMA staff estimates.

Foreign currency deposits declined by 0.3% in the first seven months of 2019 (Chart 4.6). In particular, US dollar deposits declined by 0.8%, in part reflecting lower US dollar interest rates. On the other hand, other foreign currency deposits grew mildly by 1.1% during the same period, with renminbi deposits continuing to increase at a modest pace. Overall, total deposits with AIs increased by 1.6% during the first seven months.

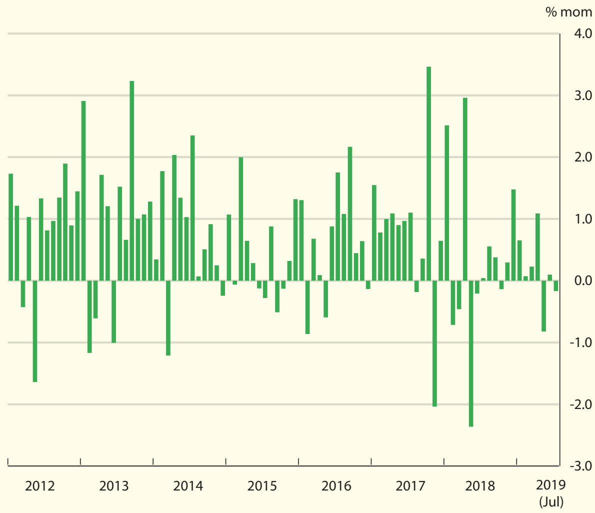
[33] As a reference, Hong Kong dollar loans grew by 6.0% during the first seven months.

Chart 4.6
Deposits with AIs by currencies



Source: HKMA.

Chart 4.7
Total broad money supply (M2)



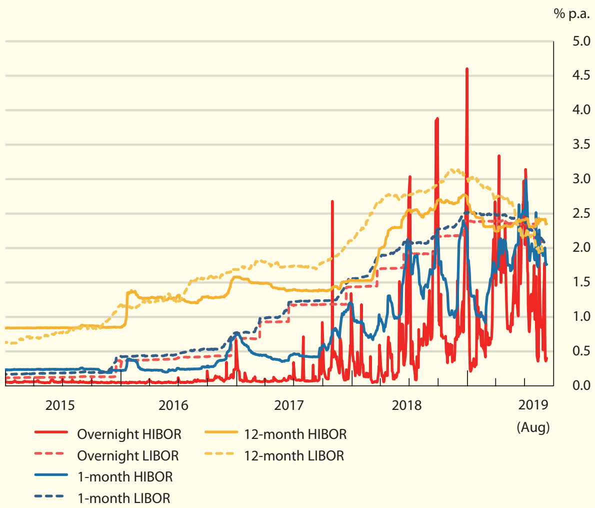
Source: HKMA.

Total broad money supply in Hong Kong grew at a relatively steady pace thus far in 2019 (Chart 4.7). With the pick-up in Hong Kong dollar deposits exceeding the decline in foreign currency deposits, both total M2 and M3 increased by a modest 1.1% for the first seven months as a whole. It should be noted that monthly changes in deposits and broad money are subject to volatility due to a wide range of transient factors, such as seasonal and IPO-related funding demand, as well as business and investment-related activities.

After softening in the first two months of 2019, the Hong Kong dollar interbank interest rates faced renewed upward pressure between March and June. The short-term Hong Kong Interbank Offered Rates (HIBORs) picked up considerably since March with reduced liquidity amid the triggering of the weak-side CU (Chart 4.8). In particular, seasonal funding needs, together with anticipated liquidity demand for large IPOs in the second half, pushed up the short-term HIBORs further since late May. Stepping into the second half of 2019, HIBORs declined gradually as the seasonal and IPO-related funding demand receded. The 1-month HIBORs declined to an average of 1.94% in August.

The reduction in the AB since April last year may have led to a higher sensitivity of the Hong Kong dollar interbank rates to changes in supply and demand of Hong Kong dollar funding in the local market. Banks have reportedly been more active in managing their day-to-day funding position in order to ensure effective deployment of liquidity for themselves and efficient circulation of liquidity in the banking system. It has also been observed that banks have started earlier to prepare for periods of strong funding needs (e.g. quarter-ends or IPO subscription periods).

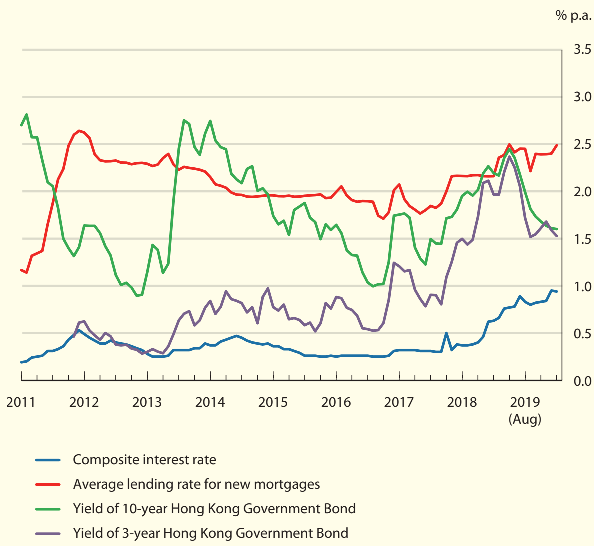
Chart 4.8
Hong Kong dollar and US dollar interbank interest rates



Sources: CEIC and HKMA.

Over the review period, the Hong Kong dollar yield curve broadly tracked the movements of the US dollar yield curve, shifting downward and flattening at the longer-end. Compared with the end of 2018, the yields of the three-year and ten-year Hong Kong Government Bonds declined, respectively, by 33 basis points and 97 basis points to 1.52% and 1.08% at the end of August (Chart 4.9).

Chart 4.9
Yields of Government Bonds, the composite interest rate, and the average lending rate for new mortgages



Sources: HKMA and staff estimates.

The composite interest rate, a measure of the average Hong Kong dollar funding costs of retail banks, remained largely stable at around 0.82% in the first five months of 2019 (Chart 4.9). As banks raised their preferential deposit rates amid the rise in funding demand, the composite interest rate picked up to 0.95% at the end of June, before easing marginally to 0.94% at the end of July.

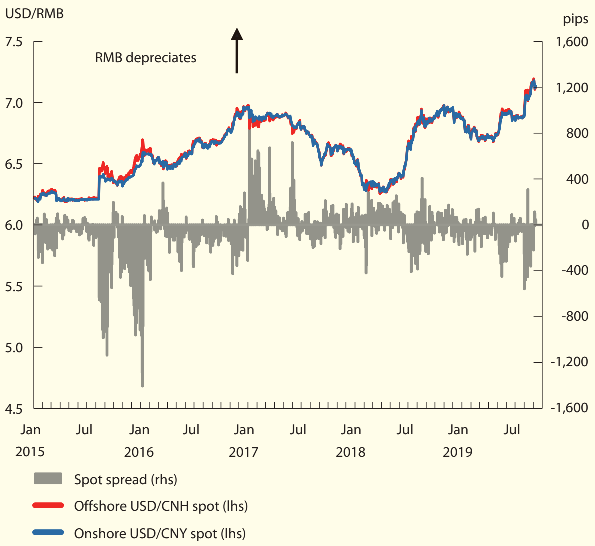
Mainly reflecting the relatively stable prime-based cap for the HIBOR-based mortgages, the average lending rate for new mortgages remained steady at around 2.4% in most of the first half. The average mortgage rate, however, increased slightly moving into August to 2.49%, with major banks raising the level of the prime-based caps for some of their new mortgage lending.

Looking ahead, movements in Hong Kong dollar interest rates will continue to be influenced by their US dollar counterparts under the design of the Linked Exchange Rate System. Fluctuations are expected to be seen around periods with strong funding demand (e.g. quarter-ends or IPO subscription periods). In case of short-term liquidity tightness due to large scale capital market activities, banks can make use of the HKMA liquidity facilities.

Offshore renminbi banking business

Against the backdrop of the US-China trade conflict, the offshore (CNH) and the onshore (CNY) renminbi have faced depreciation pressures since early May after strengthening gradually in the several months before that. In early August, the CNY exchange rate fell past 7 against the US dollar for the first time since 2008 after the US planned to impose an additional 10% tariff on US$300 billion worth of Mainland's imports from September (Chart 4.10). The spread between CNY and CNH once widened to about 450 pips in mid-May and further widened to about 560 pips in early August, although it remained moderate by historical standards.

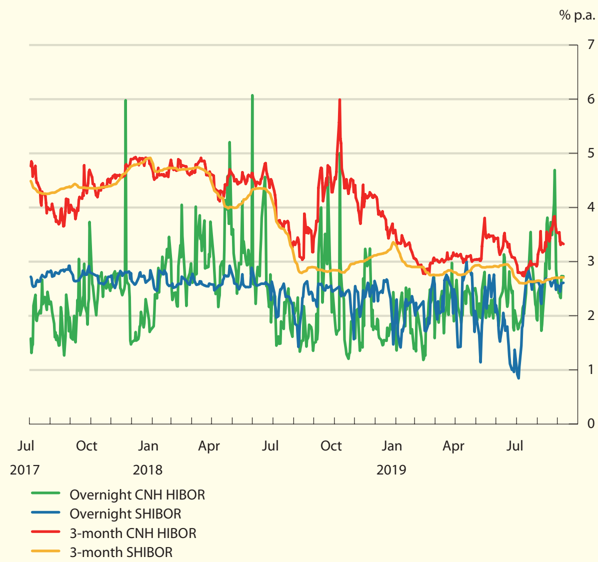
Chart 4.10
CNY and CNH exchange rates



Source: Bloomberg.

Despite pressure on the renminbi exchange rate to weaken, liquidity conditions in the offshore CNH interbank market remained broadly stable in the review period. The 3-month CNH HIBOR mostly traded in the range between 3 to 4% (Chart 4.11). Moderate fluctuations were seen over the period, in part reflecting funding demand for MSCI's A-share rebalancing and tightened liquidity amid the trade conflict.

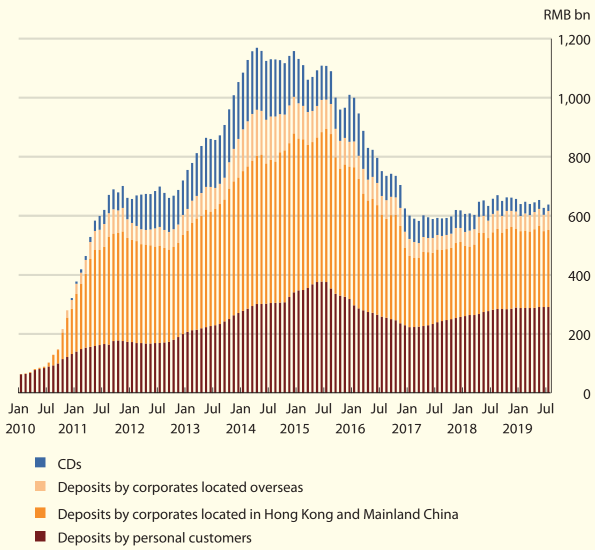
Chart 4.11
The overnight and the three-month CNH HIBOR fixings



Source: CEIC.

As for Hong Kong's CNH liquidity pool, the total outstanding amount of renminbi customer deposits and certificates of deposit (CDs) decreased by 2.9% from RMB657.7 billion at the end of 2018 to RMB638.8 billion at the end of July 2019 (Chart 4.12 and Table 4.B). Despite the renminbi depreciation pressure, particularly since the second quarter, renminbi customer deposits increased slightly by 0.2% for the first seven months as a whole. On the other hand, outstanding CDs dropped further by 46.7% in the first seven months, partly due to a fall in CD issuances.

Chart 4.12
Renminbi deposits and CDs in Hong Kong



Source: HKMA.

Table 4.B
Offshore renminbi banking statistics

Renminbi trade settlement and banking business

	Dec 2018	Jul 2019
Renminbi deposits & CDs (RMB bn)	657.7	638.8
Of which:		
Renminbi deposits (RMB bn)	615.0	616.0
Share of renminbi deposits in total deposits (%)	5.2	5.1
Renminbi CDs (RMB bn)	42.7	22.7
Renminbi outstanding loans (RMB bn)	105.6	120.8
Number of participating banks in Hong Kong's renminbi clearing platform	200	200
Amount due to overseas banks (RMB bn)	80.4	61.4
Amount due from overseas banks (RMB bn)	132.8	121.2

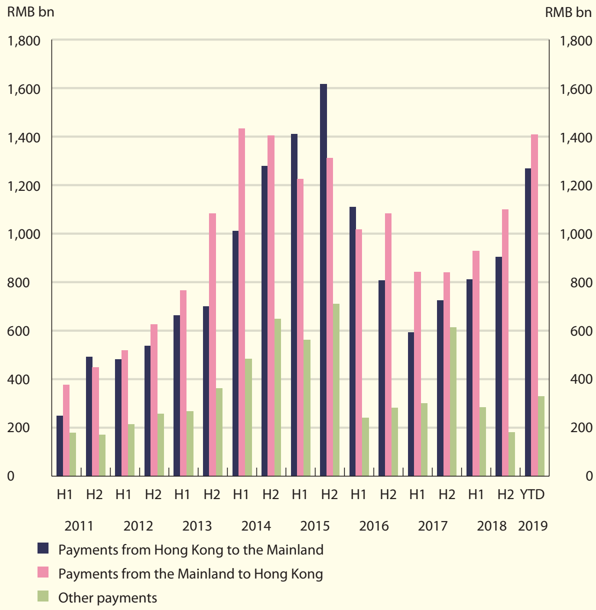
	Jan — Jul 2019
Renminbi trade settlement in Hong Kong (RMB bn)	3,005.8
Of which:	
Inward remittances to Hong Kong (RMB bn)	1,407.0
Outward remittances to Mainland China (RMB bn)	1,268.4
Turnover in Hong Kong's RMB real time gross settlement (RTGS) system (Daily average during the period; RMB bn)	1,121.3

Source: HKMA.

Hong Kong's renminbi bank lending showed signs of stabilisation after seeing a declining trend for two years, with the outstanding amount of renminbi bank loans increasing by 14.4% to RMB120.8 billion at the end of July 2019. Meanwhile, Hong Kong's renminbi trade settlement continued to expand. Transactions handled by banks in Hong Kong amounted to RMB3,005.8 billion during the first seven months (Chart 4.13), compared with RMB2,383.2 billion during the same period last year. The increase was driven by both inward remittances to Hong Kong and outward remittances to Mainland China.

The renminbi liquidity pool in Hong Kong continued to support a large amount of renminbi payments and financing transactions. During the first seven months, the average daily turnover of the renminbi RTGS system stayed high at RMB1,121.3 billion, compared with RMB953.1 billion in the same period in 2018.

Chart 4.13
Flows of renminbi trade settlement payments



Note: Year-to-date (YTD) indicates January to July 2019.
Source: HKMA.

The development of the offshore renminbi market will continue to be affected by external headwinds, particularly the lingering US-China trade conflict. Nevertheless, the progress of Mainland's capital account liberalisation, the increase of renminbi assets allocation by international investors, and enhanced regional economic and financial co-operation under the Belt and Road and Guangdong-Hong Kong-Macao Greater Bay Area initiatives are expected to offer continued support to the offshore renminbi business.

Asset markets

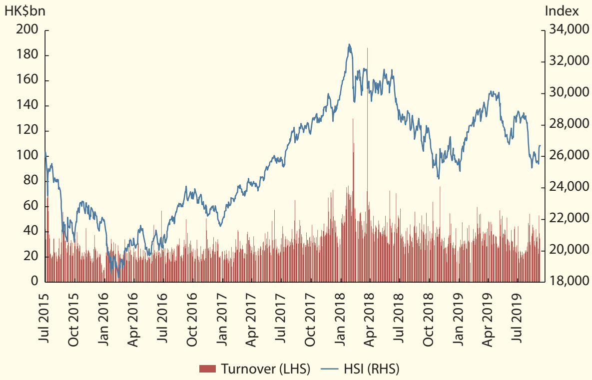
The Hong Kong equity market was largely driven by the ebb and flow of the US-China trade tensions during the review period, while cushioned by strong signals from leading central banks to ease monetary policy. The Hong Kong dollar debt market expanded mildly and the offshore renminbi debt market showed a rebound in issuance amid elevated volatility in global bond markets. After a strong rebound in the first five months, the residential property market has softened somewhat since June amid renewed trade tensions and a weakening economy.

4.3 Equity market

The local equity market took a roller coaster ride in the review period. The Hang Seng Index (HSI) continued to rally on apparent progress in trade negotiations between Mainland China and the US initially, but it was quickly reversed by a re-emergence of conflicts, with both sides doubling down on their threats with new tariffs and non-tariff protective measures in the run-up to the G20 Summit in Osaka (Chart 4.14). At the same time, global economic conditions have weakened, prompting leading central banks to indicate a readiness to introduce fresh stimulus, which once helped revive sentiment in the local market. This also appeared to echo Trump's repeated call for the Fed to take bolder steps to ease monetary policy amid increasing uncertainties about the US economic outlook and escalating trade tensions with Mainland China. However, despite the subsequent return of both sides to the negotiation table following the Osaka summit, trading has since, by and large, reflected investors coming to terms with the reality that their differences on structural issues will take time to be resolved and hence the formidable trade negotiations will be a long-drawn-out process.

Overall, the HSI and Hang Seng China Enterprises Index, also known as the H-share index, managed to decline by 10.72% and 12.37%, respectively from March 2019 to September 2019. Option-implied volatilities initially surged to a peak in early May, but have since subsided as calm returned to the market (Chart 4.16). The SKEW index rebounded towards the end of the review period, reflecting that investors were again concerned with heightened tail risk, hence seeking downside protection.[34]

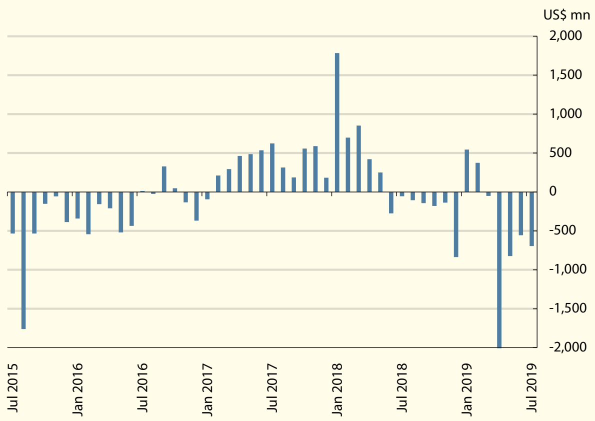
Chart 4.14
Equity prices in Hong Kong



Source: Bloomberg.

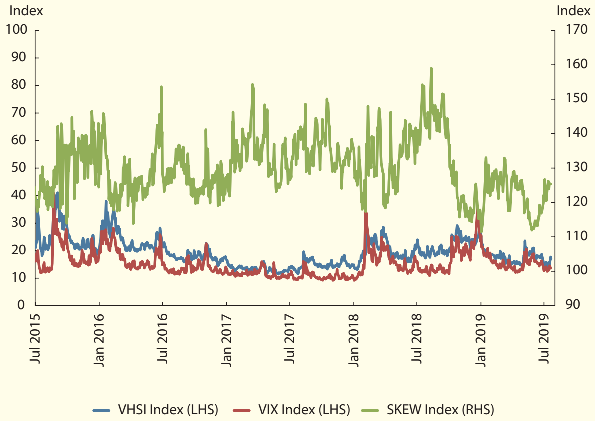
[34] The SKEW Index is calculated by the Chicago Board Options Exchange from the prices of the S&P 500 out-of-the-money options. A SKEW value of 100 means that the probability of outlier negative returns at a 30-day horizon is negligible. As SKEW rises above 100, the left tail of the S&P500 returns distribution 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.

Chart 4.15
Equity market fund flows into Hong Kong



Source: EPFR Global.

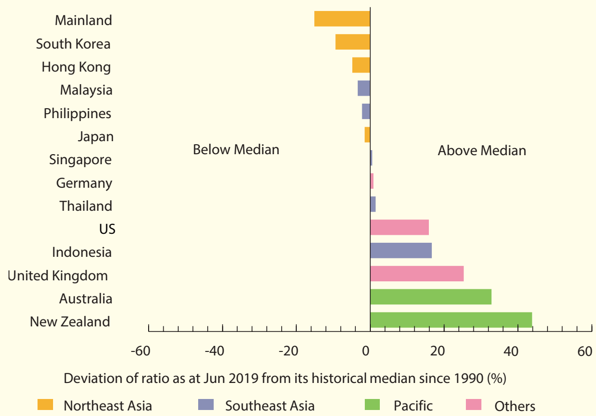
Chart 4.16
Option-implied volatilities of the HSI and S&P 500, and the SKEW Index



Sources: Bloomberg and HKMA staff estimates.

The outlook for local equities in the period ahead is going to be highly uncertain, as trade tensions between the two super-economic powers will inevitably ebb and flow in the foreseeable future. This has already kept investors increasingly sidelined as reflected in the net fund outflows and reduced turnover (Charts 4.15 and 4.14). Their concerns stem mainly from the potential impact on the real economy, rather than the resulting currency fluctuations (Box 4). The trade war aside, investors are weary of the wild cards of a possible hard Brexit and the geopolitical tensions between the US/UK and Iran. On the policy front, whether the coming round of monetary easing will be timely and sufficient enough to cushion the slowing global economy remains to be seen. Hence, despite its attractive valuations, the local equity market is likely to head for another bumpy ride (Chart 4.17).

Chart 4.17
Cyclically-adjusted price-earnings ratios of Asia Pacific and other major markets



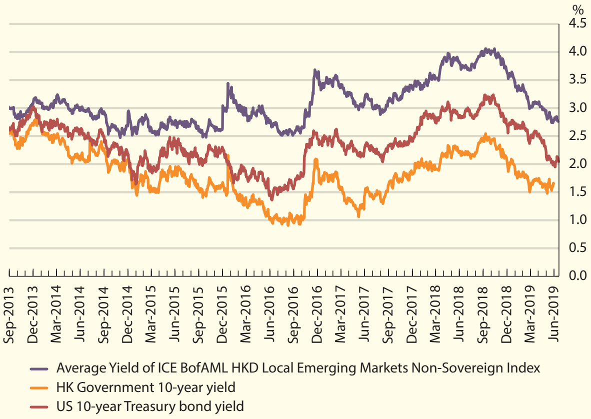
Sources: Bloomberg, CEIC and HKMA staff estimates.

4.4 Debt market

The Hong Kong dollar debt market expanded mildly in the first half of 2019, despite elevated volatility in global bond markets. Total issuance rose steadily on the back of increased demand for funds by domestic and international borrowers. With the bias of monetary policy of the G3 central banks tilted towards a more dovish stance, the yields of both sovereign and non-sovereign bonds eased further globally, with the US Treasury bonds and Hong Kong Exchange Fund papers being no exceptions (Chart 4.18).[35]

[35] G3 refers to the United States, European Union, and Japan.

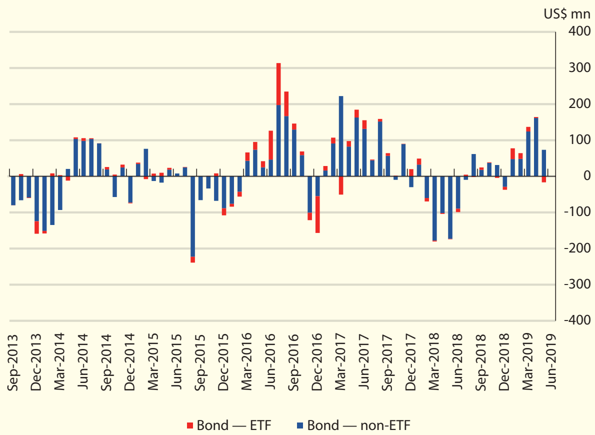
Chart 4.18
Hong Kong dollar sovereign and non-sovereign bond yields and US ten-year Treasury yield



Sources: ICE Data Indices and HKMA.

Despite growing uncertainties over the global economic outlook and lingering geopolitical tensions, international investors continued to return from the sideline as evidenced by strong non-resident portfolio inflows to emerging markets in recent months.[36] Against this backdrop, Hong Kong has experienced a stream of net bond fund inflows since January this year, marking the longest positive streak since September 2017 (Chart 4.19).

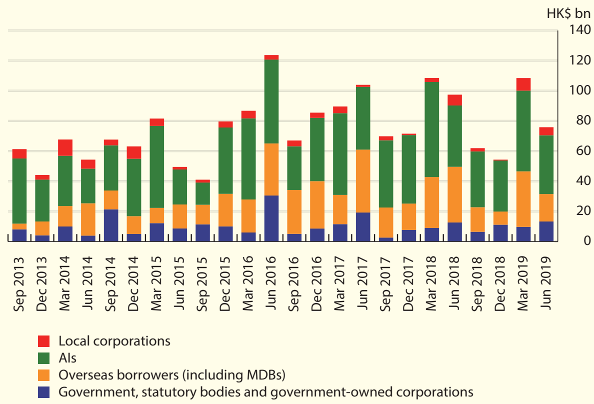
Chart 4.19
Exchange traded fund (ETF) and non-ETF bond fund flows into Hong Kong



Source: EPFR Global.

The total issuance of Hong Kong dollar debt increased by 1.1% year on year to HK$1,822.3 billion in the first six months of 2019, mainly driven by a 2.5% increase in the Exchange Fund's issuance, which more than offset the decline in debts issued by the private sector (Chart 4.20).

Chart 4.20
New issuance of non-EFBNs Hong Kong dollar debt

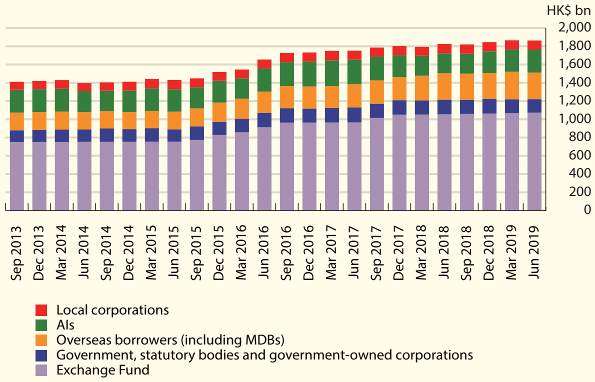


Source: HKMA.

The outstanding amount of Hong Kong dollar debt went up by 2.1% year on year to HK$1,862.8 billion at the end of June (Chart 4.21). The amount was equivalent to 24.7% of HK$M3 or 19.9% of Hong Kong dollar-denominated assets of the banking sector. Within the total, overseas borrowers including multilateral development banks (MDBs) saw their debt outstanding grow slightly by 0.3% from a year ago to HK$289.6 billion. Meanwhile, the outstanding debt of the local private sector also rose by 10.0% year on year to HK$353.2 billion, attributable to an increase in the outstanding debt of AIs.

36 According to the Institute of International Finance, the non-resident portfolio inflows to emerging markets were US$40.8 billion in June 2019, the highest level in five months.

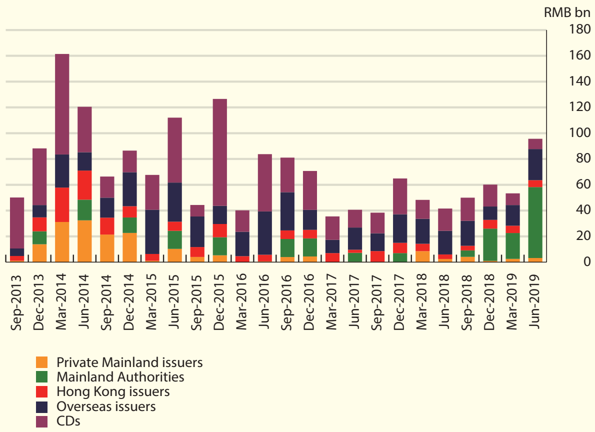
Chart 4.21
Outstanding Hong Kong dollar debt



Source: HKMA.

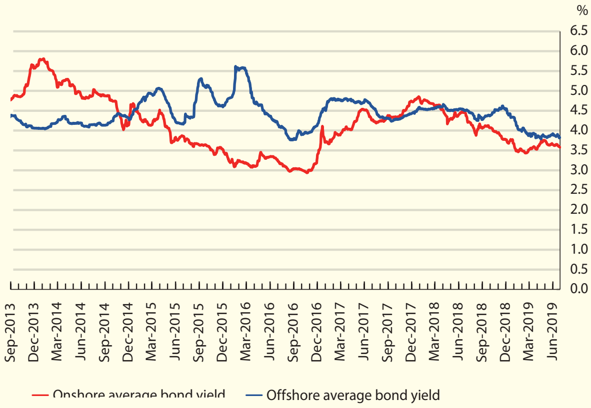
The primary offshore renminbi debt market in Hong Kong showed a rebound in activity in the review period, after several quarters of tepid performance. Total issuance jumped 65.8% year on year to RMB149.0 billion in the first half of 2019, driven by increase in issuance by both overseas issuers and Mainland authorities (Chart 4.22). The appetite of the private sector remained weak, as uncertainties increased over the outlook for the Mainland economy. The average onshore yield was persistently lower than the offshore counterpart, which added to the considerations underlying the reluctance of private Mainland issuers to roll over their debt offshore (Chart 4.23).

Chart 4.22
New issuance of offshore renminbi debt securities



Sources: Newswires and HKMA staff estimates.

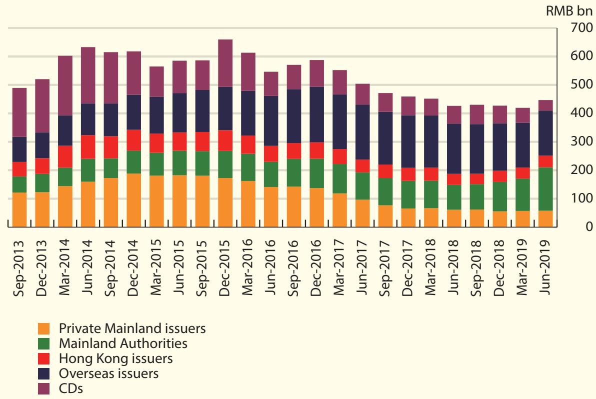
Chart 4.23
Average yields of onshore vs. offshore renminbi bond indices



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

Against this backdrop, the total outstanding amount of offshore renminbi debt securities in Hong Kong registered a year-on-year growth of 4.8% to RMB446.8 billion at the end of June 2019 (Chart 4.24), after suffering 12 consecutive quarters of decline.

Chart 4.24
Outstanding amount of offshore renminbi debt securities and renminbi deposits in Hong Kong



Sources: Newswires and HKMA staff estimates.

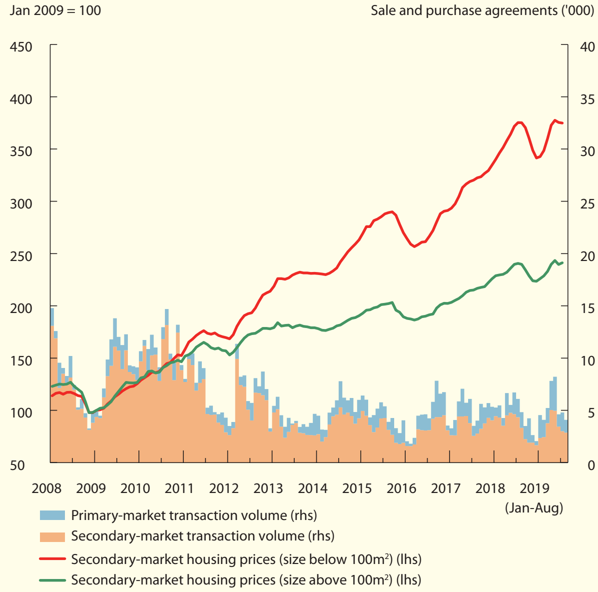
The near-term development of the local debt market, including the offshore renminbi debt market, will be subject to considerable headwinds. The slowing global economy, in particular the slowing Mainland economy, means that borrowers are likely to be less willing to engage in long-term projects, hence dampening their demand for long-term funds, while investors face an increasing amount of credit risk. Although the increased prospect of monetary easing will to some extent offset this negative outlook, the credit spread is expected to widen in the period ahead. This is particularly true when the US-China trade tensions continue to persist in the foreseeable future. Nonetheless, rising to the challenges, the Government remains firmly committed to promoting the local debt market and continuing with a number of policy initiatives, especially encouraging first-time issuers and green bond issuers to tap the market in Hong Kong.

4.5 Property markets

Residential property market

After a strong rebound in the first five months of 2019, the residential property market has softened somewhat since June. The strong rebound from January to May reflected improved market sentiment[37], with housing transactions surging to a six-year high of 8,208 units in May and flat prices recouping the losses recorded in the second half of 2018 (Chart 4.25). Thereafter, market sentiment has been tempered by the US-China trade conflict and a weakening domestic economy. Average monthly transactions fell to 4,505 units in June–August and secondary-market housing prices also declined by around 1% in June–July after rising by 10.5% in the first five months. In particular, prices for large flats (with saleable area of at least 100m²) decreased slightly faster than the prices for small and medium-sized flats (with saleable area of less than 100m²). Meanwhile, a few property developers cut micro-flat prices to lure buyers. More recent market data indicated that secondary-market housing prices remained subdued in August and early September.

Chart 4.25
Residential property prices and transaction volume



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

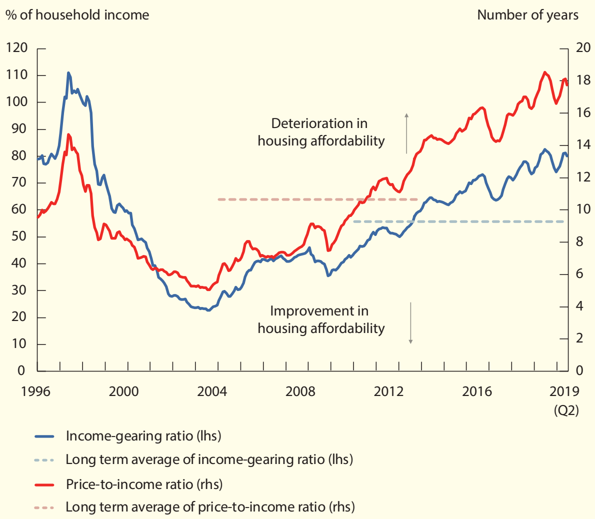
Housing affordability remained stretched, with the housing price-to-income ratio climbing to 18.0 in the second quarter, compared with the 1997 peak of 14.7. In addition, the income-gearing ratio was 80.7% in the second quarter, well above the long-term average (Chart 4.26).[38] As the cumulative increase in housing rentals was smaller than that of housing prices, the buy-rent gap remained high in the first half of the year (Chart 4.27).[39] On the flip side, residential rental yields stayed low at 2.1–2.6%.

[37] Market sentiment improved at that time partly because concerns over US-China trade tensions temporarily eased, equity markets across the globe recovered and expectations of further US rate hikes diminished.

[38] The price-to-income ratio measures the average price of a typical 50m² flat relative to the median income of households living in private housing. Alternately, the income-gearing ratio compares the amount of mortgage payment for a typical 50m² 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, which is subject to a maximum cap by the HKMA prudential measures.

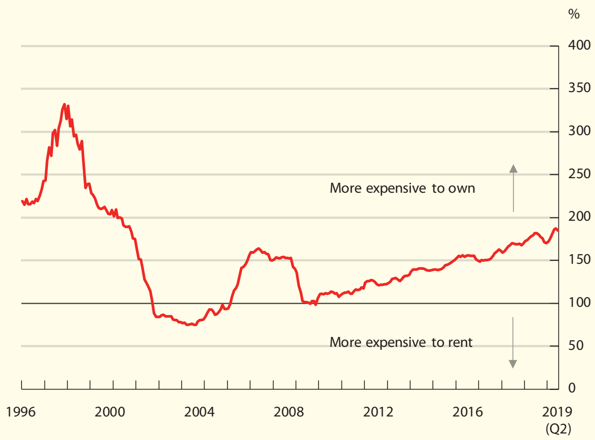
[39] The buy-rent gap estimates the cost of owner-occupied housing (under a 20-year mortgage scheme with a 70% LTV ratio) relative to rentals.

Chart 4.26
Indicators of housing affordability



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

Chart 4.27
Buy-rent gap



Note: This indicator is calculated as the ratio of the cost of purchasing and maintaining a 50m² flat with that of renting it.
Sources: R&VD, C&SD and HKMA staff estimates.

The average interest rates for new mortgages continued to be low at about 2.5% despite the recent rises in HIBORs (see also Section 4.2). However, since August some banks have increased their mortgage interest rates and reduced the cash rebates for new mortgages. This partly reflected a pick-up in the average cost of funds of banks.

In general, banks in Hong Kong have sufficient buffers to withstand risks stemming from the property market. Reflecting the effectiveness of the macro-prudential measures implemented by the HKMA since 2009, the average LTV ratio for new mortgages declined to 46.2% in July from 64% before the measures were first introduced, and the debt-servicing ratio also fell to 35%.

The residential property market outlook has become more uncertain. While the currently low unemployment rate could provide some support for property demand, the weakening economy could lead to deterioration in labour market conditions. Other risk factors including the US-China trade conflict and slowing global economic growth may weigh on housing market sentiment in the near term. In addition, while the Fed cut its policy rate in July, the trajectory for domestic mortgage interest rates is still uncertain and will depend on other factors such as local interbank liquidity conditions. Over the longer term, the outlook for the housing market will hinge on the housing supply-demand gap. The Government projects the private housing completion will remain high in the years ahead, which should help narrow the housing supply-demand gap over time.

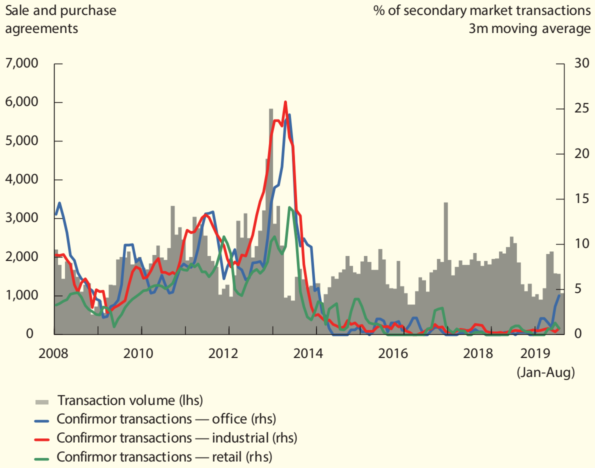
Non-residential property market

The non-residential property market picked up in the second quarter after a lacklustre start in the first quarter. The average monthly transactions rebounded by 85% to 1,939 units in the second quarter from 1,051 units in the first quarter, while speculative activities remained inactive as indicated by the low level of confirmor transactions (Chart 4.28).[40] The prices of retail premises, office space and flatted factories also picked up from their respective troughs in the first quarter (Chart 4.29). The leasing market exhibited diverse movements in the first half of the year, but rentals were generally higher compared with figures at the end of 2018. The overall rental yields across segments were maintained at a low range of 2.6–2.9% in July.

40 The transactions however retreated in July–August amid a weakening domestic economy.

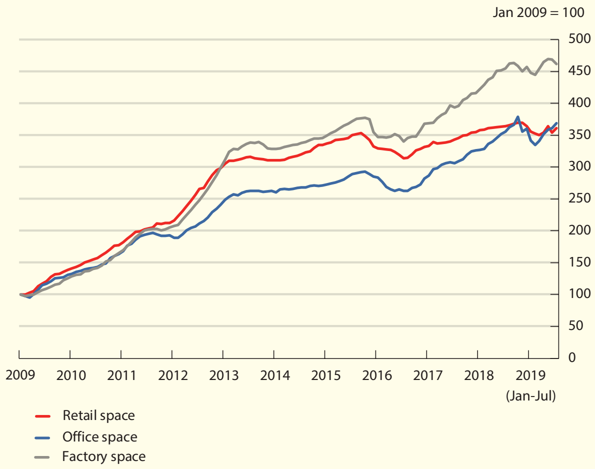
The non-residential property market is likely to face headwinds in the near term. For example, the prospects for the retail segment will be overshadowed by the weakening retail sales and tourist arrivals.

Chart 4.28
Transactions in non-residential properties



Sources: Land Registry and Centaline Property Agency Limited.

Chart 4.29
Non-residential property price indices



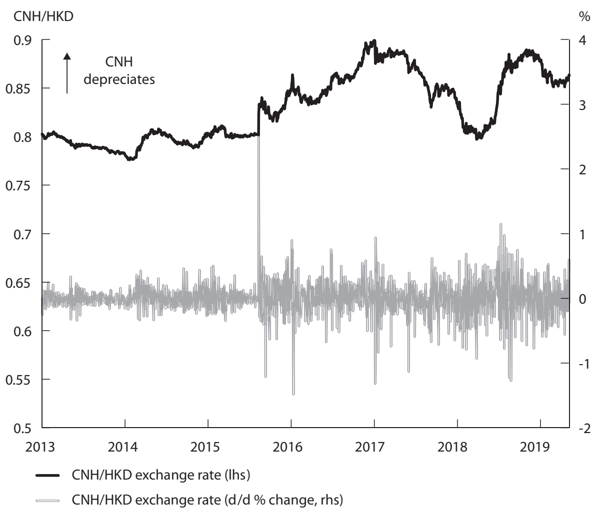
Source: R&VD.

Box 4
Does the renminbi exchange rate affect equity flows? – Evidence from the Stock Connect programmes

Introduction[41]

Since 2014, the Stock Connect programmes have offered international and Mainland investors a new channel for diversifying their equity investment portfolios into the Mainland and Hong Kong markets. However, fluctuation in the renminbi has become more pronounced since the exchange rate reform in August 2015 (Chart B4.1), raising concerns that the fluctuation may have an impact on the currency-adjusted returns in investors' portfolios. As such, does the renminbi fluctuation influence investors' decisions on their participation in the programmes?[42]

Chart B4.1: Movement of the offshore renminbi (CNH)



Against this background, this box (i) assesses the effects of the CNH exchange rate movement on the cross-border equity flows to firms under the programmes; and (ii) identifies characteristics of firms that could experience more outflows when the CNH depreciates. Given the granular data publicly available, we opt for the machine learning (ML) technique since it is effective in handling data that are multi-dimensional and multi-variant.

Data and methodology

The equity flow to each firm is measured by the net change in the percentage of a firm's shareholdings via the Stock Connect programmes. A positive (negative) equity flow indicates a net inflow (outflow) to the firm. The CNH movement is measured by the daily percentage change in the CNH against the Hong Kong dollar. In addition, global stock volatility, firm's stock performance and funding cost of investors are also included in the ML model as the control factors.[43]

Covering the sample period from 20 March 2017 to 30 April 2019, our data sample consists of 1,522 actively traded firms, among which 1,110 firms are listed in Mainland China (denoted as "northbound firms") and the remaining 412 firms are listed in Hong Kong (denoted as "southbound firms"). These firms account for 90% and 94% of the market capitalisation of all eligible northbound and southbound firms respectively.[44]

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41 Details are in Fong et al. (2019) "Does the renminbi exchange rate affect equity flows? - Evidence from the Stock Connect programmes", *HKMA Research Memorandum*, forthcoming.

42 Imperfect foreign exchange risk hedging is the major reason behind why international equity flows should react to movement in exchange rates, as it would affect the returns of cross-border equity investments.

43 Global stock volatility is measured by the daily changes of the Chicago Board Options Exchange Market Volatility (VIX) index. Next, for an investor investing in a firm via the Stock Connect programmes, firm's stock performance is measured by its daily excess return over the investor's domestic stock market return (i.e., the Hang Seng Composite Index return for international investors; and the CSI 300 Index return for Mainland investors). Finally, funding cost is measured by the daily changes of the 3-month CNH interbank interest rates and the 3-month Shanghai interbank offered rate for northbound and southbound investors respectively.

44 Actively traded firms refer to those with non-zero equity flows in over 70% of the trading days of the sample period under the programmes. Individual firms' shareholdings under the programmes have been publicly available since 17 March 2017 at the earliest.

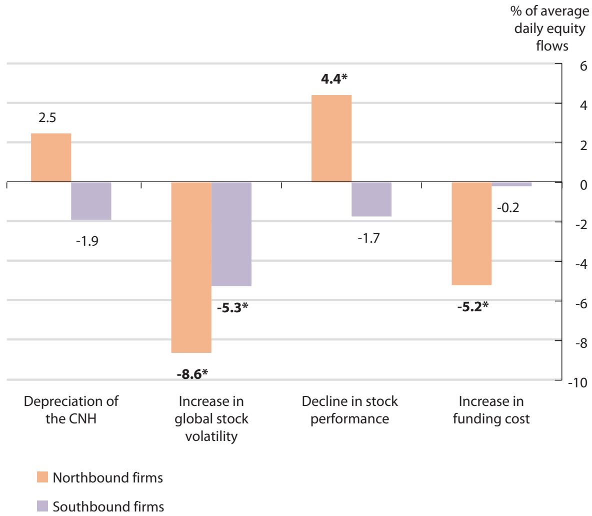
We uncover the relationships between the equity flows and the selected factors including the CNH movement in three steps. First, we estimate a total of 632 ML models for each firm by considering a number of model variants from three popular ML techniques, which include random forest, support vector machine and artificial neural network. Second, we select the best 20 models based on their out-of-sample prediction accuracy and use each of the best 20 models to predict the potential changes in equity flows on certain shocks to the CNH or other factors. Finally, we measure the potential changes in equity flows to each firm by taking the average predicted changes from these best 20 models.[45]

To identify the characteristics of firms which are more affected by the renminbi exchange rate movement, we use the k-means clustering to group firms into different clusters, such that firms in the same cluster share more similarities with each other, in terms of one or multiple characteristics, than with those in other clusters. In addition to the effects of the CNH movement on equity flows, we consider several additional aspects of a firm in the cluster analysis, which include the firm's stock performance, financial fundamentals, shareholding under the Stock Connect programmes and share of overseas revenue.[46,47]

Empirical evidence

Chart B4.2 depicts the estimated impact on the aggregate equity flows to northbound and southbound firms. Specifically, when the CNH depreciates by one standard deviation (SD), equity flows to northbound (southbound) firms are estimated to increase (decrease) by 2.5% (1.9%) of average daily equity flows of all northbound (southbound) firms. Nevertheless, both effects are statistically insignificant. By comparison, shocks in global stock volatility are found to have the greatest impact on equity flows, where the equity flows to northbound (southbound) firms are estimated to decline significantly by 8.6% (5.3%) of average daily equity flows of all northbound (southbound) firms, when the VIX index increases by one SD.

Chart B4.2: Estimated effect on equity flows on one-SD shock to selected factors



Notes:
(1) Figures refer to the sum of effects on equity flows to individual northbound/southbound firms, and are expressed as the percentage of the average aggregate daily equity flows to all northbound/southbound firms in the study.
(2) * denotes statistical significance at 10%.

Chart B4.3 are radar charts that compare two clusters of firms identified by the k-means clustering. The first cluster groups firms with a decrease in equity flows (i.e. the red boundary) while the second one groups firms with an increase in equity flows (i.e. the blue boundary), given the CNH depreciation. In comparing the characteristics of northbound (upper panel) and southbound (lower panel)firms, we consistently

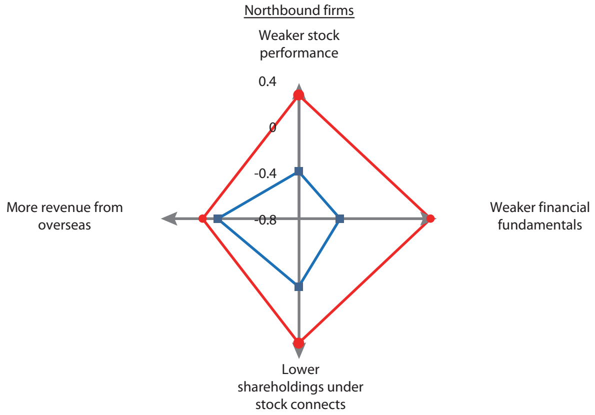
45 We select the best 20 models (instead of the best one only) to alleviate the over-fitting problem, the key area that requires attention when applying the ML techniques.

46 Stock performance is measured by equity return and stock price volatility. Financial fundamentals are measured by overall profitability, size and leverage.

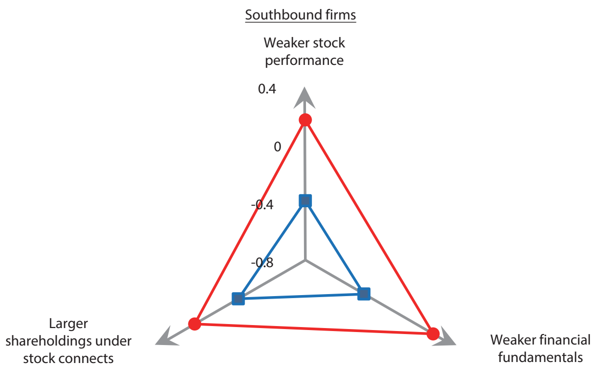
47 The aspect on share of overseas revenue is not covered in southbound firms' analysis as it would have a less direct linkage with the CNH movement than that of the northbound firms.

find that firms with a decrease in equity flows tend to have weaker fundamentals (such as smaller size and less profitable) and weaker stock performance (such as lower stock return and higher price volatility), than firms with an increase in equity flows.

Chart B4.3: Clusters of northbound and southbound firms identified by the k-means clustering



Firms with decrease in equity flows
Firms with increase in equity flows



Firms with decrease in equity flows
Firms with increase in equity flows

Notes:
(1) Firms with an increase (a decrease) in equity flows refer to firms whose equity flows have a more positive (negative) response to one-SD CNH depreciation as compared to their industry average effect.
(2) Figures under each aspect refer to firms' average of average standard score (number of SD away from their industry average) of the firm-specific characteristics in that aspect.
(3) An outer position at each axis indicates the cluster's specific aspect tilting towards what is indicated.

Empirical implications

Our empirical findings suggest that movements in the offshore renminbi exchange rate would have an insignificant impact on the equity flows to both Mainland China and Hong Kong-listed firms under the Stock Connect programmes. At the extreme point, investors would tend to sell stocks of firms with weaker fundamentals and stock market performance during periods when the renminbi was depreciating, but the selling pressure would not have a significant impact on the overall equity flows as they are also smaller in size. This insignificance may be due to the fact that the currency risk could be effectively hedged by a diversified suite of renminbi exchange rate instruments available in the markets.[48]

By comparison, global stock volatility has the strongest impact on equity flows. This indicates that with continued growth in these trades through the Stock Connect programmes, the potential global market spillovers would become more noteworthy. As such, investors should be mindful of sudden cross-border equity flows triggered by heightened global market uncertainty.

[48] For instance, the Hong Kong Exchanges and Clearing Limited offers offshore renminbi products such as USD/CNH futures and options contracts to provide greater capital efficiency and flexibility for managing renminbi exposures.