HONG KONG MONETARY AUTHORITY
香 港 金 融 管 理 局

HALF-YEARLY MONETARY AND FINANCIAL STABILITY REPORT

September 2014

This Report reviews statistical information between the end of February 2014 and the end of August 2014.

Half-Yearly Monetary and Financial Stability Report
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1. Summary and overview

Global and regional financial markets have experienced very low level of volatility and appear to be underpricing the risks associated with the exit from unconventional monetary policies by the US Fed.

The Hong Kong dollar has been under inflow pressures, reflecting a range of global, regional and local factors. As a result, local monetary conditions will remain loose but can tighten abruptly along with a rise in the US dollar interest rates.

Income growth has been sluggish in Hong Kong. As incentives for borrowing continue to be unabated, credit, liquidity and interest rate risks may increase further in the financial system in the period ahead.

The external environment

Global financial markets have experienced low volatility in recent months. However, there appears to be growing disconnect between the performance of the financial markets and the real economy, as indicated by the significant divergence between strong asset price inflation and sluggish credit growth in the major advanced economies. Investors are justifying their bets on continued accommodative global monetary environment and strengthening global growth, but they may be underestimating hidden economic and policy risks that could cause dislocations in the markets.

One major swing factor is the timing and pace of monetary policy normalisation in the US. The unemployment and inflation rates are already approaching the long-run policy targets faster than the Fed had expected, posing risks of a stronger-than-expected monetary tightening. In the euro area, the effectiveness of the European Central Bank (ECB)'s latest monetary easing on combating disinflation is still unclear. In Japan, the strength and sustainability of the economic rebound after the April tax increase remain uncertain and there is a risk that "Abenomics" may fail to stimulate long-term growth if the government cannot deliver the structural reforms it has promised.

In East Asia, growth momentum has moderated in the first half of 2014 due to the weak external performance alongside slowdown in the US and China. But financial markets in the region have been buoyed by the unusually calm investor sentiment. As incentives for borrowing remain strong, leverage in the region could increase further before the Fed eventually exits its unconventional monetary policy. This would exacerbate the risk of a boom-bust cycle that leads to an abrupt unwinding of the currently compressed risk premia and fund flow reversal. Box 1 (see Page 14) discusses the potential impact of the Fed's monetary normalisation by examining the relationship between US Treasury yields and sovereign bond yields in the Asia Pacific, especially when the markets come under severe stress.

The degree of financial market adjustment and capital flow reversal in the region would be sensitive to the growth prospect of the Mainland China economy. Growth momentum of the Mainland economy has improved and is expected to be largely stable in the near-term amid gradually improving external demand and fine-tuning of economic policies. Nevertheless, the property market downturn and its impact on industries with overcapacity and local government debt would continue to put pressure on banks' asset quality. Our analysis in Box 2 (see Page 22) suggests that entrusted lending, a major component of shadow banking on the Mainland, has mainly been conducted by state-owned enterprises (SOEs) and big firms in industries with overcapacity as well as real estate developers. This Box seeks to provide a better understanding of entrusted lending on the Mainland using firm-level data.

The domestic economy

In Hong Kong, economic growth has been sluggish in the first half of 2014, with real GDP declining marginally by 0.1% on a quarter-on-quarter basis in the second quarter, following the mundane growth of 0.3% in the first quarter. Domestic spending used to be the main growth engine but has weakened noticeably, particularly in the second quarter. Investment spending was the main drag, while private consumption also declined due to weaker growth prospects and receding housing wealth effects. Meanwhile, services exports were weighed down by weaker tourist spending and, to a lesser extent, softer financial market activities. A brighter spot was moderate improvement in exports of goods on the back of stronger external demand.

Domestic inflation moderated during the first seven months of 2014, with the annualised three-month-on-three-month underlying inflation rate declining to 2.5% in July from 4.0% in January. This was driven mainly by the easing in services inflation. Going forward, moderate inflation will likely continue as mild rental increase and tepid labour cost pressures are expected to contain inflationary pressure.

Despite sluggish economic activity in the first half, a pick-up in sequential growth momentum is expected, though likely at a moderate below-trend rate. Export performance would improve further with the recovery of the US economy continuing to take hold and the Mainland China economy showing signs of stabilisation. Box 3 (see Page 30) studies the relative importance of Mainland China and the US in driving Hong Kong's economic cycle and trend growth. While weaker Mainland tourist spending could well remain a drag, there will be some support from exports of trade-related services and financial services, the latter buoyed in part by the soon-to-be-launched Shanghai-Hong Kong Stock Connect pilot scheme.

Regarding domestic spending, private consumption is anticipated to improve modestly, supported by a relatively stable yet easing labour market. Overall fixed investment would continue to be supported by infrastructure projects and other building and construction activities, although capital spending tends to fluctuate.

The Government has revised downward its range forecast of 2014 real GDP growth to 2-3% from 3-4% as announced earlier in May. Private-sector analysts also adjusted downward their growth forecasts recently to an average of 2.4%. The HKMA in-house composite index of leading indicators points to a modest increase in economic activities in the second half. However, downside risks to the economic outlook remain amid uncertainties surrounding the global economic and financial environment as well as heightened geopolitical tensions.

Monetary conditions and capital flows

Despite some softening in the first quarter, the Hong Kong dollar has faced stronger buying pressure. The Hong Kong dollar exchange rate strengthened towards 7.75 in the second quarter and the following months, while the net spot foreign currency positions of the Authorized Institutions (AIs) increased considerably, suggesting strong net inflows into the non-bank private sector alongside revived stock market activities and investors' risk appetite. The inflow pressure remained persistently strong in recent months, which culminated into repeated triggering of the strong-side Convertibility Undertaking (CU) in July and August. In response, the HKMA purchased a total of US$9.7 billion from banks, thereby creating HK$75.3 billion and leading to a corresponding increase in the Aggregate Balance. The net inflows were driven by a range of global, regional and local factors, including improved confidence in the Mainland China economy, and active commercial activities such as dividend distributions, cross-border merger and acquisition transactions and initial public offerings.

With ample liquidity in the banking system and interest rates hovering at low levels, the monetary and credit conditions in Hong Kong remained highly accommodative. While the Hong Kong-dollar broad money supply (HK$M3) has expanded at a robust pace, the wholesale funding costs of banks remained low, with the overnight and three-month Hong Kong dollar interbank interest rates moving around 0.06% and 0.37% respectively. The Hong Kong dollar yield curve has flattened along with the US dollar yield curve by about 20 basis points for the yield of the 10-year Exchange Fund Notes. On the other hand, given a moderate increase in the deposit rates, the composite interest rate, which reflects the average funding cost of retail banks in Hong Kong, rose to 0.47% in June from 0.39% last December. However, the average lending rate for new mortgage loans declined to around 2% recently, probably reflecting slight easing in banks' credit stance towards mortgage lending.

Total bank loans grew faster at an annualised 19.1% in the first half of 2014 following a 16.0% increase in 2013. Reflecting strong cross-border demand and increased Mainland-related exposure, foreign currency loans and loans for use outside Hong Kong continued to grow at a fast pace, though moderating slightly compared with last year. Meanwhile, Hong Kong dollar loans and loans for use in Hong Kong (including trade finance) also rose faster. Household debt edged up to 63.6% of GDP in the second quarter alongside strong growth in personal loans. The loan-to-deposit ratio for Hong Kong dollar was largely stable while the ratio for foreign currency (particularly US dollar) increased, albeit levelling off more recently.

Offshore renminbi business in Hong Kong maintained a solid growth momentum. Total renminbi deposits and certificates of deposit (CDs) increased by 6.8% (not annualised) in the first half, while renminbi trade settlement picked up by 36.4% (not annualised). Meanwhile, renminbi financing activities in Hong Kong grew at a robust pace, with outstanding loans increasing by 20.6% (not annualised) and renminbi bond issuance recording strong growth. Largely due to increased funding demand for renminbi bond investments and liquidity needs around the half-year end, interbank liquidity for offshore renminbi tightened slightly in May and June, as the three-month CNH interbank rate rose by about 60 basis points to 3% at the end of June. The offshore exchange rate (CNH) has tracked closely the onshore rate (CNY), without any persistent positive or negative spreads between the two rates.

Asset markets

Hong Kong equities have rebounded over the past six months, following a sell-off in the beginning of the year. International investors regained appetite for risky assets as the Fed indicated to keep interest rates low for the foreseeable future. Against this backdrop, a series of "mini-stimulus" measures unveiled by the Mainland authorities and a pilot programme to link the local and Shanghai stock markets fuelled a rally in the local market, sending the HSI to a 6-year high. However, in view of the current low volatility in global financial markets, a rebound in interest rates may prompt a major risk re-appraisal globally. Hence, the medium-term outlook for local equities is still largely uncertain.

In the local bond market, the total amount of bonds outstanding registered a small decline in the first half of this year. Following a sell-off in Asian bonds early in the year, improved economic conditions in the region provided a favourable environment for the private sector to raise more funds in the debt market. Public sector issuance also increased, though only marginally. However, the increase in issuance was not enough to offset matured bonds. Box 4 (see Page 46) reviews recent developments in the corporate bond market in the region and discusses potential risks associated with rising leverage of the issuers. The offshore renminbi debt market in Hong Kong continued its rapid expansion and overseas despite some concerns over the credit quality of a few issuers. Looking forward, the market is likely to see steady growth in view of strong refinancing needs. Investor risk appetite would also increase if the outlook for the Mainland economy improves further.

After some consolidation in the past year or so, the residential property market has turned more active in recent months on the back of pent-up demand and improving sentiment, with transaction volume picking up from recent lows and housing prices resuming moderate growth. But property valuation remains highly stretched relative to household income and economic fundamentals, with the price-to-income ratio and the income gearing ratio staying high. Box 5 (see Page 53) discusses the impact of counter-cyclical prudential and demand-management measures on housing market activities.

Banking sector performance

Retail banks maintained solid earnings growth, sound asset quality and a strong capital position. In the first half of 2014, their pre-tax operating profits grew by 7.3% from the second half of the previous year, and their return on assets edged up to 1.22%. The increase in profitability was mainly driven by a 7.6% growth in net interest income. Meanwhile the net interest margin of retail banks held at 1.4%.

The average liquidity ratio stood at 40.8% in the second quarter, well above the 25% regulatory minimum. The Liquidity Coverage Ratio under the Basel III liquidity standards, which aim at strengthening banks' resilience to liquidity stress, is scheduled to phase in from 1 January 2015 with a view to completing the implementation on 1 January 2019. Banks in Hong Kong are not expected on the whole to encounter major difficulties in complying with the new liquidity standards over the transitional period.

The overall loan-to-deposit ratio for all AIs went up to 73.6% at the end of June, largely reflecting a faster increase in foreign currency loans that outpaced the moderate growth of foreign currency deposits. In this regard, the prospective exit from unconventional monetary policy (UMP) by the US Fed may potentially lead to a disruption of the supply of international US dollar credit. Box 6 (see Page 68) studies this issue and finds that although the contractionary effect on global liquidity brought by Fed's exit from UMP could be partly offset by the expansionary effect of UMPs of other central banks, the net effect is crucially dependent on whether the normalisation of liquidity in the US would coincide with a general flight to safety from risky assets. Liquidity risks associated with the flow of international US dollar credit can be high in such stressful scenario, posing significant challenges for policymakers.

Looking forward, banks should remain vigilant to risks associated with rising corporate leverage and household indebtedness. Debt-servicing burdens have increased in both the household and the corporate sectors in recent years, and could worsen significantly if income growth continues to be sluggish.

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 financial markets have recently seen volatility falling to multiyear lows and appear to have underpriced the growing economic and policy uncertainties. In the US, the unemployment rate and inflation have been moving toward the Fed's projections and long-run policy targets faster than expected. In other major advanced economies, the sustainability of growth remains in doubt amid growing disinflation pressure in the euro area and uncertainty in the strength of economic recovery in Japan.

In East Asia, growth momentum has moderated but financial markets in the region have been buoyed by the unusually calm global market. Leverage in the region could increase further before the Fed eventually exits. This would increase the risk of a boom-bust cycle that leads to an abrupt unwinding of the currently compressed risk premia and fund flow reversal.

In Mainland China, growth momentum improved in the second quarter, partly underpinned by the mini-stimulus on infrastructure spending. The housing market appeared to have entered a down cycle, and asset quality of the banking sector has been under pressure. Despite the property market downturn, near-term growth momentum is expected to be largely stable along with the gradually improving external demand and fine-tuning of economic policies.

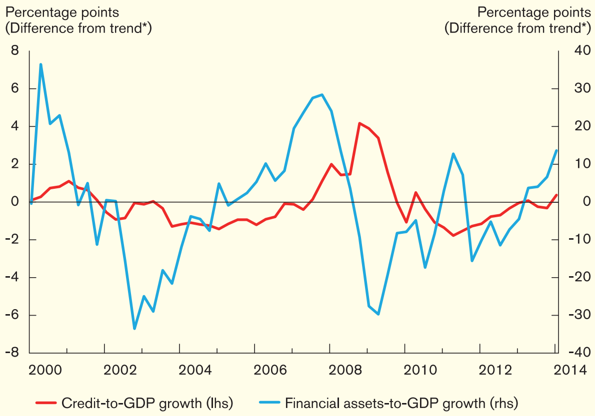
2.1 External environment

Financial market volatility has recently fallen to multiyear lows across the globe, driven by market expectations of a goldilocks scenario, under which the US Federal Reserve would successfully manage an orderly monetary normalisation, the European Central Bank and the Bank of Japan would continue to provide effective policy support in the form of further unconventional monetary easing, and major economies would continue to see recoveries steadily taking hold. Despite the optimism, global economic and policy tail risks remain, amid growing signs of financial excesses, the uncertain timing and pace of the unprecedented monetary normalisation in the US, risk of a sharper slowdown in the Mainland China economy and recent heightening of geopolitical tensions.[1]

[1] A number of hot spots include, most notably, those in the Middle East and Eastern Europe.

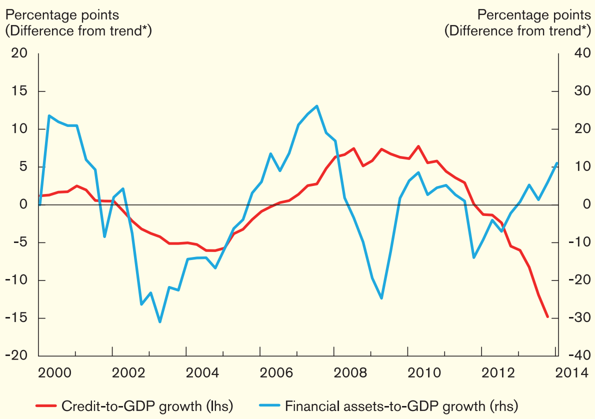
The current period of low market volatility is characterised by a divergence between strong asset price inflation and sluggish credit growth in major advanced economies (Charts 2.1 and 2.2). The sluggish credit growth reflects the breakdown of the credit intermediation process due to deleveraging, which in turn impedes the recovery of the real economy. With the credit flow clogged, ample global liquidity eventually found its way in asset markets. Such development has fuelled a divergence between financial asset prices and economic fundamentals, indicating a build-up of financial market risks that warrants central banks' close attention.

Chart 2.1
US: Financial assets and credit-to-GDP growth



* The trend is calculated using the Hodrick-Prescott filter, setting lambda to 1600.
Sources: CEIC and HKMA staff calculations.

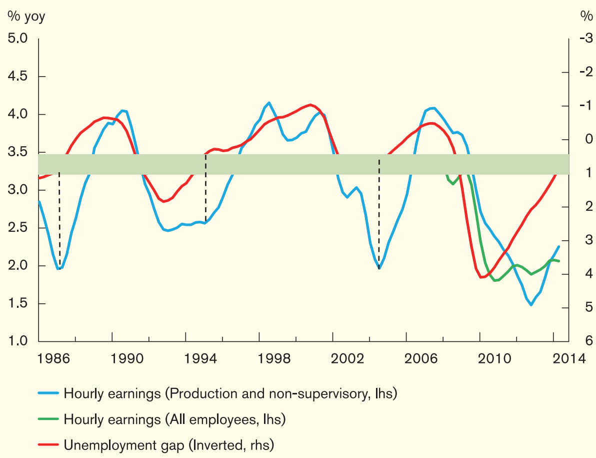
Chart 2.2
Euro area: Financial assets and credit-to-GDP growth



* The trend is calculated using the Hodrick-Prescott filter, setting lambda to 1600.
Sources: CEIC and HKMA staff calculations.

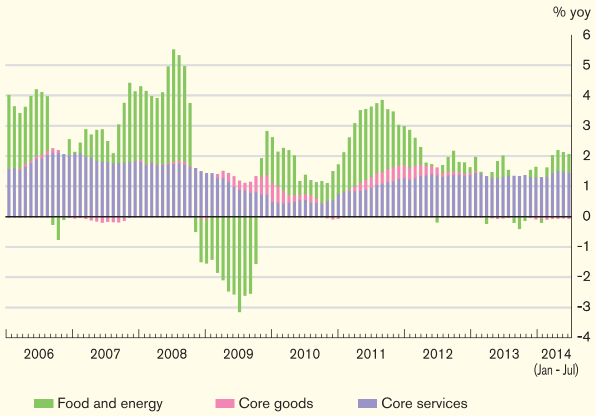
The current high degree of market optimism also stands in stark contrast with the growing macroeconomic and financial uncertainties in major economies. In the US, the recent run of robust employment growth has already driven the unemployment rate down to 6.1% in August, close to the Fed's previous end-of-2014 projections. Experience in the US suggests that wage growth tends to pick up abruptly once the unemployment rate falls to almost close the unemployment gap (i.e. actual minus the natural unemployment rate) (Chart 2.3). Meanwhile, detailed breakdown reveals a rather broad-based increase in inflation across different sub-components, particularly in the services sector (Chart 2.4), with rising costs in rental and medical care. In the event that wages and inflation pick up faster than expected, the Fed may be forced to tighten abruptly.

Chart 2.3
US: Unemployment gap and average hourly earnings*



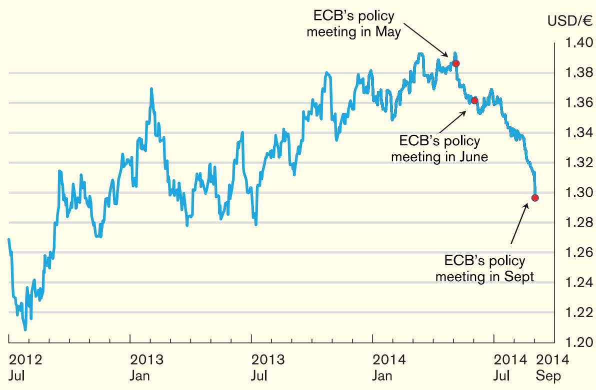
*All data are shown as 4-quarter rolling average.
Sources: CEIC, Congressional Budget Office and HKMA staff calculations.

Chart 2.4
US: Headline CPI inflation by contribution



Sources: CEIC and HKMA staff calculations.

Chart 2.5
Euro area: Euro against the US dollar

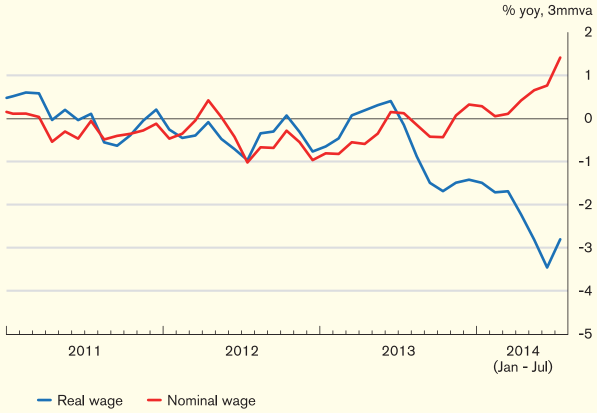


Source: Bloomberg.

Across the Atlantic, the deleveraging process continues to exert strong downward pressure on inflation in the euro area. As a result, disinflationary risk has now become a big threat to the euro area economy. To combat the mounting disinflationary pressure, the ECB introduced monetary easing measures at the June and September Governing Council meetings, including cuts in policy interest rates, the introduction of Targeted Longer-Term Refinancing Operations (TLTRO) and purchases of asset-backed securities and covered bonds. However, these policies appear to have only limited effects on the money markets so far as money market rates dropped just under the zero lower bound. In contrast, the impact on the exchange rate has been more visible, with the euro trending downward in recent weeks (Chart 2.5). Meanwhile, ongoing bank and corporate deleveraging could further dampen demand for credit and hamper the TLTRO programme's efficacy in boosting bank lending in the real economy.

In Japan, while the first and second arrows of Abenomics, namely fiscal stimulus and monetary easing, have generated some decent economic momentum, it remains uncertain how well the recovery can sustain after the latest consumption tax hike in April. The fall in real wages has recently accelerated as a result of the tax hike which drove up inflation (Chart 2.6). The third arrow, namely structural reforms, now plays a critical role for sustainable economic recovery. There has been some progress made on this front such as the elimination of the rice production quota and corporate tax cut. However, the most critical and controversial areas such as more fundamental reforms in the labour market and the agricultural sector are still left largely untouched in the face of strong political resistance. There is a risk that Abenomics could fail to reignite long-term growth of the Japanese economy if policymakers fail to follow through on the promised structural reforms.

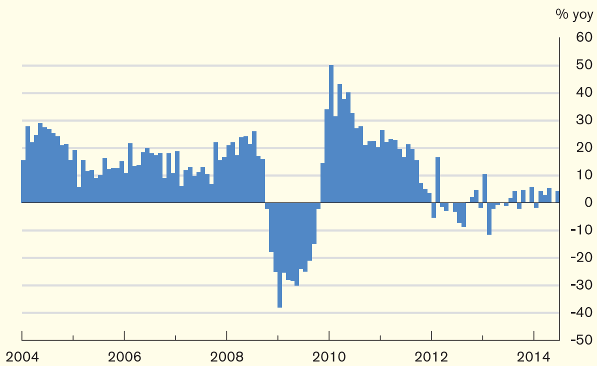
Chart 2.6
Japan: Real and nominal wage growth



Source: CEIC.

In East Asia[2], growth momentum abated in the first half of 2014 amid softened domestic demand and weak performance of the external sector. So far, recovery in the US appeared to have only limited effects on the region's external performance. In particular, the region's exports continued to hover around low single-digit growth in recent months, compared with their double-digit growth on average before the global financial crisis (Chart 2.7).

Chart 2.7
Asia: Export growth



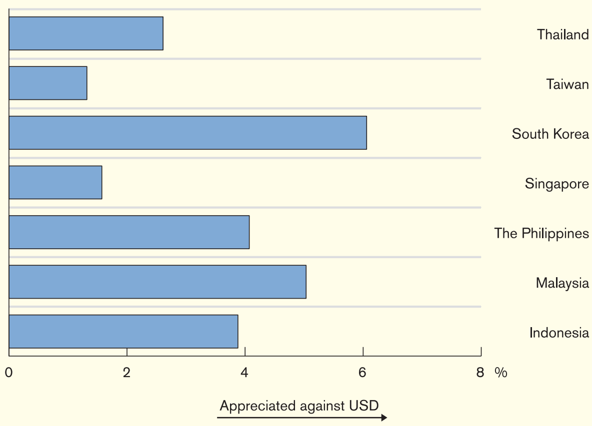
Note: The chart depicts the monthly year-on-year growth of total exports from the seven East Asian economies.

Sources: CEIC and HKMA staff calculations.

Looking forward, although external demand would likely pick up along with the gradually improving demand from the US, domestic demand may continue to ease along with the expectation of tighter financial conditions ahead.

Despite the soft patch in growth, the unusually calm investor sentiment in global financial markets appeared to have induced investor complacency about risk, boosting asset prices in the region. While equity prices in many regional economies have risen along with those in advanced economies, property prices remain high in some regional economies and the concerns about possibility of a housing market bubble loom large. Meanwhile, exchange rate of most East Asian currencies has remained resilient since early February (Chart 2.8). This also coincided with the increase in capital inflows to the equity and bond markets in the region. Cheap funding costs also continued to support bond issuance in the first half of 2014.

Chart 2.8
Asia: Exchange rate change



Note: The chart shows the change in exchange rate against US dollar from 3 February to 4 September 2014.

Source: Bloomberg.

[2] East Asian economies refer to Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand.

As incentives for borrowing remain strong and major central banks reinforce "low for long" expectations, bank credit growth is likely to remain robust and leverage in the region may increase further before its eventual unwinding once the Fed accelerates its pace of interest rate normalisation. This increases the risk of a boom-bust cycle in both the asset markets and the real economy in the region. As discussed in Box 1, the impact of US monetary normalisation on sovereign bond yields in Asia could potentially be very disruptive if it turns out to be much more disorderly than expected.

Moreover, a sharper-than-expected slowdown in the Mainland China economy and a heightening in geopolitical tensions would also add to risk of capital flow reversal in the region. In a not necessarily inconceivable scenario of a combination of these risks materialising at the same time, financial markets could see an abrupt unwinding of the currently compressed risk premia and fund flow reversal.

Box 1
How would sovereign bond yields in Asia Pacific react to US monetary normalisation in turbulent market conditions?

Former Fed Chairman Ben Bernanke surprised global financial markets when he signalled the Fed's intention to taper its quantitative easing (QE) programme in his Congressional testimony on 22 May 2013. The US Treasury bond market was sold off, which coincided with a sharp rise in sovereign bond yields in the Asia Pacific and abrupt capital outflows from the region. While financial markets have been a lot calmer since the Fed commenced its QE tapering, it is important to be vigilant about a repeat of the potential turbulence over the course of monetary normalisation. This box seeks to shed some light on the potential impact of the Fed's QE exit by examining the relationship between the US Treasury yields and sovereign bond yields in Asia Pacific, especially when the markets come under severe stress. We use the technique of quantile regression to measure the tail risks.

Theory and modelling

In theory, the borrowing cost in an economy, which has its own currency and runs its own monetary policy, should not be affected by that in another economy. Instead, it depends on the chances of the lender getting repaid or, in other words, the risk of default. However, the surge in sovereign bond yields in Asia Pacific during the period from May to September 2013 suggested that there are indeed other factors at play, such as the US Treasury bond yield.[3]

Hence, in this study we postulate that the sovereign bond yield of an economy is determined by a world risk-free interest rate, the economy's own funding cost, the credit and the exchange rate risks of the economy, and global risk appetite.[4] The reason for including a world risk-free interest rate is that global financial markets have become highly interconnected. Depending on infrastructural and regulatory constraints, individual capital markets are closely linked together. International investors would thus take advantage of arbitrage opportunities, having regard to the credit and exchange rate risks involved and their risk tolerance.

Based on monthly data covering the period from October 2004 to February 2014, a principal component vector autoregressive (PC-VAR) model is estimated for the eleven EMEAP member economies.[5] This model examines the contemporaneous relationship among four endogenous variables of an economy, including (1) the 10-year local sovereign bond yield; (2) the domestic 3-month interbank interest rate which is used to control for the local funding cost; (3) the 5-year domestic sovereign CDS spread which is used as a measure for the credit risk of the economy; (4) the risk reversal of the local currency against the US dollar which is used as a proxy for the exchange rate risk. It also consists of three exogenous variables, including (1) the 10-year US Treasury yield; and (2) the Merrill Option Volatility Expectations Index which are used as a proxy for the level and the volatility of

[3] An empirical study found significant evidence that sovereign bond yields in emerging economies have moved much more closely with the US Treasury bond yield after 2005. For details, see Turner, P. (2013), "Benign neglect of the long-term interest rate", BIS Working Papers No. 403.

[4] Such modelling of emerging market sovereign bond yields is not new. See similar model proposed by Edwards, S. (1986), "The pricing of bonds and bank loans in international markets: An empirical analysis of developing countries' foreign borrowing", *European Economic Review*, 30, 3, 565 - 589.

[5] Specifically, the PC-VAR model fits an autoregression of a vector of principal components derived from the endogenous variables. The lead-lag and contemporaneous relationships among the endogenous variables are therefore captured by the coefficient matrices and the loading matrix of principal components respectively. More discussion of this model family can be seen in Matteson and Tsay (2011) "Dynamic orthogonal components for multivariate time series", *Journal of the American Statistical Association*, 106, 496, 1450-1463.

the world risk-free interest rate respectively; (3) an estimated global fear index which is used as a measure of risk appetite in global financial markets.[6, 7]

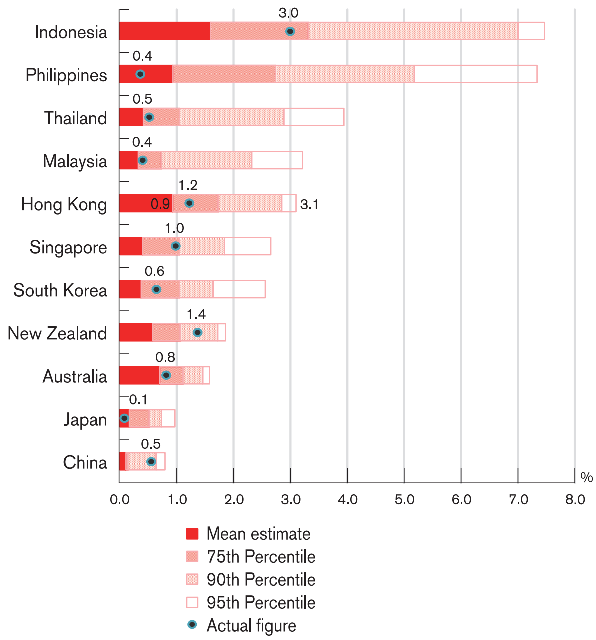
Apart from estimating the mean relationship using the ordinary least squares (OLS) method, the model can be easily extended to estimating the functional relationship at high quantiles using the quantile regression method.[8] This enables us to assess how drastic the sovereign bond yields in the region could possibly respond to changes in US Treasury bond yields under extreme market conditions or, in other words, the tail risks.

Scenario analysis and conclusion

The model estimated at the mean and various quantiles are used to compute short-run changes in the sovereign bond yield of each of the economies based on the scenario seen between May and September 2013 during which the increase in the US Treasury yield is 94 basis points. The different quantiles can be considered as representing different levels of market distress: the higher the quantile, the greater the distress.

Chart B1.1 shows the short-run response in the sovereign bond yields in Asia Pacific estimated at the mean and various quantiles along with their corresponding actual increases, with the economies ranked according to the size of their response at the 95th percentile. Take Hong Kong as an example, the actual increase in the sovereign bond yield is 1.2%, while the estimated increase at the mean and 95th percentile are 0.9% and 3.1% respectively.

Chart B1.1
Estimated short-run changes in local government bond yields based on the scenario seen between May 2013 and September 2013



Note: During the period, the 10-year US Treasury bond yield rose by 94 bps.
Source: HKMA staff estimates.

First of all, it is apparent that the actual increases registered in the episode are mostly greater than the mean estimates except for the Philippines and Japan.[9] This may reflect a knee-jerk reaction of international investors to run for the exit in response to the news, given that these economies had received significant capital inflows after several rounds of QE of the Fed.

Second, by comparing the actual increases and the estimates at the various quantiles, it highlights the importance of assessing the potential tail risk. The estimates at the 90th and

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6 The Merrill Option Volatility Expectations Indices are developed by Merrill Lynch to reflect a market estimate of future Treasury bond yield volatility. The index used in this study, which is constructed based on 3-month options on Treasury securities in a wide range of tenors, measures the uncertainty about long-term yields over a 3-month horizon.

7 The estimated global fear index is proxied by the first principal component constructed by nine major stock market volatility indices including the S&P 500, Dow Jones Industrial Average, NASDAQ, Euro Stoxx 50, DAX, CAC 40, FTSE 100, NIKKEI 225, and Hang Seng Index. The index, which explains 85.6% of the total variation of the nine indices, has a nearly equal weight on each stock volatility index, so it arguably reflects a risk appetite of global financial markets in general.

8 Given that the four principal components are uncorrelated with each other, the vector autoregressive model can be viewed as four separate univariate autoregressive models which can be individually estimated by the quantile regression method.

9 The Philippines is a notable exception with a much smaller increase attributable to the fact that the sovereign rating of the country was upgraded by a notch to investment grade by Standard & Poor's in May 2013. Japan, which introduced its own QE programme, also saw a slightly smaller increase in this episode.

95th percentiles are many times larger than the actual increases or mean estimates. This means that the volatility and turbulence of financial markets could have been far more disruptive than imagined in times of extreme adversity.

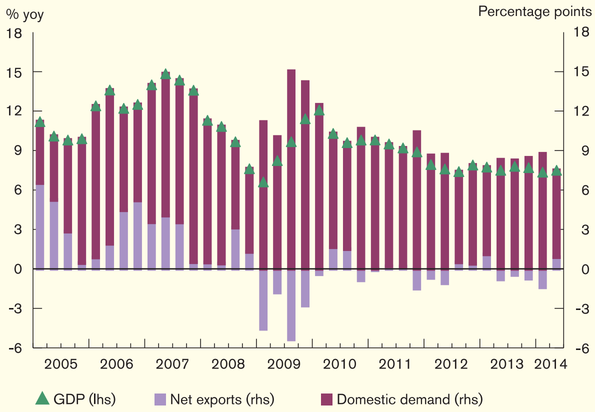
Finally, the ranking of the economies suggests that under stressful market conditions, an increase in the US Treasury yield has a much smaller potential impact on the sovereign bond yield in economies that are perceived to have stronger fundamentals.

In sum, empirical evidence supports that the US Treasury bond yield can have a significant influence on the sovereign bond yields in Asia Pacific. This is one of many channels in which the QE tapering of the Fed can affect the economies in the region. Increase in sovereign bond yields will not only compromise the ability of the sovereigns to service their debt but also translate into higher cost of borrowing for the entire economy. The results also show the potentially outsized impact if the US monetary normalisation somehow turns out to be much more disorderly than expected.

2.2 Mainland China

Real GDP growth in Mainland China edged up to 7.5% year on year in the second quarter from 7.4% in the previous quarter (Chart 2.9), underpinned by a recovery in exports and the mini-stimulus on infrastructure spending.[10] Domestic consumption growth was largely stable, but real estate and manufacturing investment growth slowed. Inflationary pressures were mild. Headline CPI inflation rate eased to 2.2% year on year on average in the second quarter, but PPI inflation rate stayed in negative territory at -1.5%.

Chart 2.9
Mainland China: contributions by domestic demand and net exports to GDP growth

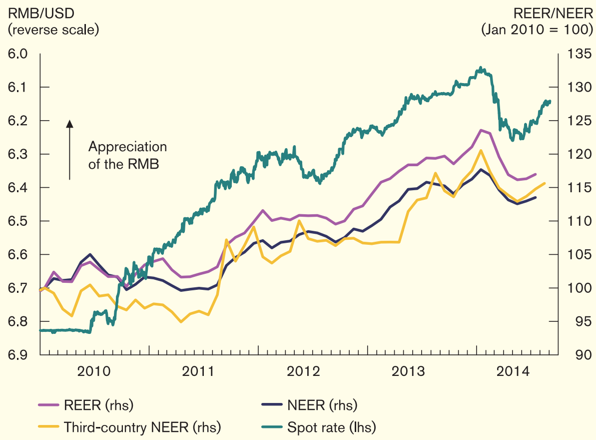


Sources: CEIC and HKMA staff estimates.

Growth momentum is expected to be moderate in the near term. The progress in absorbing the overcapacity in a few heavy industries appeared to have been slow, while the weakening housing market would add uncertainty to the near-term growth momentum. However, the gradually improving external demand and fine tuning of economic policies point to low risk of a sharp deterioration in the outlook. Consensus forecasts in August project the Mainland economy to grow by 7.4% for 2014 as a whole, and CPI inflation rate could be 2.4%.

Capital inflow pressures receded in the second quarter amid an increase in the two-way movements of the RMB/USD exchange rates, and concerns over the growth prospect. Capital flow pressures have become more balanced in recent months, with the RMB/USD exchange rate appreciating by around 1.7% during June-August, following a continued softening in earlier months (Chart 2.10). Consensus forecasts in August suggest that the renminbi may continue to strengthen mildly against the US dollar in the next few months, but for 2014 as a whole, it may depreciate slightly. Volatility in the RMB/USD exchange rate increased after the widening of the daily trading band in March but subsided in recent months (Chart 2.11).

Chart 2.10
Mainland China: renminbi exchange rates

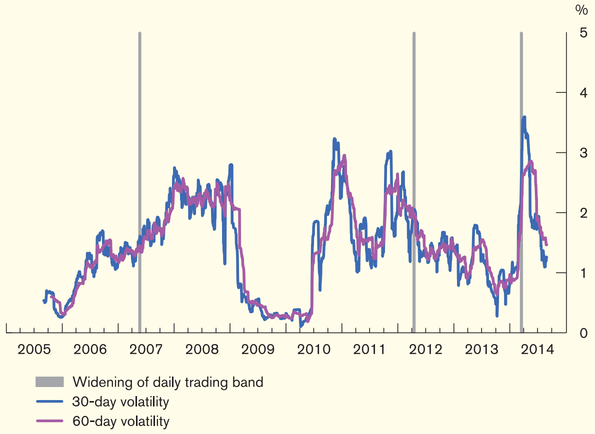


Note: A higher effective exchange rate index indicates a stronger renminbi. The 3rd-country NEER takes into account the competition that China faces in foreign markets from other economies exporting similar products.

Sources: Bank for International Settlements, Bloomberg and HKMA staff estimates.

[10] On a seasonally adjusted quarter-on-quarter basis, real GDP growth also quickened to 2.0% from 1.5% in the previous quarter. Year-on-year GDP growth was 7.4% for the first half of the year.

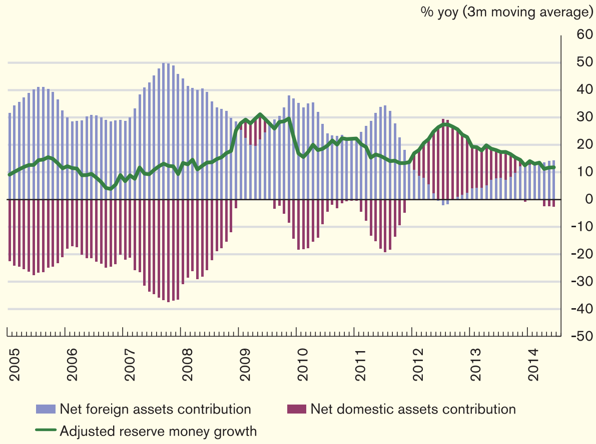
Chart 2.11
Mainland China: volatility of the RMB/USD exchange rate



Note: Volatility is calculated based on the annualised sum of squared daily changes during the reference periods.

Sources: Bloomberg and HKMA staff estimates.

Chart 2.12
Mainland China: contributions to reserve money growth



Note: Total reserve money is adjusted for the changes in the reserve requirement ratio.

Sources: CEIC and HKMA staff estimates.

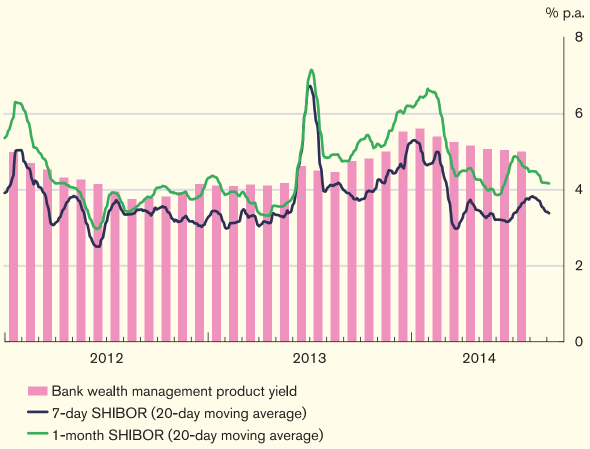
The People's Bank of China (PBoC) appeared to have tilted towards an easing bias in monetary policy recently. It cut the required reserve ratios for targeted financial institutions, and reserve money growth showed signs of stabilisation in recent months (Chart 2.12). Growth in broad money (M2) increased year on year in the second quarter following a softening in previous months, while bank loans expanded at a steady pace over the same period. Credit expansion, via both bank and non-bank channels, slowed notably in July, reflecting weaker demand for credit and seasonal factors. For instance, new entrusted lending (a financing activity between companies with banks as middlemen, a major component of shadow banking) dropped from around RMB262 billion in June to around RMB122 billion in July. Box 2 sheds light on entrusted lending, a subject that is little understood.

Banks' effective lending rate fell by about 0.2 percentage points in the second quarter, but funding costs for some small and private enterprises reportedly have remained elevated amid continued difficulties in raising funds via formal channels. For instance, the private lending composite rate in Wenzhou, a city in Zhejiang province where private lending is prevalent, stayed at around 20% per year during the review period.

Liquidity conditions in the interbank market have been largely stable over the review period, partly reflecting the proactive liquidity management by the PBoC. Regulatory bodies' initiatives to curb the fast-growing interbank business associated with "non-standard" products may have also dampened the demand for funds in the interbank market.[11] Accordingly, money market rates have been trendless over the review period, while yields of bank wealth management products have edged down (Chart 2.13).

[11] "Non-standard" products refer to debt-based products that are not traded in interbank markets or security exchanges, such as trust loans, entrusted loans and acceptance bills.

Chart 2.13
Mainland China: money market rates and bank wealth management product yields



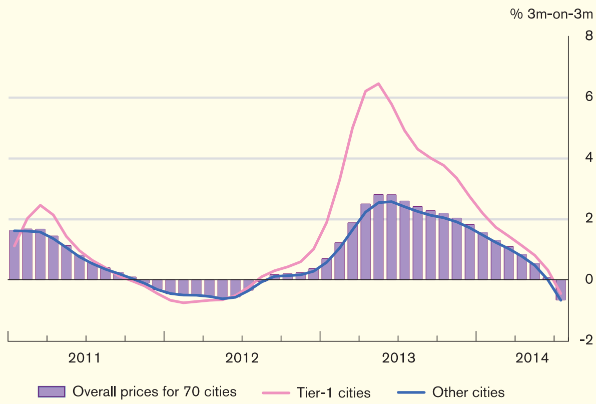
Sources: CEIC and HKMA staff estimates.

Equity markets remained weak in earlier months but have shown stronger momentum in recent weeks. The Shanghai Composite Index has risen by more than 10% since mid-July, while the average daily transaction volume of the Shanghai Stock Exchange has increased to more than RMB130 billion from RMB78 billion in the first half of 2014. This partly reflected an improvement in market sentiment amid the introduction of mini-stimulus measures to support economic growth. The prospective launch of the Shanghai-Hong Kong Stock Connect,[12] which would broaden the base of international and institutional investors for the Mainland stock markets, appeared to have strengthened market confidence as well.

The housing market appeared to have started a down cycle over the review period. Among the 70 big and medium-sized cities monitored by the National Bureau of Statistics (NBS), over 60 cities saw property prices drop month on month in July, compared with less than 15 cities in March.

Top-tier cities, which had seen a surge in property prices in previous quarters, experienced faster softening in property prices than smaller cities in recent months (Chart 2.14). Property market transactions have weakened, with the overall floor space sold having fallen by 7.6% year on year in the first seven months of the year.

Chart 2.14
Mainland China: house prices

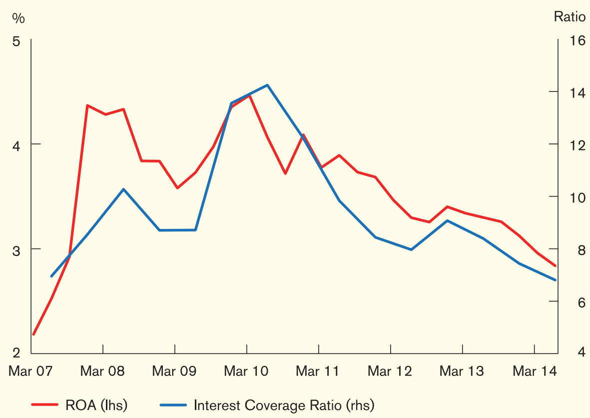


Note: House price for first-tier cities is the simple average of the price indices for Beijing, Guangzhou, Shanghai and Shenzhen (the National Bureau of Statistics).

Sources: CEIC and HKMA staff estimates.

Property developers' financial conditions have weakened accordingly. Listed developers' profitability and debt servicing capacity continued to soften over the review period (Chart 2.15), and smaller developers have reportedly been in an even more difficult situation.

Chart 2.15
Mainland China: listed developers' financial conditions



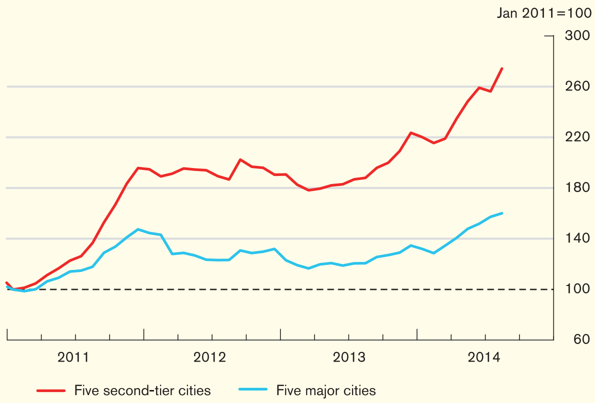
Sources: Bloomberg and HKMA staff estimates.

12 Shanghai-Hong Kong Stock Connect is a pilot programme that links the stock markets in Shanghai and Hong Kong. This pilot programme will allow Mainland investors who satisfy the eligibility criteria to trade eligible stocks listed on the Stock Exchange of Hong Kong (SEHK) via the Shanghai Stock Exchange (SSE) directly. At the same time, it will also allow Hong Kong and overseas investors to trade for the eligible stocks listed on the SSE through the SEHK directly.

While tighter mortgage lending might have contributed to the weakening in the property market, a fast increase in house supply in recent years has likely played a bigger role. For instance, average annual floor space started during 2011-2013 has been nearly 50% more than that of the previous three years of 2008-2010.

Looking ahead, risks to the housing market appear to be on the downside, particularly in smaller cities. Property inventory has increased, with the space of unsold properties in the primary markets of mega cities (including Beijing and Shanghai) building up in the past few months, and that of a few second-tier cities has grown even faster (Chart 2.16). Official data also indicate per capita floor space under construction was generally larger in smaller cities than in bigger ones in 2013 (Chart 2.17). Some local governments have taken measures to support the housing market (for instance, removing property purchase restrictions). As such, the likelihood for a nationwide disorderly adjustment in the housing market should still be low.

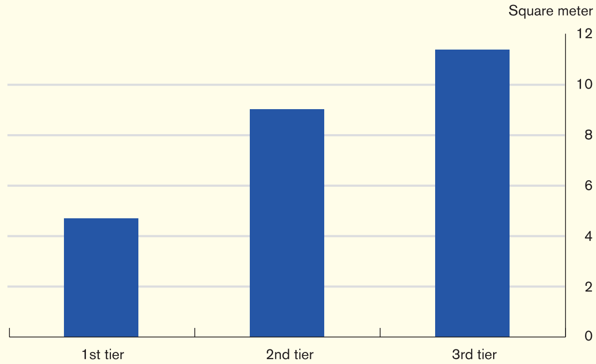
Chart 2.16
Mainland China: space of unsold properties in primary markets



Note: Major cities include Beijing, Guangzhou, Hangzhou, Shanghai and Shenzhen. Second-tier cities include Huizhou, Nanchong, Nanjing, Qingdao and Suzhou.

Sources: WIND and HKMA staff estimates.

Chart 2.17
Mainland China: per capita floor space under construction in 2013

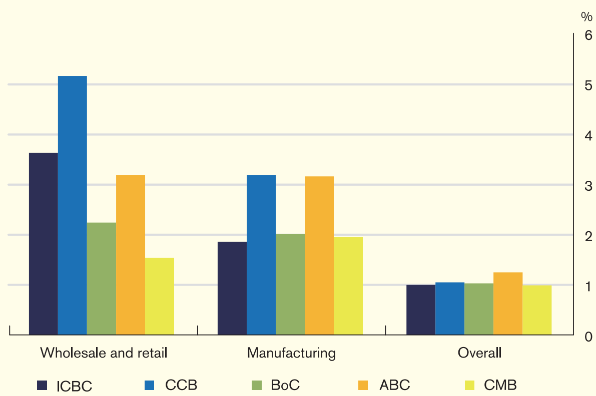


Note: First-tier cities include Beijing, Guangzhou, Shanghai and Shenzhen. Second-tier cities are mainly provincial capitals and cities specially designated in the state plan. Third-tier cities mainly include prefectural-level cities.

Sources: CEIC and HKMA staff estimates.

The banking sector's asset quality remained largely stable in aggregate, but the picture does not appear to be uniform across industries. While the overall non-performing loan (NPL) ratio has only risen slightly from 1.0% at end 2013 to 1.08% at end-June 2014, the NPL ratios for sectors with overcapacity problems and related industries have reportedly risen at a faster pace. In fact, data for a few big banks indicate the NPL ratios of the manufacturing industries with substantial overcapacity (steel, for instance) and the wholesale industry were noticeably higher than the average at end-June 2014 (Chart 2.18).

Chart 2.18
Mainland China: NPL ratios for selected industries as of end-June 2014



Note: BoC's "wholesale and retail" NPL ratio is proxied by its "commerce and services" sector's NPL ratio.

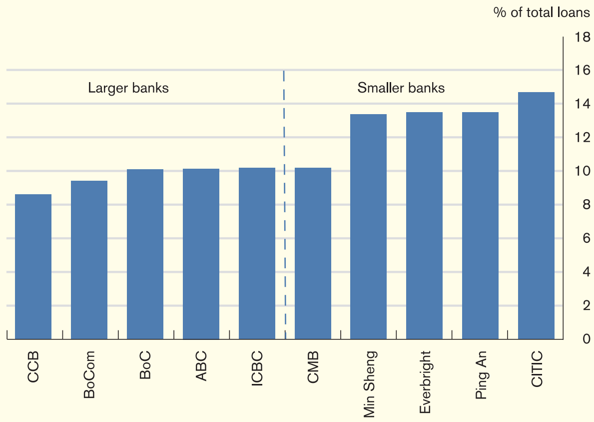
Sources: Banks' financial reports.

Going forward, overcapacity problems would continue to weigh on banks' asset quality, particularly given a continued rise in their leverage over the review period. In fact, some overcapacity industries' debt-to-asset ratios have exceeded 70% as of end-June 2014, while around 30% of enterprises in some of these industries suffered losses in the first half of the year.

The property market downturn would add uncertainty to the banking sector's asset quality. The direct impact might not be large, particularly for big banks with smaller exposure to real estate and construction sectors (Chart 2.19), but the indirect impact could be larger. For instance, debt servicing capacity of local governments would weaken along with the property market adjustment given their heavy dependence on land sales revenue as funding source in recent years (Chart 2.20). Indeed, official data show that overall land sales revenue growth declined from 40.3% year on year in the first quarter to 14.5% in the second quarter. Given that downside risks to the property market are generally lower in large cities, the impact on their land sales revenue should be smaller accordingly.

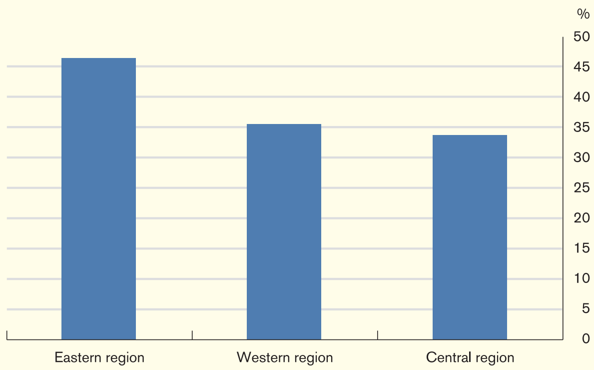
Market sentiment about the banking industry generally deteriorated accordingly, with the price-to-book ratio of banks' shares declining from around unity at end 2013 to around 0.84 at end-August.

Chart 2.19
Mainland China: banks' exposure to developers and construction in 2013



Sources: Banks' annual reports and HKMA staff estimates.

Chart 2.20
Mainland China: local governments' direct debt with land sales revenue as funding source in 2012



Note: Regional figures are simple average of available provincial level numbers.
Sources: WIND and HKMA staff estimates.

New forms of unconventional financing or shadow banking activities, such as bank-securities cooperation and internet finance, have accelerated in recent periods. Specifically, net assets of money market funds doubled in the first half of the year to nearly RMB1,600 billion. However, overall, banks' off-balance sheet and non-bank intermediaries' financing activities have expanded at a slower pace amid a strengthening in the regulations by the authorities.[13] For instance, the share of entrusted and trust loans in total social financing dropped from 25% on average in 2013 to around 17% in the first half of 2014 on a flow basis.

[13] In addition to measures introduced in earlier periods, the China Banking Regulatory Commission (CBRC) strengthened the risk management of trust business in April. Shareholders of trust companies were required to provide liquidity support or inject capital to shore up the trust company in case of liquidity strain or credit losses. To contain the risk of using repurchase agreement to finance less formal financing activities, underlying assets of repo transactions should be of good liquidity such as bank acceptances, bonds and central bank bills.

Box 2
Entrusted lending in Mainland China

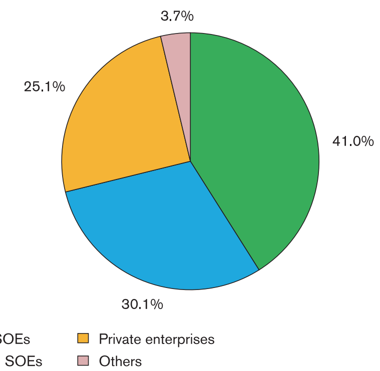
Entrusted lending, a financing activity between companies with banks acting as middlemen, has developed at a fast pace in recent years. On a flow basis, it accounted for 12.8% of total social financing in the first half of 2014. The outstanding balance of entrusted lending amounted to RMB8.3 trillion at the end of 2013, accounting for about a third of estimated total shadow banking on the Mainland. Despite its rising importance, entrusted lending does not appear to be well understood. This article attempts to lift the veil. Based on the entrusted loans announced by listed firms in 2013, we explore what types of firms have engaged in entrusted lending and what the interest rate has been. As it was reported that some entrusted lending has relied on bank loans or bond issuance as funding source, we also shed some light on potential non-bank corporate credit intermediation activities in Mainland China with data of both listed firms and bond issuers.

Who has engaged in entrusted lending and what has been the level of the interest rate?

Entrusted lending in Mainland China has been incentivised by structural issues as well as cyclical factors. In particular, it has been difficult for small and private enterprises to raise funds via formal financing channels, while bank lending has reportedly been skewed towards SOE either out of policy priority or implicit government guarantee. In recent periods, it has also become more difficult for property developers and the firms in the industries with substantial overcapacity to borrow along with the authorities' efforts to reduce their leverage. Consequently, it is common for firms with better financial conditions or stronger financing capacity to lend to those firms short of funds.

Our analysis based on entrusted lending announced by listed firms in 2013 indicates that over 70% of the lending was conducted by SOEs (41% by local SOEs and 30% by central SOEs), with only 25% of entrusted lending being initiated by private enterprises (Chart B2.1).[14] Other firms, including foreign enterprises, accounted for less than 4% of total entrusted lending of listed firms in 2013. By maturity, around 80% of the entrusted lending had duration of no more than three years.

Chart B2.1
Lenders of entrusted loans by ownership in 2013

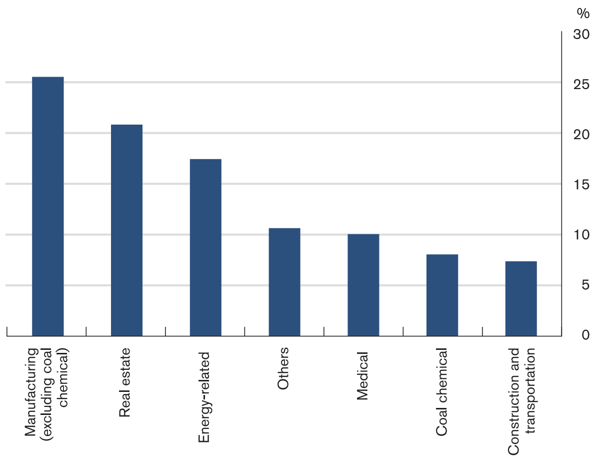


Sources: Shanghai and Shenzhen Exchanges and HKMA staff estimates.

Firms in the industries facing tighter credit controls appeared to have relied on their parent companies or other firms as an important source to raise funds. In recent periods the authorities tightened bank lending to the industries with substantial overcapacity and a fast increase in leverage (for instance, steel, coal, and developers), and borrowers of entrusted loans are indeed mainly from these sectors. Specifically, manufacturing, energy-related and real estate industries together accounted for more than 70% of total entrusted loans by listed firms in 2013, compared with 10% and 7% for medical and construction & transportation industries respectively (Chart B2.2).

[14] If an enterprise's state ownership is more than 50%, we define it as SOE in our analysis.

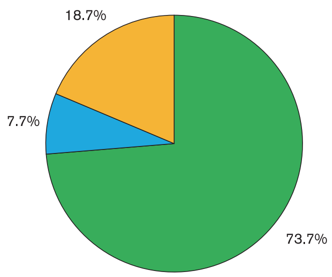
Chart B2.2
Distribution of borrowers by industry in 2013



Sources: Shanghai and Shenzhen Exchanges and HKMA staff estimates.

Most of the loans were extended by big firms to their subsidiaries or affiliated enterprises, with less than 20% of the lending being conducted between non-affiliated firms (Chart B2.3). This possibly suggests entrusted lending has been an important channel to allocate funds within conglomerates.

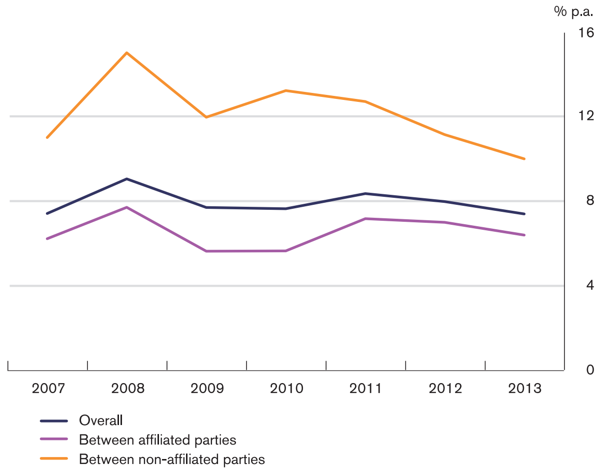
Chart B2.3
Relationship between lenders and borrowers in 2013



Sources: Shanghai and Shenzhen Exchanges and HKMA staff estimates.

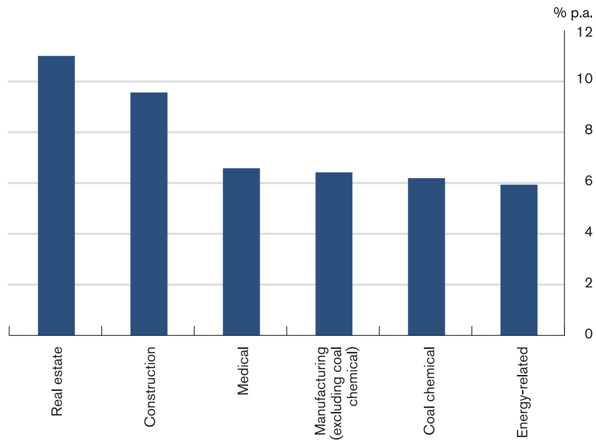
Interest rates of entrusted lending varied a lot across industries and firms. Lending rates for financing between non-affiliated firms have generally been much higher than those for financing between affiliated firms. The lowest rate was actually 0% in 2013 (from a big firm to its subsidiary), while the highest was 24% per year (between non-affiliated firms). Average lending rate between non-affiliated firms has been 2.5-5.5 percentage points higher than that for lending between affiliated firms in recent years (Chart B2.4). Property developers and construction industry paid the highest lending rates of 9.5-11% per year on average in 2013, while other industries paid around 6% per year on average or even lower (Chart B2.5).

Chart B2.4
Entrusted lending rate by relationship



Sources: Qian and Li (2013)[15], Shanghai and Shenzhen Exchanges and HKMA staff estimates.

Chart B2.5
Average interest rate of entrusted lending by industry in 2013



Sources: Shanghai and Shenzhen Exchanges and HKMA staff estimates.

15 "Operation mechanism and guarding financial risk of entrusted loans: stemming from the public data of listed companies in China from 2004 to 2013" by X. Qian and X. Li, *Enterprise Development*, 2013.

Has entrusted lending relied on formal financing as funding source?

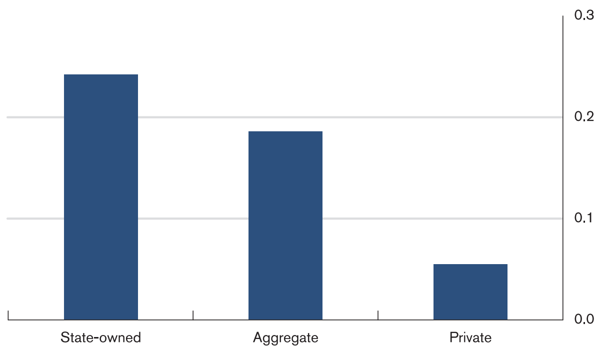
It has been reported that entrusted lending might have relied on financing through formal channels as funding source. While some companies, in light of their easier access to formal financing channels, may have borrowed and then lent to their subsidiaries that have difficulty in raising funds through formal channels, others may have just engaged in financial intermediation in an attempt to profit from the interest rate gap between formal financing and entrusted lending. Shin et al. (2013) also point out that some Chinese firms have borrowed overseas in foreign currency and lent to domestic firms directly or indirectly in anticipation of the renminbi appreciation.[16]

Whether an enterprise has engaged in credit intermediation can be judged from the relationship between its financial asset and financial liabilities. Non-financial enterprises' financial asset and liability changes tend to move in opposite directions as the purpose for them to borrow is to finance investment. In contrast, credit intermediaries' financial asset and liability changes have the same sign as they borrow in order to lend. Following Shin et al. (2013), we study the elasticity of financial asset to financial liabilities with firm-level data across ownership, firm size, and industries.[17] If a firm's elasticity of financial asset to financial liabilities is significantly positive, we would conclude that it has likely engaged in credit intermediation.

Regression results suggest that some enterprises have indeed engaged in financial intermediation. The elasticity of financial asset to financial liabilities is around 0.2 on average, suggesting a one percent increase in these firms' financial liabilities would mean a 0.2 percent rise in their financial asset. This is in sharp contrast to the case of non-financial enterprises in major advanced economies. For instance, estimations by Shin et al. (2013) indicate that the elasticity of financial asset to financial liabilities for non-financial enterprises in the US has been -0.04 to 0.02 in the past few decades.

Moreover, it seems that SOEs have been more active in financial intermediation than private enterprises. Specifically, SOEs' elasticity of financial asset to financial liabilities has been around 0.24 on average, compared with only 0.06 for private enterprises (Chart B2.6). This may help explain why entrusted lending has been mainly conducted by SOEs. In other words, in view of their easier access to formal financing channels such as bank lending and bond issuance, some SOEs may have borrowed through these formal channels on one hand and then lent to other firms on the other.

Chart B2.6
Elasticity of financial asset to financial liabilities



Sources: WIND and HKMA staff estimates.

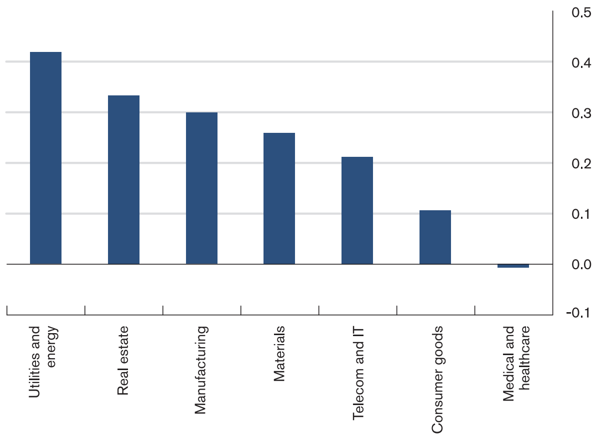
There does not seem to be much difference across the size of firms in our sample, with the elasticity of financial asset to financial liabilities being around 0.20 for most quartiles of firms in terms of sales. This is possibly because listed firms and bond issuers are all large firms, and it has been easier for them to borrow and hence conduct financial intermediation than smaller firms.

[16] See "Firms as surrogate intermediaries: evidence from emerging economies", by H. S. Shin and L. Y. Zhao (2013), manuscript, Princeton University.

[17] The sample includes 3,200 listed firms and bond issuers during 2009-2013.

By industry, utilities and energy (gas and water supply, coal, etc.), property developers, and manufacturing firms display much stronger surrogate intermediation behaviour than others. As shown in Chart B2.7, the elasticity of financial asset to financial liabilities for telecom and utilities and energy industries ranges from 0.2 to around 0.4, and it is less than 0.1 for consumer goods and slightly negative for medical and healthcare firms. We further find that the elasticity of financial asset to financial liabilities has been higher for firms in the industries with substantial overcapacity problems (0.38), possibly suggesting large firms in these industries have likely used their privileged access to borrowing and help other firms meet the demand for funds.

Chart B2.7
Elasticity of financial asset to financial liabilities by industry



Sources: WIND and HKMA staff estimates.

Concluding remarks

The main messages of this box are summarised as follows:

- Entrusted lending has been mainly conducted by SOEs. Most of the loans have been extended by big firms to their subsidiaries or affiliated enterprises in 2013. Firms in the industries facing tighter credit controls in recent periods, such as those with overcapacity problems, and property developers, appeared to have used entrusted lending as an important channel to raise funds.

- Interest rates of entrusted lending varied a lot across industries and firms. Lending rates for financing activities between non-affiliated firms have generally been much higher than those for financing conducted between affiliated firms. Specifically, property developers and construction industry paid the highest lending rates on average.

- Our analysis based on data for listed firms and bond issuers suggests that those firms which have made loans through entrusted lending might have financed their lending through formal channels. Specifically, some SOEs might have engaged in such credit intermediation activities in view of their easier access to formal financing channels such as bank credit and bond issuance.

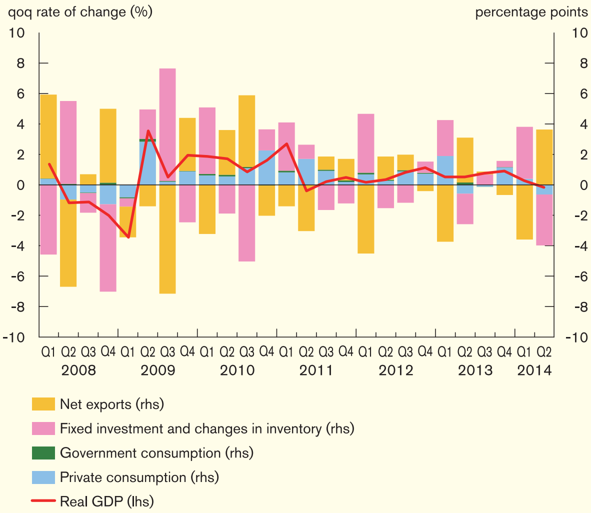
3. Domestic economy

The Hong Kong economy saw little growth in the first half of 2014, with weaker domestic demand and tourist spending offsetting a moderate rise in merchandise exports. While a pick-up in growth momentum is in prospect, as lifted by stronger external demand, downside risks remain amid uncertainties surrounding the global monetary, macroeconomic and financial environment and heightened geopolitical tensions. Domestic inflation will likely remain moderate on the back of mild rental increase and modest business cost pressure.

3.1 Real activities

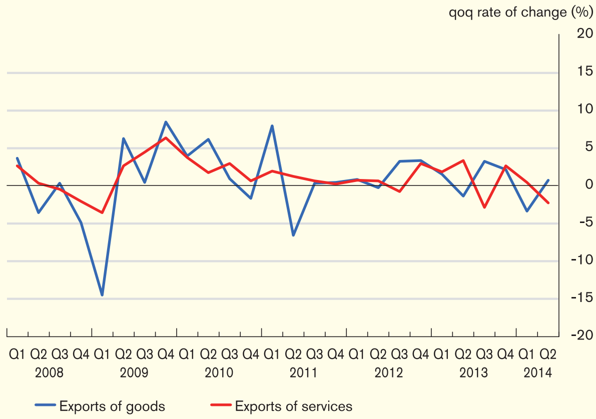
Economic activities in Hong Kong weakened in the first half of 2014, reflecting feeble domestic demand and lower inbound tourism earnings. On a seasonally adjusted quarter-to-quarter basis, real GDP declined marginally by 0.1% in the second quarter, following a 0.3% growth in the first quarter. Contrary to the developments in the first quarter, domestic demand contracted notably and detracted a total of 3.8 percentage points from the second-quarter real GDP growth (Chart 3.1). Investment spending was the primary drag, led by a sharp decrease in machinery and equipment acquisitions. Private consumption also declined, mainly due to weaker growth prospects and receding housing wealth effects. Meanwhile, services exports were weighed down by weaker tourist spending and, to a lesser extent, softer financial market activities (Chart 3.2). A brighter spot was moderate improvement in exports of goods on the back of stronger external demand.

Chart 3.1
Real GDP growth and contribution by major expenditure components



Sources: Census and Statistics Department (C&SD) and HKMA staff estimates.

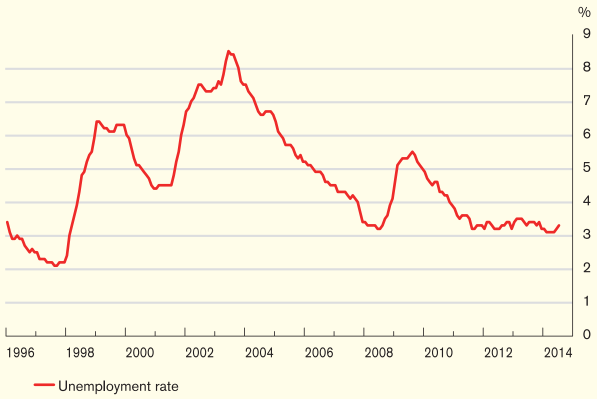
Chart 3.2
Exports of goods and services in real terms



Source: C&SD.

The year-on-year real GDP growth rate slowed to 2.6% and 1.8% respectively in the first and second quarters. The recent pace of growth was the slowest since the second half of 2012 and some way off the average annual growth of 4.5% in the past 10 years. Labour market conditions eased slightly along with the growth slowdown of the domestic economy (Chart 3.3). The seasonally adjusted unemployment rate edged up to 3.2% in the second quarter after hitting a 16-year low of 3.1% in the first quarter, with the retail, hotel and food services sector experiencing a relatively sharper increase. The unemployment rate of the lower-skilled segment picked up in the first half, while that of the higher-skilled segment remained stable.

Chart 3.3
Unemployment rate



Source: C&SD.

In the second half of the year, it is expected that economic activities in Hong Kong will regain sequential traction, albeit at a moderate below-trend rate. Trade in goods is expected to improve gradually with the recovery of the US economy continuing to take shape and the Mainland China economy showing signs of stabilisation following a number of targeted stimulus measures. There will also be some support from exports of trade-related services and financial services, the latter buoyed in part by the soon-to-be-launched Shanghai-Hong Kong Stock Connect pilot scheme. But softer Mainland tourist spending could continue to provide an offset. Box 3 studies the relative importance of Mainland China and the US in driving Hong Kong's economic cycle and trend growth. Regarding domestic spending, private consumption is anticipated to tick along, mainly driven by a relatively stable yet easing labour market. Overall fixed investment will continue to be supported by ongoing infrastructure projects and other building and construction activities, although capital spending tends to fluctuate. The HKMA in-house composite index of leading indicators, which keeps track of the monetary and financial conditions, housing starts, sentiment indicators and global growth prospects, also points to a modest pickup in economic activities in the second half (Table 3.A). Overall, taking into account the weak data in the first half, the Government has revised downward its range forecast of 2014 real GDP growth to 2-3% from 3-4% as announced earlier in May. Private-sector analysts have also adjusted downward their growth forecasts recently to an average of 2.4%.

Table 3.A
Recent trends of the coincident economic indicator and the leading economic indicator

	% change over one month		% change over six months	
	CEI	LEI	CEI	LEI
2013				
Jul	-1.3	0.3	0.3	1.6
Aug	0.1	0.3	0.2	1.6
Sep	0.3	0.4	-0.4	1.7
Oct	0.5	0.2	-1.2	1.4
Nov	2.0	0.8	1.7	1.9
Dec	0.6	0.5	2.2	2.5
2014				
Jan	2.5	0.5	6.1	2.7
Feb	-2.7	0.4	3.2	2.7
Mar	-0.3	-0.3	2.6	2.0
Apr	-2.2	0.3	-0.2	2.1
May	0.0	0.6	-2.1	1.9
Jun	-1.1	0.6	-3.8	2.0
Jul	0.9	0.5	-5.3	2.0
Aug	n.a.	0.4	n.a.	2.0

Note: The six-month rate of change of a leading economic indicator is commonly referred to for detection of any business cycles turning points.

Source: HKMA staff estimates.

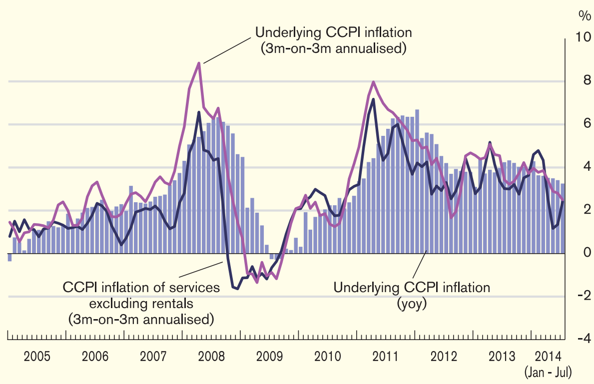
The baseline scenario in which the Hong Kong economy would resume moderate sequential growth is subject to a number of uncertainties and risks. On the downside, external demand could be weaker than expected if the recovery in the US economy slowed down, the euro area economies failed to resume growth, and the macro-financial concerns about the Mainland China economy lingered on. Moreover, worries about the future monetary policy paths of the advanced economies and a potential reversal of recent risk premia and volatility compression could pose important downside risks to the global financial market and induce volatile international capital flows, causing negative spillover effects on the Hong Kong economy. Real economic activities in Hong Kong could also be hurt through trade and financial channels if heightened geopolitical tensions translated into a source of volatility spikes or trade impediments. Domestically, property market imbalance may persist for a time, and this could pose further risks to Hong Kong's macroeconomic and financial stability.

On the upside, if the advanced economies and the Mainland China economy performed better than expected, the resultant boost to world growth and global trade flows could suggest stronger external demand for Hong Kong. This, coupled with an upswing in asset prices, could benefit local private consumption and investments through strengthened consumer and business confidence.

3.2 Consumer prices

Local inflationary pressure moderated during the first seven months of 2014, with the year-on-year underlying inflation rate dropping to 3.3% in July from 4.3% in January. The annualised three-month-on-three-month underlying inflation rate also declined to 2.5% in July from 4.0% in January, driven mainly by the easing in services inflation (Chart 3.4). In particular, the rise in labour cost has been subdued, with the real payroll per person growing at a mild pace of 0.1% in the first quarter of 2014 (Chart 3.5). The mild increase in labour cost is due to weak demand in the domestic economy, as the slightly negative output gap widened further in the first half. Meanwhile, the slow retail property rental increase, at below 2% year-on-year in recent months, also contributed to moderating inflation momentum amid the slowdown in retail sales.

Chart 3.4
Different measures of consumer price inflation



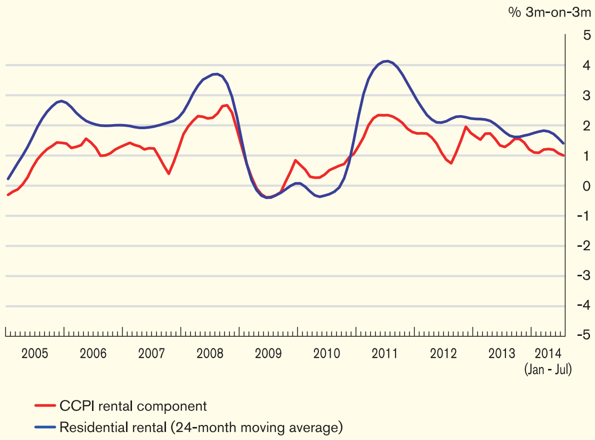
Sources: C&SD and HKMA staff estimates.

Chart 3.5
Labour cost and labour productivity

Sources: C&SD and HKMA staff estimates.

The sequential inflation momentum will likely remain moderate, as the feed-through to consumer price inflation from housing rental increase in recent months is expected to be mild (Chart 3.6). Moreover, the business cost pressure is expected to be contained given the weak labour cost pressures due to the softening in labour demand and weakness in the retail sector, as well as the expected modest increase in commercial property rental. The relief in business cost will help contain the rise in service inflation and thus ease the pressure in consumer price inflation for the rest of the year. On the whole, the annual year-on-year inflation rate for 2014 is likely to decline as compared with 2013, with the latest Government forecast for the underlying inflation rate being revised downward to 3.5% from 3.7%.

Chart 3.6
CCPI rental component and market rentals



Note: CCPI rental component excludes the effects of one-off special relief measures.
Sources: Rating and Valuation Department, C&SD and HKMA staff estimates.

The near-term inflation outlook is subject to risks on both sides. On the downside, the risk of sharper-than-expected slowdown in the Mainland economy and any heightening in financial market volatility or tightened monetary and financial conditions resulting from uncertainty in the timing and pace of US monetary policy normalisation could dampen Hong Kong's growth momentum and hence inflation. In particular, more significant decline in Mainland visitors' spending in Hong Kong could spill over to the local labour market and commercial property rental, which could in turn pose downward pressure on services inflation.

On the upside, faster-than-expected growth in the advanced economies could lead to an increase in local demand pressure, while the risk of intensification of geopolitical tensions could increase energy prices, thus putting upward pressures on imported inflation.

Box 3
Hong Kong's growth synchronisation with Mainland China and the US[18]

The continued economic integration between Hong Kong and Mainland China may have led to a higher degree of growth co-movement between the two economies. Headline numbers of trade and financial flows seem to suggest that the influence of Mainland China on the Hong Kong economy has become dominant, especially over the past decade. For example, 51% of Hong Kong's merchandise and services exports destined for the Mainland in 2012, while 21% went to the US, a significantly smaller share than that from a decade ago. Yet, these headline figures have masked the origin of final demand behind the trade flows. Indeed, a significant proportion of goods exported to the Mainland had been re-exported to meet the final demand from advanced economies, particularly the US.

This box studies the relative importance of Mainland China and the US in driving Hong Kong's economic growth. Economic integration can strengthen trade and financial linkages between Hong Kong and the Mainland, which can lead to a higher degree of output co-movement. On the other hand, the US remains an important source of influence for the Hong Kong economy, particularly from the perspective of final demand. The Linked Exchange Rate system (LERS) also reinforces the transmission of economic shocks from the US to Hong Kong. We first provide some stylised facts on Hong Kong's trade and financial flows from a supply and demand perspective. We then analyse formally how Hong Kong's economic cycle and trend are affected by Mainland China and the US, and how such influences evolve over time.

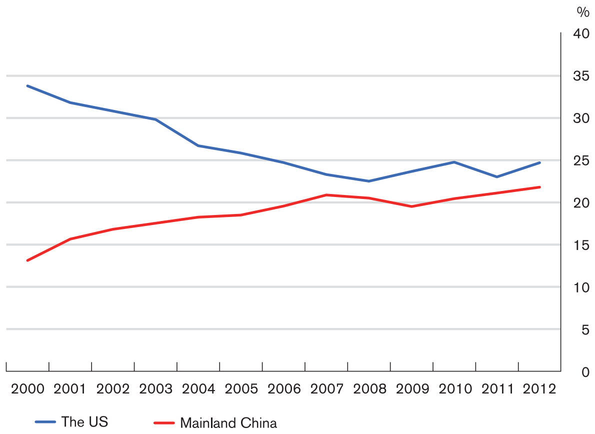
[18] This box is adapted from "Hong Kong's growth synchronisation with China and the U.S.: a trend and cycle analysis" by D. He, W. Liao and T. Wu (2014), Hong Kong Institute for Monetary Research Working Paper No. 15/2014.

Some stylised facts on Hong Kong's economic integration with the Mainland and US

In principle, the cyclical and trend components of Hong Kong's output growth may be driven by different external forces. From a supply side perspective, Hong Kong has been expanding its service-based economy to capture the opportunities arising from the rise of Mainland China in the past two decades. In particular, Hong Kong's financial sector has become more productive in expanding the supply of financial products, including initial public offering (IPO), as well as offshore renminbi bond issuance in recent years as Hong Kong has evolved into a major offshore renminbi centre.

From a demand perspective, Hong Kong has primarily served as a gateway for trade and financial flows between the Mainland and the rest of the world, targeting at demand from overseas. In this regard, Hong Kong's cyclical conditions are very much tied to fluctuations in the flows of goods, services and capital between the Mainland and its major trading partners. To better illustrate Hong Kong's merchandise exports from a final demand perspective, we construct estimates of value-added merchandise exports by excluding import content and applying adjustments to processing trade data. Based on our own estimates, the share of merchandise exports to the Mainland in value-added terms was about 22% in 2012 (Chart B3.1). The US share, though having declined from a decade ago, was still around 25% in 2012. The US share would be even larger if we take into account its influence on other export markets of Hong Kong, such as the euro area. These observations suggest that US final demand could remain the dominating factor behind the fluctuations in the external demand for goods in Hong Kong.

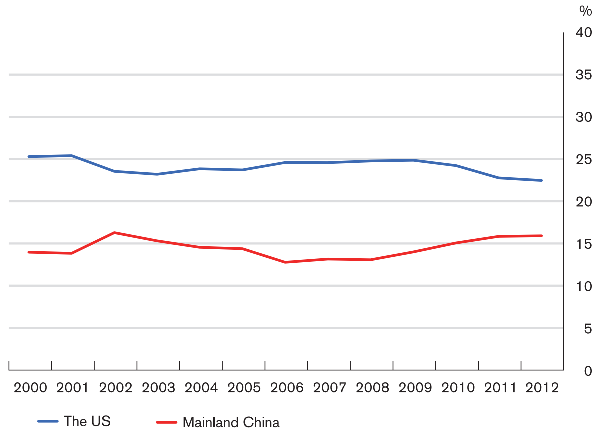
Chart B3.1
Shares in Hong Kong merchandise exports (value-added)



Sources: CEIC, C&SD and HKMA staff estimates.

While Mainland tourist spending plays a dominant role in Hong Kong's tourism services export, the final demand for Hong Kong's exports of non-tourism services from the US remained larger than that from Mainland China (Chart B3.2).[19] In particular, US demand accounted for 33% of Hong Kong's financial services export in 2012, whereas the Mainland's share was 4%. This reflects demand from overseas investors who are trying to gain exposure to Mainland-related financial assets. In other words, overseas investors have been driving the demand for Mainland-related financial products supplied through Hong Kong's platform, in contrast to the general conception that the demand for financial services in Hong Kong is largely originated from the Mainland.

Chart B3.2
Shares in Hong Kong services exports excluding tourism (value-added)



Sources: C&SD and HKMA staff estimates.

Co-movement of business cycles and trends

To formally study the relative importance of Mainland China and the US in driving Hong Kong's economic cycle and trend, we decompose real GDP into a cyclical (transitory income) and trend (permanent income) component for Hong Kong, Mainland China and the US, and make use of hierarchical, structural vector autoregression (SVAR) models to analyse how shocks originating from Mainland China and the US affect the cyclical output and trend of the Hong Kong economy.[20, 21] Specifically, the SVAR model for studying business cycle co-movement includes cyclical output and inflation rates of the three economies, as well as the 3-month US Treasury bill rates. The variables follow a specific hierarchy so that shocks from Mainland China and the US can affect each other and Hong Kong, while shocks from Hong Kong can only affect itself since Hong Kong is a small open economy. We cover the two sample periods from 1985Q1 to 1997Q2 and from 2003Q4 to 2013Q2. We skipped the period between Asian financial crisis and the SARS outbreak when the Hong Kong economy went through a prolonged period of deflation.

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19 Stripping out import content, Mainland China accounted for 66% of Hong Kong's total tourism services exports in 2012, up from 28% in 2000, whereas the US share dropped to 4% from 11% over the same period.

20 We decompose transitory and permanent income based on the permanent income hypothesis following Aguiar, M. and G. Gopinath (2007), "Emerging market business cycles: the cycle is the trend", Journal of Political Economy, 115, 69-102. Specifically, since consumption only responds to permanent income shocks according to the hypothesis, the common trend between real GDP and consumption can be used to represent the permanent income. The hypothesis has been tested for the cases of Hong Kong and Mainland China, in which the existence of a common stochastic trend between consumption and real GDP data has been confirmed by co-integration tests.

21 We estimate each economy's permanent income based on a simple state-space model using consumption and real GDP data. The difference between real GDP and our estimate of permanent income is the transitory income.

Our results show that shocks originating from Hong Kong contributed the most to its own cyclical output and inflation fluctuations over a short-term horizon during both sample periods. However, US shocks exerted a much larger impact on Hong Kong's business cycle fluctuations in the longer term. For instance, when we look at a 20-quarter horizon, US shocks could explain about 57% of Hong Kong's cyclical fluctuations in the earlier period, and about 48% in the latter period, both of which were larger than the contribution from shocks originating from Mainland China and Hong Kong (Table B3.A). On the other hand, both Mainland and the US shocks had strong long-run influence on Hong Kong's inflation in the latter sample period, while the US influence had dominated in the earlier sample period.

Table B3.A
Contribution to cyclical output fluctuations in Hong Kong

1985Q1-1997Q2	Cyclical output			Inflation		
Horizon (in quarters)	US	Mainland China	Hong Kong	US	Mainland China	Hong Kong
1	13.562	16.346	70.092	33.387	1.737	64.877
4	31.646	17.629	50.725	49.719	7.331	42.950
10	52.055	13.300	34.645	58.304	7.590	34.106
20	57.084	13.680	29.237	59.266	7.795	32.938
2003Q4-2013Q2						
1	16.500	8.574	74.926	36.998	9.709	53.293
4	37.856	18.007	44.137	34.778	36.291	28.931
10	52.416	18.104	29.481	36.855	35.910	27.234
20	47.622	28.657	23.721	37.012	35.992	26.996

Source: HKMA staff estimates.

To study trend co-movement across borders, we estimate a SVAR model which consists of the trend output of Hong Kong, Mainland China and the US, and impose an assumption in which shocks from Hong Kong cannot affect the other two economies due to its limited size. Our results show that the Mainland has become more important than the US in explaining Hong Kong's trend fluctuations. The long-run influence of US permanent shocks on Hong Kong declined from about 36% between 1985Q1 and 1997Q2 to 30% during the 2003Q4-2013Q2 period. On the other hand, the long-run impact of Mainland's shocks on Hong Kong's trend growth increased significantly from about 15% to about 65% in the latter sample period (Table B3.B).

Table B3.B
Contribution to trend fluctuations in Hong Kong

1985Q1-1997Q2	US	Mainland China	Hong Kong
1	2.766	7.558	89.676
4	11.757	14.539	73.704
10	26.385	19.767	53.848
20	35.779	14.702	49.520
2003Q4-2013Q2			
1	4.935	4.735	90.330
4	15.650	42.683	41.667
10	31.818	58.990	9.192
20	29.808	65.270	4.922

Source: HKMA staff estimates.

Conclusion

Our findings suggest that at the business cycle frequency, Hong Kong's growth remains more synchronised with the US economy than with the Mainland economy. Since it is the similarity of cyclical shocks that matters most for the choice of exchange rate regime, the LERS, which links the Hong Kong dollar to the US dollar, continues to be appropriate for the foreseeable future. On the other hand, permanent shocks from Mainland China now have a larger impact than the US on Hong Kong's trend growth. Indeed, Hong Kong has benefited from the rise of Mainland China as a major trading nation and ongoing economic integration by transforming itself from a manufacturing economy to a service economy characterised by higher productivity.

4. Monetary and financial conditions

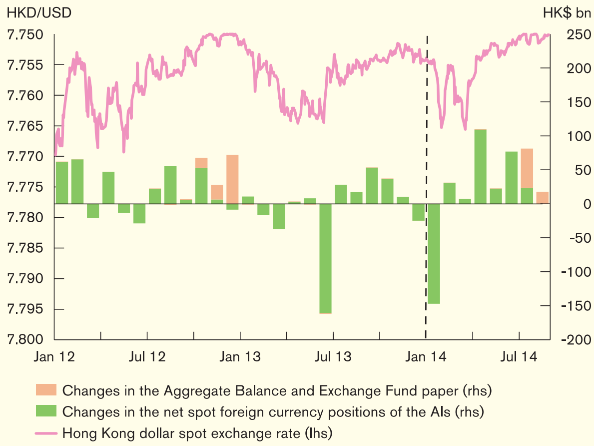
Exchange rate, interest rates and monetary developments

Despite some softening in the first quarter, the Hong Kong dollar faced more buying pressures thereafter, which culminated in the triggering of the strong-side Convertibility Undertaking in July and August. At the same time, loan growth pressure persisted with the continuation of the low interest rate environment.

4.1 Exchange rate and capital flows

The Hong Kong dollar spot exchange rate weakened against the US dollar in the first quarter and then strengthened progressively towards 7.75 in the second quarter and the following months, with the strong-side Convertibility Undertaking (CU) being triggered repeatedly in July and August. Early in the year, there was some selling pressure on the Hong Kong dollar, with the spot exchange rate dipping to a 20-month low of 7.7653 on 30 January and a low of 7.7656 on 18 March. This largely reflected market concerns about tapering of the Fed's asset purchase program, as well as weaker growth and financial prospects for Mainland China and selected emerging market economies. Hong Kong dollar outflow pressure from the non-bank private sector was also evident in the sharp decrease in the net spot foreign currency positions of the Authorized Institutions (AIs) in January (Chart 4.1). Accompanied by equity portfolio outflows, local stock market activities also weakened at that time.

Chart 4.1
Fund flow indicators and exchange rate

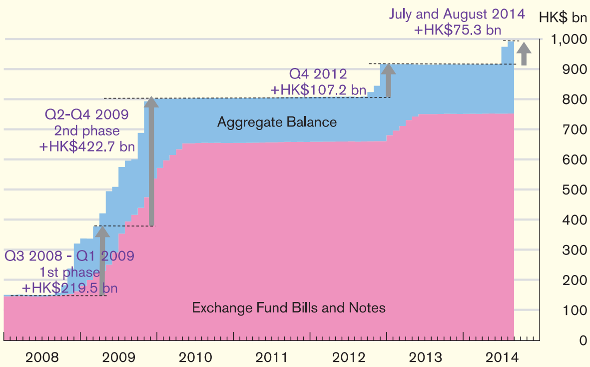


Note: For fund flow indicators, a positive value indicates inflows. The data for changes in the net spot foreign currency positions in July are tentative estimates only, and there are no estimates for August.

Sources: HKMA and staff estimates.

The direction of net fund flows has changed since late March. There were strong net Hong Kong dollar inflows into the non-bank private sector in the second quarter, particularly in April along with a revival in stock market activities and investors' risk appetite. The Hong Kong dollar spot exchange rate also strengthened gradually to around 7.75 near the end of June. Banks then triggered the strong-side CU between 1 July and 5 August, the first time since late 2012. This prompted the HKMA to passively purchase a total of US$9.7 billion from banks in exchange for HK$75.3 billion, which led to a corresponding increase in the Aggregate Balance in accordance with the currency board principles. In earlier episodes, there were net Hong Kong dollar inflows in 2008, 2009 and 2012, involving a total of around HK$750 billion due to market operations by the HKMA (Chart 4.2).

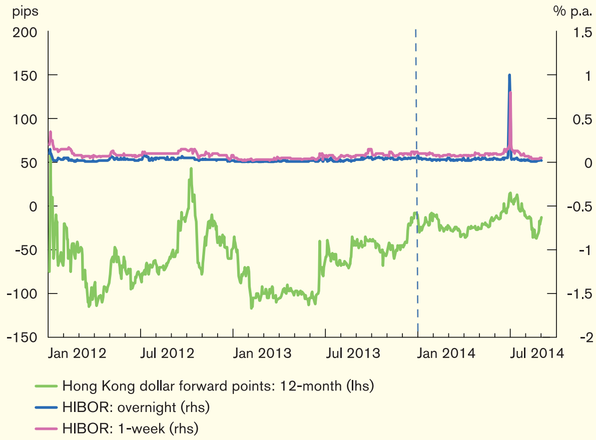
Chart 4.2
Fund flow indicators



Source: HKMA.

The increased demand for the Hong Kong dollar in the first half of July reflected vibrant equity fund-raising activities, commercial demands arising from dividend distributions and cross-border merger and acquisition transactions, and stronger needs for Hong Kong dollar liquidity around the half-year end. The last factor was also evident in the spikes of the overnight and one-week interbank interest rates in late June and early July (Chart 4.3). Some interbank players might also have tapped Hong Kong dollar funding through currency swaps with US dollars, leading to a narrowing of the Hong Kong dollar forward discounts and even an incidence of forward premia. During late July and early August, while the Hong Kong dollar inflow pressures continued to be driven mainly by the dividend-distribution-related demand, there were reports of modest amount of equity-related flows.

Chart 4.3
Indicators of demand for Hong Kong dollar liquidity



Source: HKMA.

Portfolio investment flows experienced some fluctuations in the first half of the year and recent months. According to the Balance of Payments (BoP) statistics[22], there were equity portfolio outflows in the first quarter, with Hong Kong residents purchasing more foreign equities and non-residents reducing their holdings of Hong Kong stocks (Table 4.A). But a recent survey of global mutual funds showed signs of moderate equity investment inflows in the second quarter (Chart 4.4). This pattern of reversal in equity flows was in part driven by a return of investors' risk appetite, characterised by the low volatility in financial markets worldwide. As regards bond portfolio investments, the BoP statistics revealed that domestic investors (mainly banks) reduced their holdings of non-resident debt securities in the first quarter while foreign investors bought more Hong Kong bonds amid buoyant domestic bond issuance activities (Table 4.A). In the second quarter, fund managers also reportedly made net purchase of Hong Kong bonds (Chart 4.4).

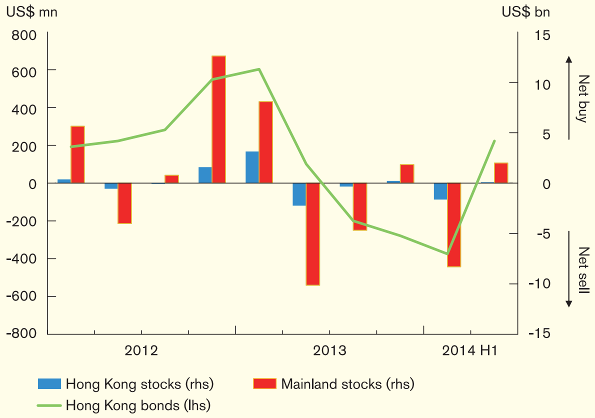
[22] At the time of writing, the second-quarter BoP statistics are not yet available.

Table 4.A
Cross-border portfolio investment flows

(HK$ bn)	2011	2012	2013	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1
By Hong Kong residents								
Equity and investment fund shares	-237.3	-159.6	-192.8	24.8	-151.4	35.4	-101.5	-75.7
Debt securities	81.5	-151.3	-278.9	-39.8	117.5	-214.7	-141.9	63.3
By non-residents								
Equity and investment fund shares	47.1	224.5	92.4	46.2	-27.9	45.0	29.1	-8.5
Debt securities	97.7	54.9	45.7	2.6	30.2	11.0	1.9	9.4

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

Chart 4.4
Market survey of equity and bond-related flows



Source: EPFR Global.

Banking-related capital flows maintained their dynamics, as local AIs continued to extend sizeable loans to external borrowers while some foreign bank branches in Hong Kong were drawing liquidity from parent or overseas banks. This largely explained why there were substantial loans and deposits outflows by residents (mainly local AIs), in conjunction with deposits inflows by non-residents in the first quarter (Table 4.B).

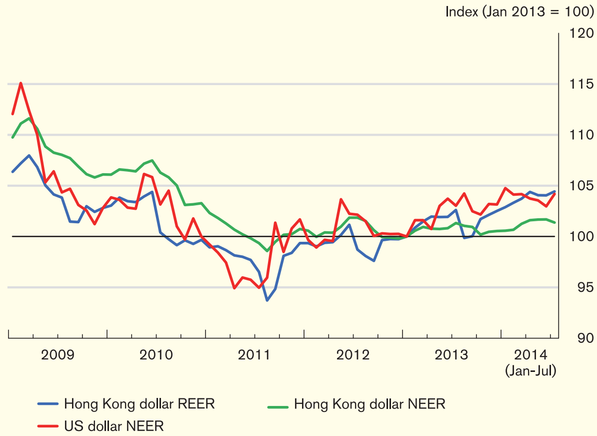
Table 4.B
Cross-border flows relating to deposits and loans

(HK$ bn)	2011	2012	2013	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1
By Hong Kong residents								
Currency and deposits	-348.1	209.0	-156.0	321.2	53.6	-250.4	-280.3	-183.8
Loans and trade credit	-414.9	-339.3	-393.3	-187.2	-81.0	-72.7	-52.3	-133.2
By non-residents								
Currency and deposits	544.7	225.7	759.6	-138.1	135.8	309.5	452.4	452.8
Loans and trade credit	194.6	150.2	181.9	57.8	66.7	37.1	20.2	4.6

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

From a broader perspective, the trade-weighted Hong Kong dollar nominal effective exchange rate index (NEER), which measures the relative strength of the Hong Kong dollar against a basket of trading partner currencies, rose slightly in the first half of the year (Chart 4.5). This was because the Hong Kong dollar appreciated against the renminbi, which more than offset the negative impact of a slightly weaker US dollar. The Hong Kong dollar real effective exchange rate index (REER) showed stronger increases amid positive inflation differentials between Hong Kong and the weighted average of its trading partners. The Executive Board of the IMF recently concluded the Article IV consultation with Hong Kong, agreeing that Hong Kong's external position is consistent with medium-term fundamentals and desirable policies. The Board also agreed that the Linked Exchange Rate system has worked well to keep the external position broadly in balance and it remains the best arrangement for Hong Kong.

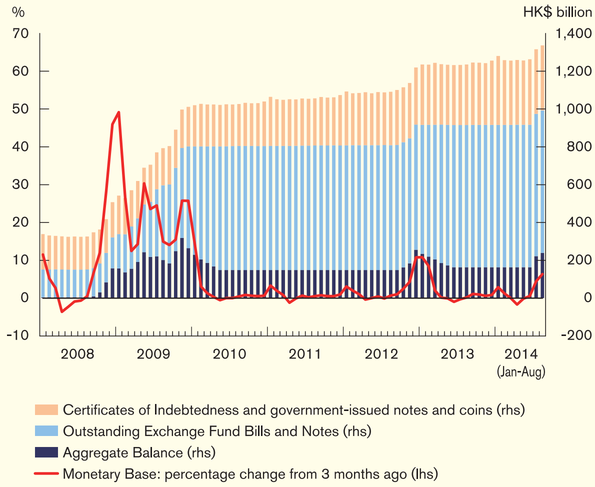
Chart 4.5
Nominal and real effective exchange rates



Note: Real effective exchange rate index is seasonally adjusted.
Sources: C&SD and HKMA staff estimates.

While the Hong Kong dollar exchange rate may remain on the strong side against the US dollar in the near-term, the direction and size of fund flows are relatively uncertain further down the road. On the upside, central banks in Japan and the euro area may lengthen or reinforce their monetary easing, which would be supportive of global risk appetite and inflows of funds into Hong Kong. It is also expected that the forthcoming launch of the Shanghai-Hong Kong Stock Connect pilot scheme will encourage more two-way portfolio flows between Mainland China and Hong Kong. On the downside, the uncertain time and pace of US monetary policy normalisation, coupled with ongoing market concerns over Mainland China's macro-financial outlook and heightened geopolitical tensions, could increase the volatility in fund flows and the risk of fund flow reversals.

Chart 4.6
Monetary Base components



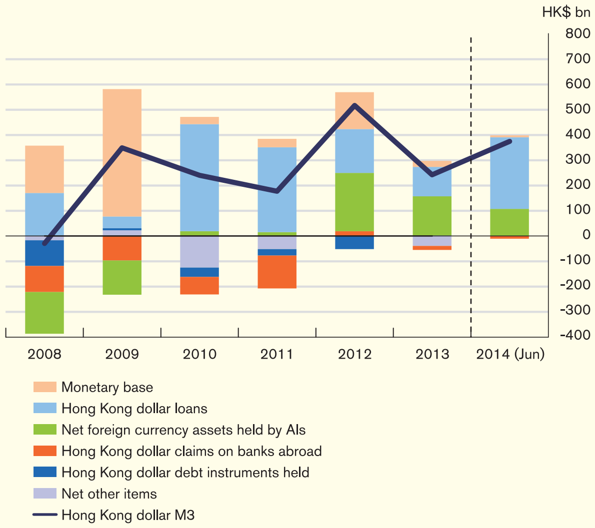
Source: HKMA.

4.2 Money and credit

The monetary and credit conditions remained accommodative in Hong Kong in the first half of 2014 and recent months, with ample liquidity staying in the banking system and interest rates hovering at low levels. While largely stable in the first half, the Hong Kong dollar Monetary Base climbed by a cumulative 5.8% in July and August following the triggering of the strong-side CU (Chart 4.6). The HKMA purchased a total of US$9.7 billion in response to banks' offer during these two months, creating HK$75.3 billion and leading to a corresponding increase in the Aggregate Balance to HK$239.2 billion at the end of August. On the other hand, there was little change in other Monetary Base components such as Certificates of Indebtedness, notes and coins in circulation, and outstanding Exchange Fund paper.

Monetary aggregates also expanded at a robust pace. Driven by a sizeable increase in time deposits and negotiable certificates of deposit held by the non-bank sector, the Hong Kong dollar broad money supply (HK$M3) rose by an annualised 14.4% in the first half, compared with 5.7% in 2013. Analysis by the asset-side counterparts under the framework of monetary survey showed that strong growth in bank loans and a rise in AIs' net foreign currency assets, the latter reflecting inflow pressure into the non-bank private sector, were expansionary on broad money supply in the first half (Chart 4.7). The triggering of the strong-side CU and the resultant increase in the Monetary Base also added to money expansion in recent months.

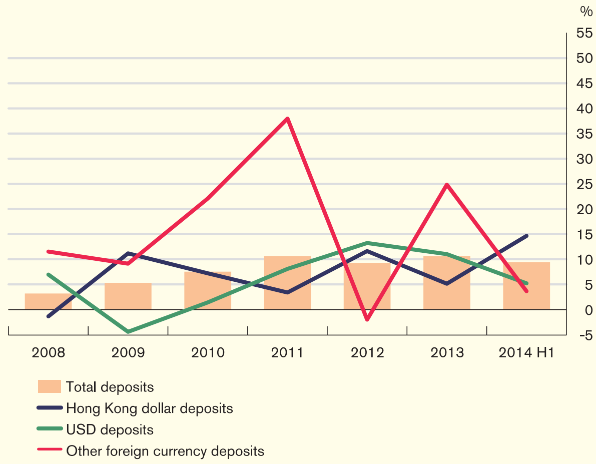
Chart 4.7
Changes in the HK$M3 and the asset-side counterparts



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.

Chart 4.8
Deposit growth



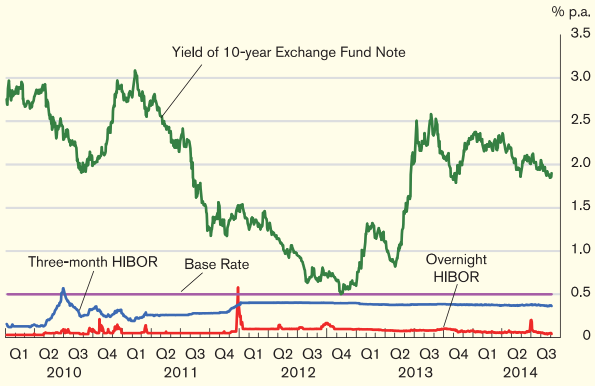
Note: Growth rates in 2014 H1 are annualised.

Source: HKMA.

As the main component of HK$M3, Hong Kong dollar deposits posted an annualised increase of 14.7% in the first half, much faster than the full-year growth of 5.1% in 2013 (Chart 4.8). On the other hand, growth in foreign currency deposits slowed to an annualised 4.6% in the first half from 16.2% in 2013. US dollar deposits briefly contracted in the first quarter but rose again in the second quarter. Renminbi deposits expanded at a robust pace early in 2014 and then levelled off in the second quarter. Their recent developments are discussed in further details later in this section. Overall, total deposits with the AIs grew by an annualised rate of 9.4% in the first half, slightly slower than the 10.7% growth in 2013.

Largely reflecting the abundant liquidity conditions, the wholesale funding costs of the banking sector remained at low levels. In the first half, the overnight and three-month Hong Kong dollar interbank interest rate (HIBOR) fixings stayed low at 0.06% and 0.37% respectively, only with occasional fluctuations due to banks' funding demand for quarter-end liquidity and IPO activities (Chart 4.9). The Hong Kong dollar yield curve also flattened, with the average yield of the 10-year Exchange Fund Notes declining by about 20 basis points in six months to 2.05% in June. This broadly followed the similar movement of the US dollar yield curve. On the other hand, given a moderate increase in the deposit rates, the composite interest rate, which reflects the average funding cost of retail banks in Hong Kong, picked up to 0.47% in June from 0.39% last December. This contrasted with a moderate decline in the average lending rate for new mortgage loans to around 2% recently.

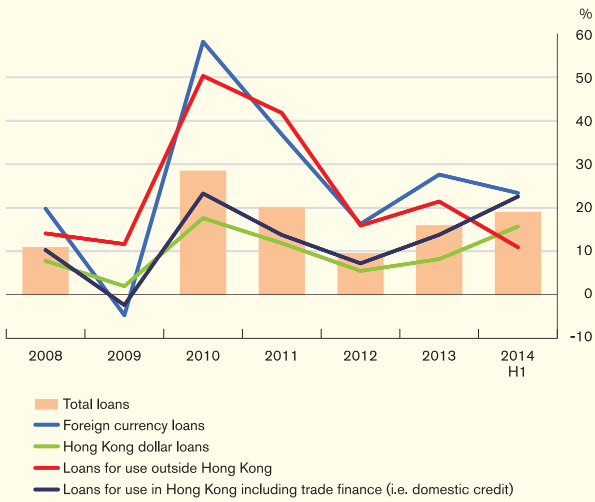
Chart 4.9
Hong Kong dollar interbank interest rates and yield of 10-year Exchange Fund Note



Sources: CEIC and HKMA.

With the continuation of the accommodative monetary conditions and the low interest rate environment, total bank loans grew faster at an annualised 19.1% in the first half of 2014, compared with a 16.0% increase in 2013 (Chart 4.10). Reflecting strong cross-border credit demand and increased Mainland-related exposure, foreign currency loans and loans for use outside Hong Kong continued to rise at a fast pace of 23.4% and 10.9% (annualised) respectively, though moderating slightly compared with last year. Meanwhile, growth in Hong Kong dollar loans and loans for use in Hong Kong (including trade finance) has accelerated to 15.7% and 22.6% (annualised) respectively.

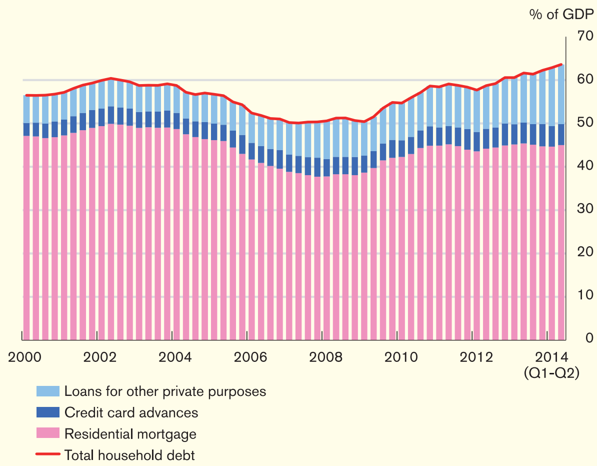
Chart 4.10
Loan growth



Note: Growth rates in 2014 H1 are annualised.
Source: HKMA.

Within domestic credit, trade finance saw a notable increase of 29.5% (annualised) in the first half, while lending to several sectors such as electricity and gas, information technology, financial concerns and stockbrokers picked up strongly. Household debt also grew at a fast pace of 9.3% (annualised), compared with 7.2% in 2013. This was largely driven by personal loans (which comprise credit card advances and loans for other private purposes), although mortgage loans also posted slightly faster growth. As a result, the household debt-to-GDP ratio edged higher to 63.6% in the second quarter (Chart 4.11).

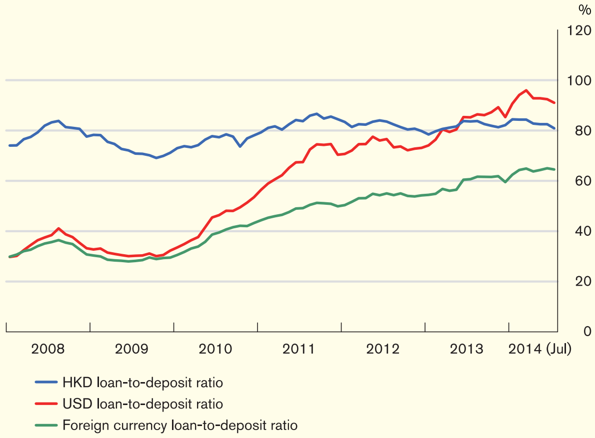
Chart 4.11
Household debt-to-GDP ratio and its components



Note: Only borrowings from AIs are covered.
Source: HKMA.

Reflecting the respective movements in deposits and loans, the loan-to-deposit (LTD) ratio for Hong Kong dollar increased slightly to 82.5% at the end of June 2014 from 82.1% at the end of 2013 (Chart 4.12). During the same period, the LTD ratio for foreign currency picked up to 65.0% from 59.5%, mainly due to a rise in the US dollar ratio. The LTD ratio for foreign currency (particularly, the US dollar) started levelling off in recent months. To prevent further build-up of funding vulnerability, the HKMA initiated an earlier review of the Stable Funding Requirement (SFR) in mid-March, which assesses the SFR based on the first quarter bank position instead of the second quarter. This measure mainly affects those banks with rapid loan growth but a relatively narrow local customer deposit base.

Chart 4.12
Loan-to-deposit ratios



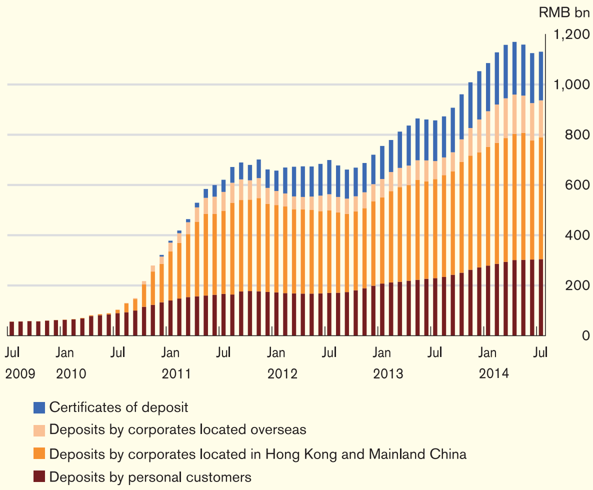
Source: HKMA.

With the low interest rate environment likely to stay for a time, credit growth pressure could persist in the near term. While cross-border dollar credit demand is expected to remain robust, domestic credit also shows signs of resurgence. Leverages of banks, corporations and households could therefore accumulate further, making them more vulnerable to adverse economic developments.

Offshore renminbi banking business

Offshore renminbi business in Hong Kong maintained solid growth. The liquidity pool expanded further in Hong Kong, with total renminbi deposits and certificates of deposit (CDs) amounting to RMB1,124.9 billion at the end of June, up 6.8% (not annualised) in the first half of 2014 following a 22.3% increase in the second half of 2013 (Chart 4.13 and Table 4.C). Growth in deposits and CDs was mainly recorded in the first quarter, followed by some softening in the second quarter. Corporate deposits declined in May and June, offsetting a steady increase in personal deposits. Moreover, CD issuance moderated in the second quarter amid active renminbi bond issuance, resulting in a decline in outstanding CDs. Renminbi trade settlement handled by banks in Hong Kong continued to increase rapidly, amounting to RMB2,926.1 billion in the first half of 2014, up 36.4% (not annualised) from RMB2,145.6 billion in the second half of 2013 (Chart 4.14 and Table 4.C). Both payments between the Mainland and Hong Kong and payments involving places outside Hong Kong grew by more than 30%. Meanwhile, the outstanding amount of renminbi bank lending grew at a faster pace of 20.6% (not annualised) in the first half, following a tepid 4.6% in the preceding half-year period.

Chart 4.13
Renminbi deposits and CDs in Hong Kong



Source: HKMA.

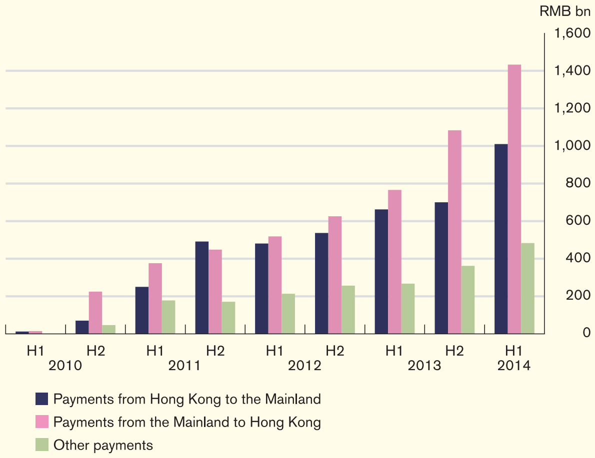
Table 4.C
Offshore renminbi banking statistics

	Dec 2013	Jun 2014
Renminbi deposits & certificates of deposit (CDs) (RMB bn)	1,053.0	1,124.9
Renminibi deposits (RMB bn)	860.5	925.9
Non-Hong Kong residents' renminbi deposits (RMB bn)	19.0	29.2
Share of renminbi deposits in total deposits (%)	12.0	12.0
Renminbi certificates of deposit (CDs) (RMB bn)	192.5	199.0
Renminbi outstanding loans (RMB bn)	115.6	139.4
Number of participating banks in HK's renminbi clearing platform	216	222
Amount due to overseas banks (RMB bn)	166.0	160.2
Amount due from overseas banks (RMB bn)	164.5	230.6

	Jan - Jun 2014
Renminbi trade settlement in Hong Kong (RMB bn)	2,926.1
Of which:	
Inward remittances to Hong Kong (RMB bn)	1,432.7
Outward remittances to Mainland China (RMB bn)	1,010.2
Ratio of inward to outward remittances to Mainland China	1.4
Turnover in Hong Kong's RMB RTGS system (Daily average during the period; RMB bn)	691.8

Source: HKMA.

Chart 4.14
Flows of renminbi trade settlement payments



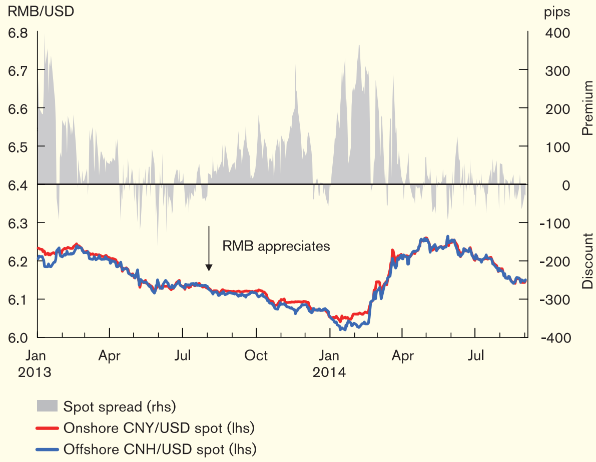
Source: HKMA.

Hong Kong's position as a global hub for renminbi clearing and settlement has further strengthened, with the average daily turnover of renminbi real time gross settlement (RTGS) system climbing to RMB691.8 billion in the first half of 2014 compared with RMB395.4 billion in the whole of 2013. This reflected the pivotal role of Hong Kong in handling the rapid expanding renminbi payments in the offshore market globally.

In all likelihood, the prospects of offshore renminbi business in Hong Kong will further prosper with the launch of the Shanghai-Hong Kong Stock Connect pilot scheme. By enabling investors to have mutual access of the Shanghai and Hong Kong stock markets, this scheme is expected to facilitate a wider cross-border usage and circulation of renminbi, further broadening the scope of offshore renminbi business in Hong Kong.

The Hong Kong offshore renminbi exchange rate (CNH) continued to broadly follow the onshore rate (CNY), both depreciating by 2.4% in the first half (Chart 4.15). The CNH, however, displayed slightly greater volatility in daily movements than the CNY. With the CNH trading at a premium, the average spread vis-à-vis CNY shrank from +163 pips in the first quarter to +3 pips in the second quarter. While relatively stable early in the year, liquidity in the CNH interbank market has tightened slightly since May, with the three-month CNH HIBOR fixings rising by about 60 basis points to 3% at the end of June. This was largely due to an increase in funding demand for renminbi bond investments and stronger liquidity needs around the half-year end.

Chart 4.15
Onshore and offshore renminbi exchange rates



Source: Bloomberg.

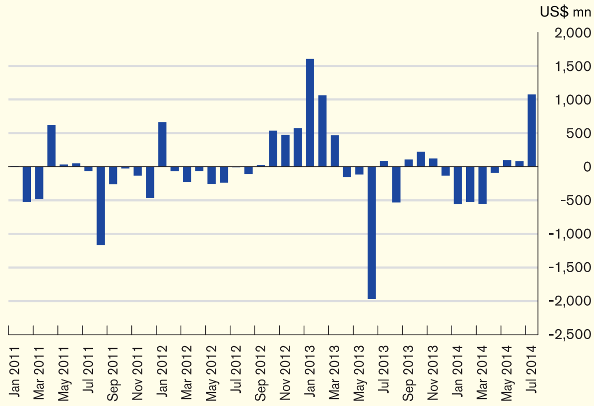
Asset markets

Hong Kong equity prices rallied in the past six months on the back of the continued dovish tone from the US Fed on its monetary policy and optimism over the launch of the Shanghai-Hong Kong Stock Connect. However, the market outlook will be uncertain in the medium-term with the impending monetary normalisation. The Hong Kong dollar debt market contracted slightly, while the offshore renminbi debt market continued to expand rapidly with non-CD debt issuance surpassing the total amount recorded in the entire 2013. The residential property market has turned more active in the past few months, with transaction volume picking up from recent lows and housing prices advancing again. Property valuation remains highly stretched and could be sensitive to interest rate hikes.

4.3 Equity market

After a sell-off in the first quarter of 2014, local equities staged a rebound over the past few months amid improved external market conditions and optimism over a pilot scheme to link the stock markets in Shanghai and Hong Kong. While the US Fed continued to taper its asset purchases as planned, its chair reiterated her pledge to keep interest rates low in the foreseeable future. As a result, international investors regained their appetite for risky assets, which benefited local equities, especially given their low valuations following a protracted period of underperformance. This was reflected in a reversal in equity fund flows (Chart 4.16) and the considerable increase in the Aggregate Balance over the review period. Meanwhile, across the border, the Central Government unveiled a series of "mini-stimulus" measures in April to support economic growth. This, coupled with the announcement of the Shanghai-Hong Kong Stock Connect, helped improve market sentiment over local equities. Although global market conditions deteriorated somewhat in mid-July upon escalating geopolitical tensions in Eastern Ukraine and Gaza, local equities continued to extend their gains amid signs of a steady economic growth in China, with the Hang Seng Index (HSI) breaking the 25,000 level in August.

Chart 4.16
Equity fund flows into Hong Kong

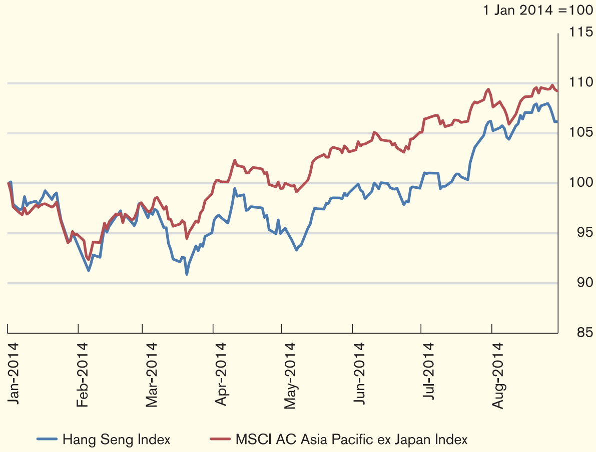


Source: EPFR Global.

Overall, the HSI and the Hang Seng China Enterprises Index (HSCEI), also known as the H-share index, increased by 8.3% and 10.8% respectively from March to August 2014. Notwithstanding the strong rebound in July, the

Hong Kong equity market still underperformed its counterparts in the Asia-Pacific region in the first eight months of 2014 (Chart 4.17).

Chart 4.17
Performance of stock markets in Hong Kong and the Asia Pacific region

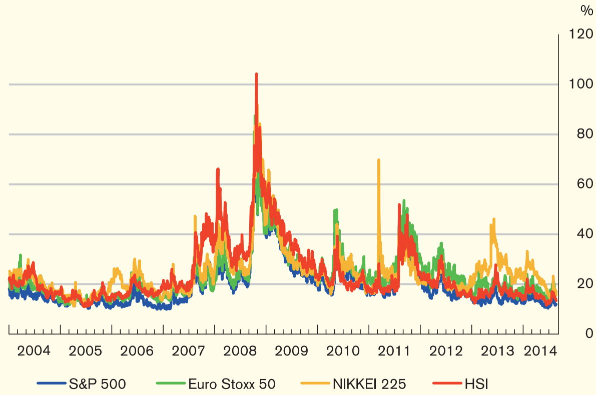


Source: Bloomberg.

Looking forward, the local equity market will continue to be dictated by external market conditions. In the near-term, market sentiment may remain buoyant ahead of the launch of the Shanghai-Hong Kong Stock Connect. Further out, however, there is unlikely to be smooth sailing through the remainder of the year. As financial market volatility has now returned to pre-subprime-crisis levels globally – a phenomenon that may be attributed to optimism stemming from expectations of low interest rates to continue – there are increasing concerns that the low-volatility environment may encourage excessive risk-taking behaviour, thereby threatening financial stability (Chart 4.18). Indeed, some studies suggest that financial market volatility goes hand-in-hand with interest rates, meaning that a rebound in interest rates could prompt a major risk re-appraisal.[23]

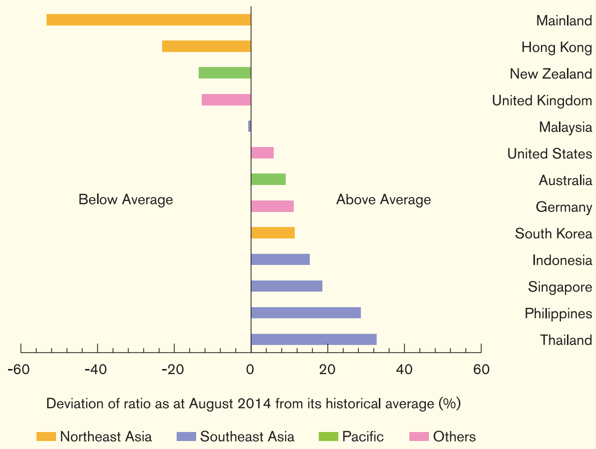
Therefore, while local equities are arguably less susceptible to a considerable downward adjustment given their current relatively low valuations (Chart 4.19), the medium-term outlook for the market is highly uncertain, especially after the Fed ends its asset purchases.

Chart 4.18
Volatility indices of major equity markets



Source: Bloomberg.

Chart 4.19
Price-earnings ratios of Asian Pacific (excluding Japan) and other major markets



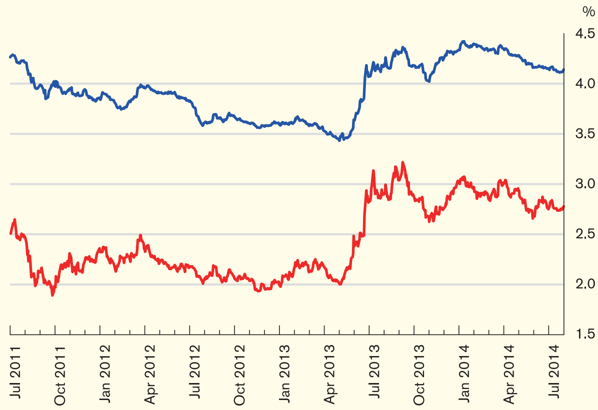
Sources: Bloomberg, CEIC and HKMA staff estimates.

[23] See, for instance, Bekaert, Geert, Marie Hoerova, and Marco Lo Duca. (2010), "Risk, Uncertainty and Monetary Policy," working paper, European Central Bank.

4.4 Debt market

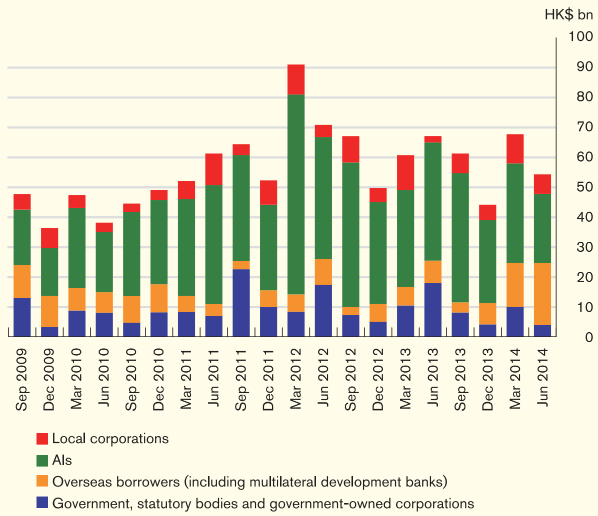
The Hong Kong dollar debt market contracted slightly despite increased issuance activities amid improved financial market conditions. At the beginning of this year, the selloff in Asian bond markets continued as the Fed started to taper its asset purchases. However, investor sentiment subsequently turned positive as regional economies showed signs of improvement. This, coupled with the Fed's indication to keep interest rate low in the near-term, generally set a bullish tone for bonds (Chart 4.20). Against this backdrop, primary market activities by the private sector increased in the first half of 2014, with issuance rising by 7.3% year on year to HK$106.7 billion (Chart 4.21).[24, 25] In contrast, public sector debt issuance edged up by just 0.4% to HK$1,078.9 billion as the increase in Exchange Fund papers issuance barely offset the sizeable decline in new debts issued by the Government and statutory bodies/government-owned corporations.[26] Overall, total issuance in the first half of 2014 amounted to HK$1,186.9 billion, slightly up by 1.1% from the preceding year.

Chart 4.20
Average yields of Asian and Hong Kong local bonds



Source: Bloomberg.

Chart 4.21
New issuance of non-Exchange Fund Bills and Notes Hong Kong dollar debt



Source: HKMA.

Notwithstanding the increase in total issuance, the Hong Kong dollar debt market registered its first, though slight, year-on-year contraction in more than five years. As at end-June 2014, the outstanding amount of Hong Kong dollar debt securities stood at HK$1,396.7 billion, down marginally by 0.6% from a year earlier (Chart 4.22). Public sector outstanding debt rose by 1.2% year on year, while the private sector saw its outstanding debt fell by 3.0% despite the significant growth in its issuance. This appears

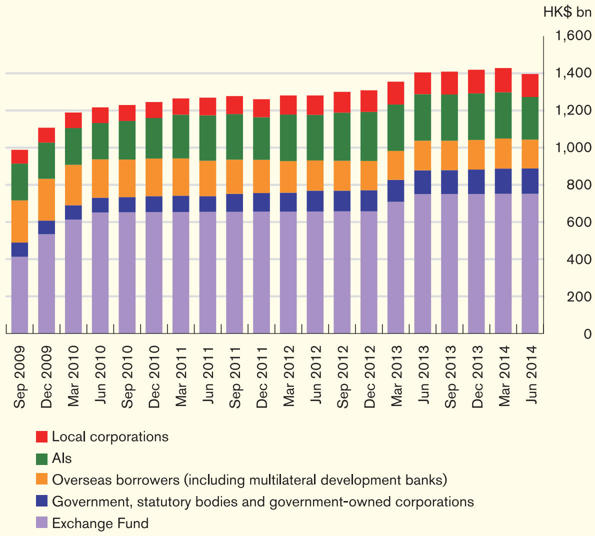
24 Private sector comprises AIs, local corporations and overseas borrowers and excludes multilateral development banks (MDBs).

25 In the first half of 2014, non-MDB overseas borrowers and local corporations issued 149.6% and 18.1% more debt than the preceding year to HK$34.0 billion and HK$16.3 billion respectively. New issuance by AIs, however, declined by 21.6% year on year to HK$56.5 billion.

26 Exchange Fund papers issuance in the first half of 2014 rose by 1.8% year on year to HK$1,064.9 billion, which was equivalent to 89.7% of total issuance over the same period. New debts issued by statutory bodies/government-owned corporations and the Government dropped considerably by 68.7% and 43.5% to HK$2.6 billion and HK$11.3 billion respectively.

to buck the trend of the rapid growth in corporate bonds in Hong Kong as well as other parts of Asia. Box 4 reviews the developments in the Asian corporate bond market in recent years and discusses the potential risks involved.

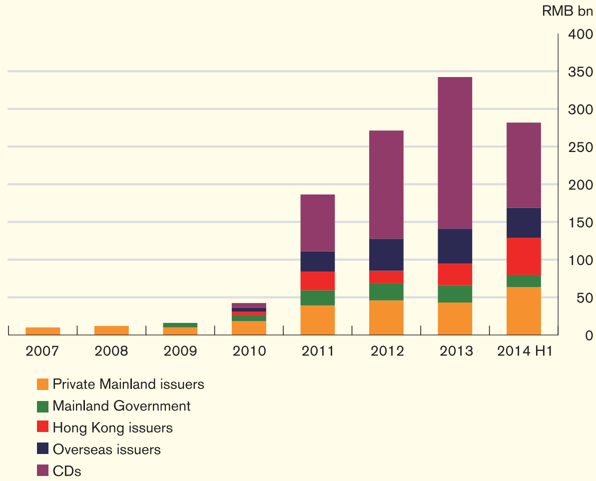
Chart 4.22
Outstanding Hong Kong dollar debt



Source: HKMA.

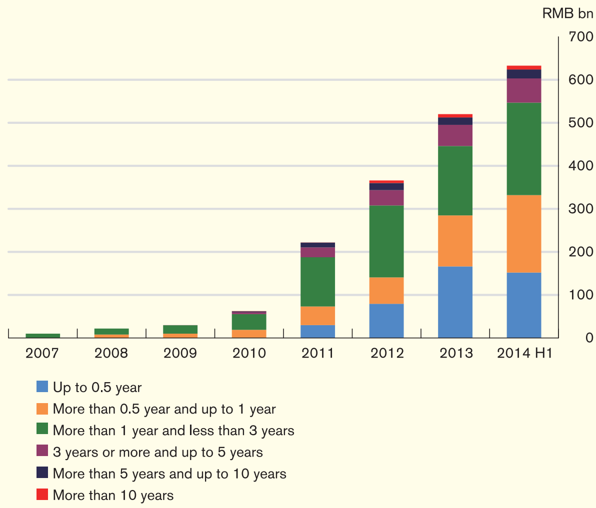
On the other hand, the offshore renminbi debt market in Hong Kong continued to expand rapidly in the first half of 2014. Despite earlier concerns over further depreciation of the renminbi and the credit quality of Mainland issuers following the first corporate bond default in the onshore market in March 2014, investor demand for offshore renminbi debt securities remained strong.[27] As a result, total issuance in the first half of 2014 jumped markedly by 38.3% year on year to RMB281.9 billion (Chart 4.23). In particular, non-CD debt issuance reached RMB168.8 billion, surpassing the full-year amount recorded in 2013. While private Mainland issuers accounted for 37.7% of the non-CD debt issuance in the first half of this year, Hong Kong issuers recorded a strong growth, issuing 251.2% or RMB35.3 billion more non-CD debt than in the same period of 2013. The surge was mainly attributed to increased issuance by banks operating in Hong Kong. With the significant growth in total issuance, the outstanding amount of offshore renminbi debt securities in Hong Kong grew by 31.3% year on year to a record level of RMB632.7 billion as at end-June 2014 (Chart 4.24).

Chart 4.23
New issuance of offshore renminbi debt securities



Sources: Newswires and HKMA staff estimates.

Chart 4.24
Outstanding amount of offshore renminbi debt securities by remaining tenor

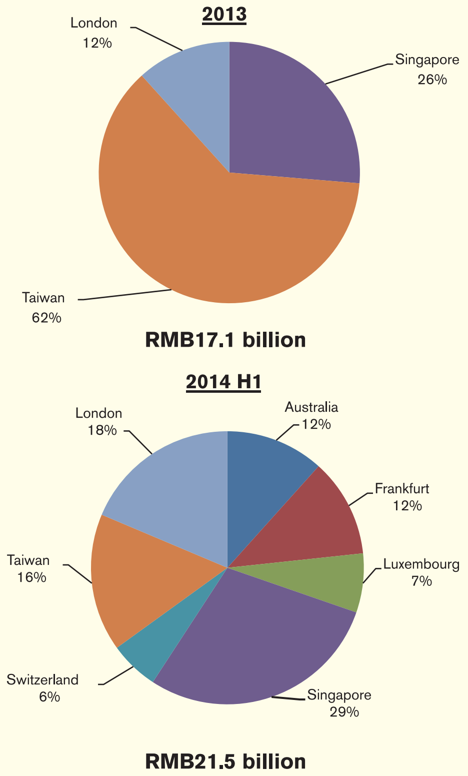


Sources: Newswires and HKMA staff estimates.

[27] Debt securities include both medium and long-term notes, bonds, CDs and commercial papers.

Meanwhile, outside Hong Kong, a total amount of RMB21.5 billion renminbi bonds was issued in the offshore renminbi market in the first half of 2014 (Chart 4.25). Apart from London, Singapore and Taiwan, a significant portion of these bonds were issued in other markets, including Australia, Frankfurt, Luxembourg and Switzerland. This reflects a deepening of the global offshore renminbi market.

Chart 4.25
New issuance of offshore renminbi bonds outside Hong Kong



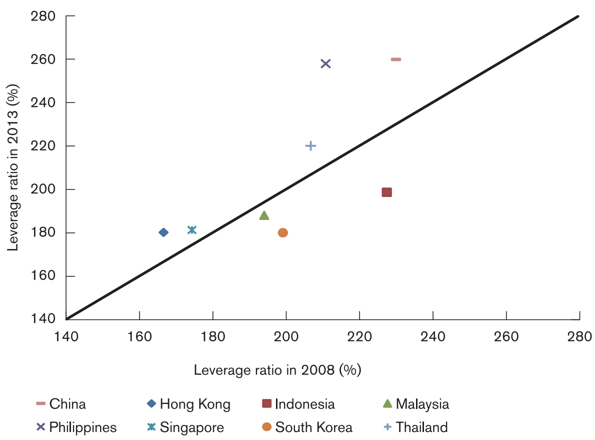
Sources: Newswires and HKMA staff estimates.

Looking ahead, the offshore renminbi debt securities market in Hong Kong is expected to continue to grow steadily in the second half of this year. On the supply side, strong refinancing need will continue to support issuance in the market. As at end-June 2014, the outstanding debt maturing by the end of this year amounted to RMB152.1 billion, which was equivalent to 24.0% of the total outstanding balance (Chart 4.24). On the demand side, investor appetite for offshore renminbi debt securities is likely to remain strong in view of the improved economic outlook for the Mainland and a relatively stable currency in the near-term.

Box 4
Recent developments of the corporate bond market in Asia

The corporate bond market has grown rapidly in Asia over the past few years. At the same time, however, there was an increase in the leverage of the corporate sector in the region. Balance sheet statistics of major listed non-financial companies show that the debt leverage ratio of the corporate sector in major Asian economies, except Indonesia, Malaysia and South Korea, has all trended higher over the past few years (Chart B4.1). This has aroused concerns over the vulnerability of the Asian economies to a sudden reversal in global liquidity conditions, especially after the bond market sell-off in May 2013 following the Fed's indication to taper its asset purchases. Against this backdrop, this box reviews the recent developments of the Asian corporate bond market and discusses the risks associated with the rapid expansion.

Chart B4.1
Leverage ratio of major listed non-financial companies in selected Asian economies



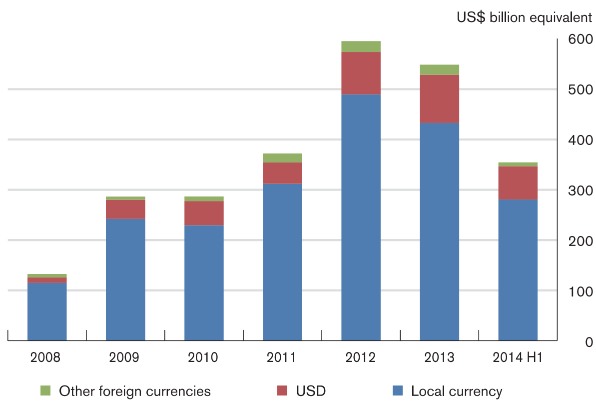
Notes:
1. Debt leverage is defined as the ratio of total assets to shareholders' funds. A higher value indicates higher leverage.
2. Major listed non-financial companies refer to the non-financial constituents of the economy's major stock market index, including the Shanghai Shenzhen CSI 300 Index, the Hang Seng Index, the Jakarta Stock Exchange Composite Index, the FTSE Bursa Malaysia KLCI Index, the Philippines Stock Exchange PSEi Index, the Straits Times Index, the Korea Stock Exchange Composite Index and the Stock Exchange of Thailand SET Index.

Source: HKMA staff estimates based on data from Bloomberg.

Recent developments

After the global financial crisis, the Asian corporate sector has increasingly relied on the bond market for funding needs. Based on the nationality of the deals (which covers both onshore and offshore issuance by the corporations), issuance of non-bank corporate bonds in major Asian economies reached US$594.8 billion in 2012, more than four times the amount recorded in 2008 (Chart B4.2).[28, 29] Although primary market activities have declined somewhat in 2013, the total amount of newly issued bonds still remained at a relatively high level of US$548.1 billion. Besides search-for-yield activities fuelled by the low interest rate environment, a number of other factors, including a tightening of bank credit amid the deleveraging in European banks and improved economic fundamentals in Asia, also contributed to the recent boom. With the surge in issuance, the outstanding balance of non-bank corporate bonds in major Asian economies rose sharply by 366.8% from 2008 to US$2,299.3 billion as at the end of June 2014 (Chart B4.3).

Chart B4.2
New issuance of local non-bank corporate bonds in selected Asian economies



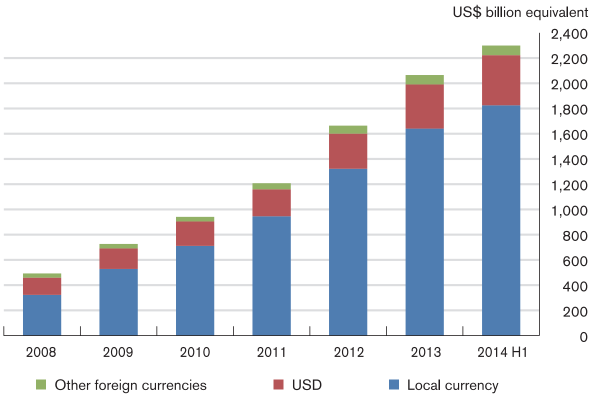
Note: The selected Asian economies include China, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, and Thailand.

Source: HKMA staff estimates based on data from Dealogic.

[28] We follow Dealogic's definition of deal nationality which is based on the nationality of the issuer parent if there is a credit support or guarantee for the issuing subsidiary. For deals without that support or guarantee, the nationality of the deal refers to that of the issuing subsidiary.

[29] Corporate bonds here include investment grade and high-yield debts, medium term notes and preferred securities. All the deals included have an original tenor greater than or equal to 18 months.

Chart B4.3
Outstanding amount of local non-bank corporate bonds in selected Asian economies



Note: The selected Asian economies include China, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, and Thailand.
Source: HKMA staff estimates based on data from Dealogic.

Despite the policy initiatives that have already been in place since the early 2000s for promoting the local currency bond market in Asia, market attention has centred around the sharp rise in foreign currency bond issuance by the Asian corporations over the past few years.[30, 31] In 2013, issuance of foreign currency bonds by non-bank corporations in major Asian economies reached US$116.0 billion, a marked 557.3% increase from 2008 (Chart B4.2). In particular, issuance of US dollar-denominated bonds jumped almost nine-fold over the same period to US$95.7 billion in 2013 as the corporate sector took advantage of the low interest rate environment due to quantitative easing by the Fed. Following the strong growth in issuance, the outstanding amount of foreign currency bonds issued by non-bank corporations in the region reached US$474.2 billion as at the end of June 2014, of which 83.8% was accounted for by US dollar-denominated bonds (Chart B4.3).

Apart from the growth in issuance, Asian corporations have been more able to issue bonds with longer tenors. In 2013, the weighted average tenor of new issuance by non-bank corporations in major Asian economies lengthened to 6.3 years from 5.9 years in 2008. The lengthening of tenors could partly be attributed to a surge in foreign currency bond issuance in offshore markets, which tend to be more developed and more appealing to institutional investors.[32, 33]

Associated risks

The rapid growth in bond issuance in the region has *ceteris paribus* brought a number of risks, namely, exchange rate risk, interest rate risk and credit risk, which warrant closer scrutiny given its potential implications for financial stability.[34]

Exchange rate risk

First, the surge in foreign currency bond issuance appears to suggest that the corporate sector may be taking a higher exchange rate risk, sparking concerns of potential currency mismatch. However, over the past few years, the growth of local currency bonds has been equally fast. In fact, local currency bonds now account for a larger share of total outstanding bonds in most of the economies in the region, with the

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30 For details on the policy initiatives for developing local currency bond markets in the region, see "ASEAN+3 Bond Market Guide", Asian Development Bank, 2012.

31 For a discussion on the impact of rising foreign currency bond issuance by corporations in emerging market economies, see Turner, P., 2014. "The global long-term interest rate, financial risks and policy choices in EMEs". BIS Working Papers No. 441, Bank for International Settlements.

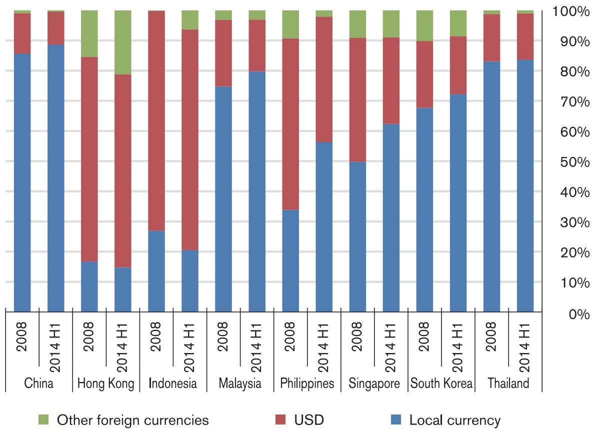
32 For a discussion on the recent developments of offshore bond issuance by corporations in emerging market economies, see Box 2 in the BIS Quarterly Review, September 2013.

33 For a discussion on the motivations for issuing bonds offshore, see Black, S. & Munro, A., 2010. "Why issue bonds offshore?". BIS Working Papers No. 334, Bank for International Settlements.

34 It should, however, be stressed that the following analysis, which focuses on the bond market, cannot provide a comprehensive analysis of the extent of corporate leverage in the region.

exception of Hong Kong and Indonesia (Chart B4.4).[35] Hence, the risk of currency mismatch may not necessarily increase.

Chart B4.4
Breakdown of outstanding non-bank corporate bonds in selected Asian economies as at end-June 2014 by currency type

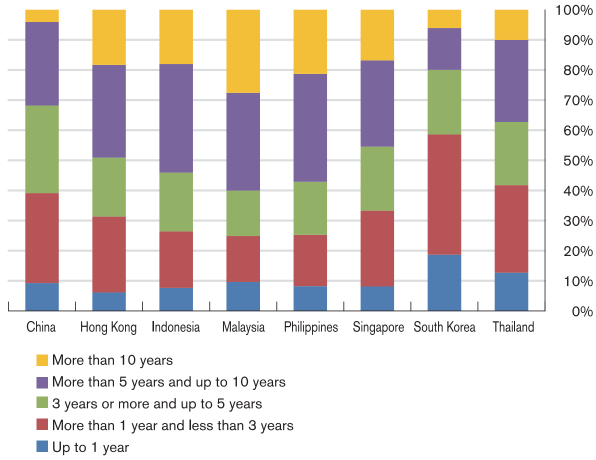


Source: HKMA staff estimates based on data from Dealogic.

Interest rate risk

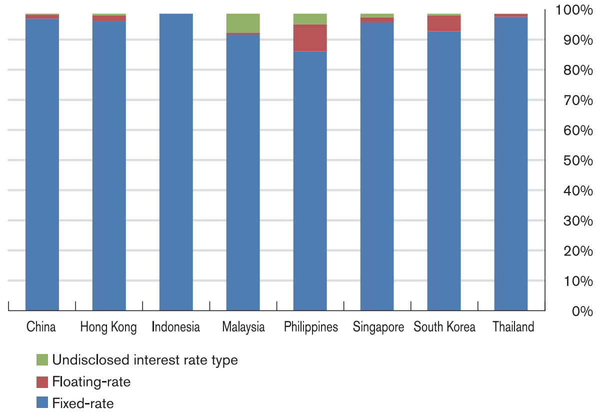
Second, in light of the rising issuance of longer-tenor bonds, the average remaining tenor of the outstanding Asian non-bank corporate bonds remained at a relatively high level of 4.9 years at the end of June 2014, with over 50% of the outstanding bonds in most of the economies (except South Korea) carrying a remaining maturity of at least 3 years (Chart B4.5).[36] This suggests that the refinancing need of the corporations in the region may not increase significantly in the near-term. Moreover, fixed-rate bonds accounted for the majority of the total outstanding bonds as corporations locked in lower cost for long-term funding by issuing fixed-rate bonds over the past few years. As at the end of June 2014, 97.1% of the total outstanding non-bank corporate bonds in major Asian economies are fixed-rated bonds, suggesting that the normalisation of the US monetary policy may not lead to substantial increase in the interest expenses of these corporations in the near-term (Chart B4.6). Nevertheless, corporations refinancing their debts still face higher interest cost as the monetary normalisation by the Fed could lead to a mark-to-market decline in the price of their bonds.

Chart B4.5
Breakdown of outstanding non-bank corporate bonds in selected Asian economies as at end-June 2014 by remaining tenor



Source: HKMA staff estimates based on data from Dealogic.

Chart B4.6
Breakdown of outstanding non-bank corporate bonds in selected Asian economies as at end-June 2014 by interest rate type



Source: HKMA staff estimates based on data from Dealogic.

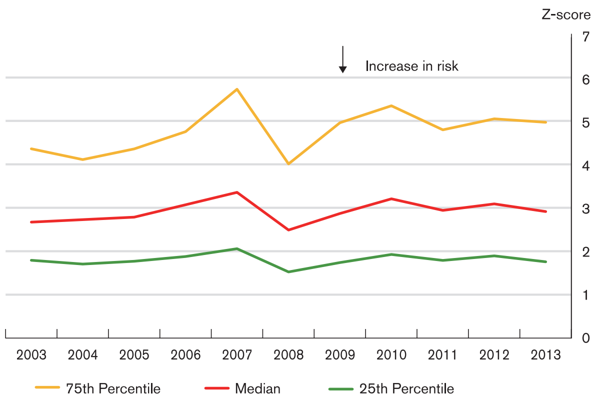
[35] While foreign currency bonds accounted for 85.2% of Hong Kong's total outstanding non-bank corporate bonds as at the end of June 2014, 75.1% of these bonds were denominated in USD. Hence, the exchange rate risk of Hong Kong corporations is arguably low given the Linked Exchange Rate System.

[36] Perpetual bonds are excluded from the calculation of weighted average tenor.

Credit risk

Last but not least, corporations' probability of default has remained fairly stable despite the strong issuance of corporate bonds. Their Altman's Z-score is still significantly above the level recorded during the global financial crisis in 2008 (Chart B4.7). Hence, the credit risk of the Asian corporations may not have heightened significantly at this stage despite their increased leverage in recent years.

Chart B4.7
Altman's Z-score of listed non-financial companies in selected Asian economies



Notes:
1. A lower Z-score indicates a higher likelihood of a company default.
2. The selected Asian economies include China, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, and Thailand.
3. Major listed non-financial companies refer to the non-financial constituents of the major stock market indices of the above eight economies, including the Shanghai Shenzhen CSI 300 Index, the Hang Seng Index, the Jakarta Stock Exchange Composite Index, the FTSE Bursa Malaysia KLCI Index, the Philippines Stock Exchange PSEi Index, the Straits Times Index, the Korea Stock Exchange Composite Index and the Stock Exchange of Thailand SET Index.

Source: HKMA staff estimates based on data from Bloomberg.

Concluding remarks

In Asia, the corporate sector has in the past relied heavily on the banking sector and stock market for financing, a key structural weakness identified in the Asian financial crisis. In recent years, the bond market has started to play a more prominent role in financial intermediation in the region. From a structural perspective, this should be a welcome development.

However, risks associated with the rapid expansion of the market warrant careful analysis. This box has examined the risks based solely on some highly aggregated bond market data and reached a conclusion that the risks remain contained. However, this is not to say that all Asian corporations are therefore safe. Issuing bonds is only one of the many channels of borrowing. Assessing the extent of leverage of a corporation requires much closer examination of its balance sheet and beyond.[37] Hence, the increasing leverage of the corporate sector warrants close monitoring, particularly given the uncertainties associated with the Fed's monetary normalisation and the macroeconomic environment in the region.

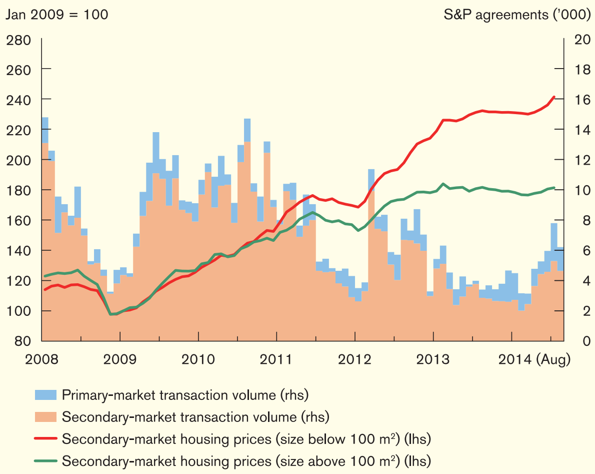
[37] For instance, there are concerns that some corporations in the region are disproportionately more indebted and vulnerable than others. See Chapter 2 in IMF Regional Economic Outlook: Asia and Pacific, April 2014.

4.5 Property markets

Residential property market

After some consolidation in the past year or so, the residential property market has turned more active in recent months, with transaction volume picking up from recent lows and housing prices resuming moderate growth. This was largely supported by pent-up demand and improving sentiment, as the market became less concerned about an imminent interest rate hike in the US and Hong Kong. Indeed, credit conditions remained supportive with the mortgage interest rates staying low and banks slightly easing their credit stance. Trading activity picked up at first in the primary market, later followed by the secondary market, particularly that of the small and medium-sized flats. The average monthly registration of sale and purchase (S&P) agreements for residential properties rose from 3,827 in number in the second half of 2013 to 4,467 in the first half of 2014 and 7,002 in July and August (Chart 4.26).

Chart 4.26
Residential property prices and transaction volume



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

Meanwhile, housing prices in the secondary market rose by 4.9% in the four months to July, after edging down by 0.6% in the first quarter and moving sideways during most of 2013. Prices of small and medium-sized flats (those with a saleable area of less than 100 m^2) were particularly resilient, rising by 5.0% between April and July to a record high level. While also picking up at a fast pace, prices of large flats (those at least 100 m^2) have not fully recovered from last year's consolidation. Other price indicators such as the Centa-City leading index, sellers' asking prices and banks' appraisal value also suggested upward pressure on housing prices. In the primary market, however, developers continued to offer discounts and concessions on new launches, while the premium of new flats relative to used ones appeared to have narrowed recently.

Given the latest developments, property valuation remains highly stretched relative to household income and economic fundamentals, and this continues to be a concern for Hong Kong's macro-financial stability. Despite sustained income growth, housing affordability is still low, with the price-to-income ratio staying high at 14.0 in the second quarter, a level just slightly below the 1997 peak, and the income-gearing ratio still hovering around 61.9% and above its long-term average of 50% (Chart 4.27).[38] Moreover, if mortgage interest rates rose to a more normal level, say by 300 basis points, the income-gearing ratio would soar to 80.8%. The buy-rent gap has also edged higher, indicating a continued rise in the relative cost of owning than renting a flat (Chart 4.28).[39] The average residential rental yield stayed low at 2.2-3.2% in the year to July, near the level of 10-year Exchange Fund Notes and suggesting active search-for-yield behaviour.

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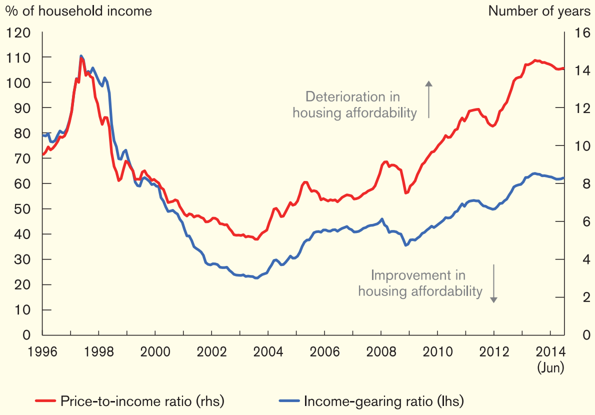
[38] The price-to-income ratio measures the average price of a typical 50 m^2 flat relative to the median income of households living in private housing. Alternately, the income-gearing ratio compares the amount of mortgage payment for a typical 50 m^2 flat (under a 20-year mortgage scheme with a 70% loan-to-value ratio) to the median income of households living in private housing.

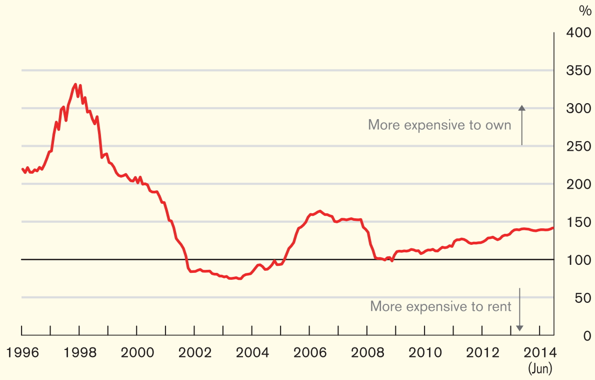
[39] The buy-rent gap estimates the cost of owner-occupied housing (under a 20-year mortgage scheme with a 70% loan-to-value ratio) relative to rentals.

Chart 4.27
Indicators of housing affordability



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

Chart 4.28
Buy-rent gap

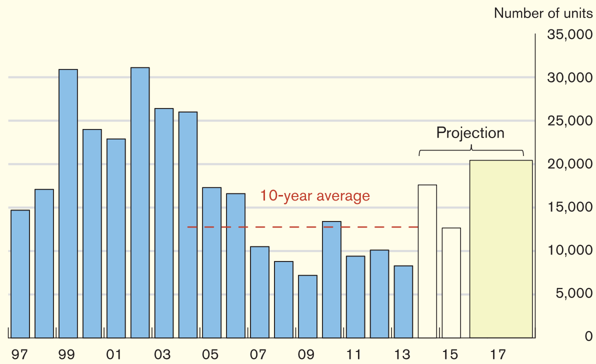


Note: This indicator is calculated as the ratio of the cost of purchasing and maintaining a 50 m² flat with that of renting it.

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

As regards the outlook, property market imbalance could persist for a time in Hong Kong, with housing prices likely to remain supported by the prevailing low interest rate environment and a relatively tight housing demand-supply condition. Nevertheless, the property market is still facing some downside risks. The eventual interest rate hikes could dampen the dynamics of property price inflation or even exert some downward pressure. By then, debt repayment and servicing burden would increase (e.g. by an estimated 30.5% for a 20-year mortgage under the assumption of a 300-basis-point rate hike), while property investment and home purchase would become less attractive due to a rise in interest rates relative to rentals. It should also be noted that the Fed's interest rate normalisation process could significantly increase financial market volatility and affect market sentiment. Should fund flows reverse significantly, it could exacerbate downward adjustment in housing prices and severely hit the broader economy. Looking further ahead, the demand-supply condition of the housing market is expected to gradually progress towards a more balanced state, with housing completion likely to hit 17,600 units in 2014 and expected total supply rising to around 73,000 units in the next three to four years (Chart 4.29).

Chart 4.29
Private flat completion

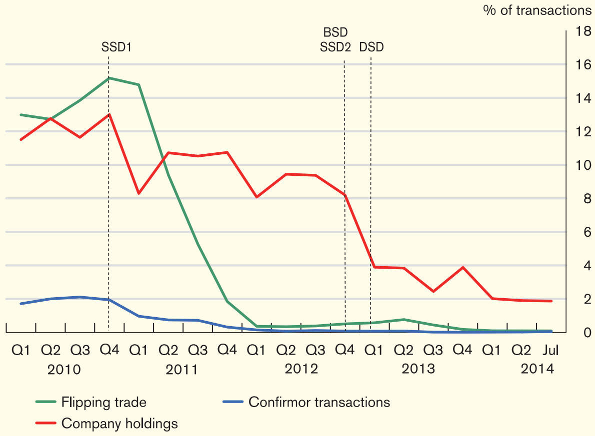


Note: The R&VD projects new housing completion at 17,614 units and 12,660 units respectively in 2014 and 2015. The projections for 2016-18 are based on the Transport and Housing Bureau's forecast of private housing supply in the next three to four years (73,000 units) netting out the R&VD's forecast for 2015.

Sources: Transport and Housing Bureau and R&VD.

Since 2009, the HKMA has introduced six rounds of counter-cyclical macro-prudential measures to prevent bank credit from fuelling property-price bubbles and to ensure that banks and their customers have sufficient cushions on their balance sheets to ride out volatilities in property prices. These measures have helped bring down the actual loan-to-value (LTV) ratio for new mortgages from an average of 64% before their introduction to around 56% and the debt servicing ratio (DSR) from an average of over 40% to around 35% recently. Growth in residential mortgage loans also slowed from 14.1% in 2010 to about 7-8% in 2011 and 2012 and 3.9% in 2013. At the same time, the Government's demand-management measures have reduced speculative and investment activity (Chart 4.30) and helped dampen property price inflation. Box 5 further explores the impact of these cooling measures on Hong Kong's property market in recent years.

Chart 4.30
Confirmor transactions, flipping trade and company purchasers



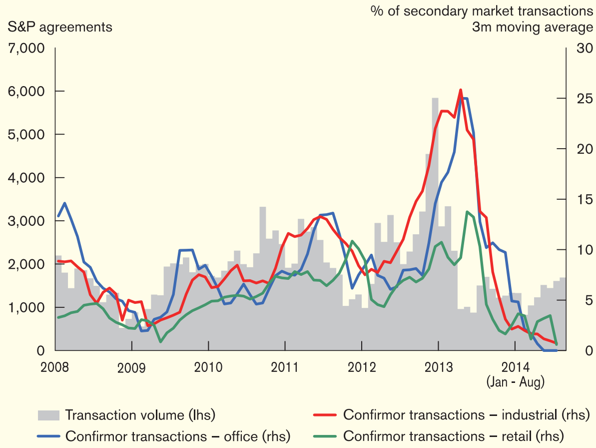
Note: SSD1 refers to the first introduction of the Special Stamp Duty in November 2010, and SSD2 refers to the enhancement in October 2012. BSD and DSD refer to the Buyer's Stamp Duty and the doubling of the *ad valorem* stamp duty rates, respectively.

Source: Centaline Property Agency Limited.

Commercial and industrial property markets

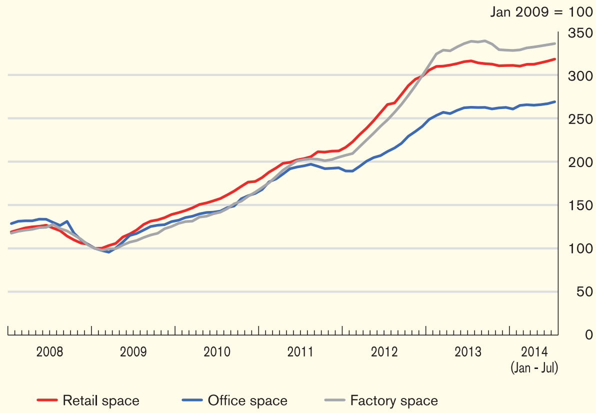
The commercial and industrial property markets also showed more signs of pick-up in recent months, although the overall market sentiment remained weak because of concerns about future interest rate hikes and the Government's demand-management measures. Transaction volume has risen from recent lows since early this year, with the number of S&P registrations averaging 1,336 a month in the first eight months (Chart 4.31). As an indicator of speculative activities, confirmor transactions continued to hover at low levels. Prices of commercial and industrial properties edged higher by a modest 2.3-2.5% in the year to July after some consolidation in the past year (Chart 4.32), while rentals also increased by around 2.3-6.2%, with yields staying low at 2.4-2.9%.

Chart 4.31
Transactions in non-residential properties



Sources: Land Registry and Centaline Property Agency Limited.

Chart 4.32
Non-residential property price indices



Source: R&VD.

Despite improving sentiment in recent months, the commercial and industrial property markets still have some headwinds to contend with in the near to medium term. It should be noted that property valuation has been highly-stretched, and rental earnings could soften going forward along with a possible growth slowdown of the domestic economy and particularly in retail trade. This, coupled with expectation of interest rate hikes, could bring down the capital values and exert downward pressure on commercial and industrial property prices. In terms of banking and financial stability, it remains critically important for banks to maintain a prudent credit stance, restrain their property-related exposure, and ensure sufficient cushions to ride out property cycles.

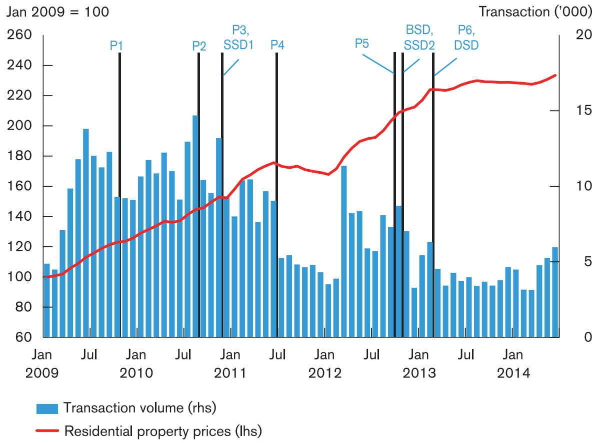
Box 5
The impact of counter-cyclical prudential and demand-management measures on Hong Kong's housing market

How can the counter-cyclical measures affect the housing market?

The HKMA has introduced six rounds of counter-cyclical prudential measures on banks' property mortgage business since October 2009 (with the latest round in February 2013) to prevent bank credit from fuelling property market imbalances and ensure that banks and their customers will have sufficient cushions on their balance sheets to ride out volatilities in housing prices (Chart B5.1). The policy tools include imposing limits on the loan-to-value (LTV) ratio and debt-servicing ratio (DSR) for property mortgage, and requiring mandatory stress tests of borrowers' repayment ability against interest rate hikes. Theoretically, while prudential measures can lead banks to lend less than they otherwise would have done, the additional wealth and income constraints, if binding on households, can help reduce housing demand and housing credit, through which housing prices may also be affected.[40, 41]

The Government has also put into place three rounds of demand-management measures starting from November 2010. By imposing additional and higher stamp duties (through Special Stamp Duty (SSD), Buyer's Stamp Duty (BSD) and doubling of the *ad valorem* stamp duty rates (DSD)), the Government aims at deterring speculative activities, as well as non-local demand. Housing prices can be affected as a result of reduced housing demand, while there can also be indirect pass-through onto demand for housing credit. Chart B5.2 illustrates how the prudential and demand-management measures may be transmitted to the housing market.

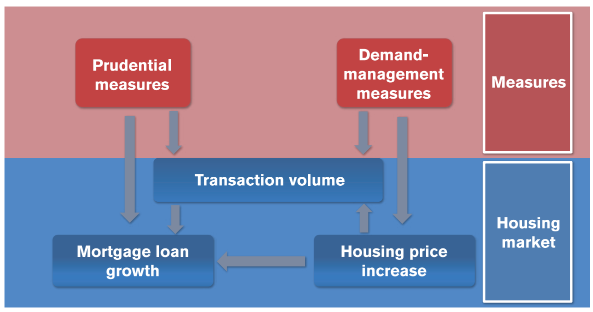
Chart B5.1
Housing prices, transaction volume and the timeline of counter-cyclical measures



Notes:
1. P1 refers to the first round of prudential measures introduced in October 2009, P2 the second round, etc.
2. SSD1 refers to the first introduction of the Special Stamp Duty in November 2010, and SSD2 refers to the enhancement in October 2012.
3. BSD and DSD refer to the Buyer's Stamp Duty and the doubling of the *ad valorem* stamp duty rates, respectively.

Sources: R&VD and Land Registry.

Chart B5.2
Transmission channels of counter-cyclical measures and the housing market



Source: HKMA staff.

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[40] For example, Kuttner and Shim (2013) use a two-period consumption model to analyse the impact of LTV and DSR on housing demand and housing credit. See Kuttner, K. and I. Shim (2013), "Can Non-Interest Rate Policies Stabilise Housing Markets? Evidence from a Panel of 57 Economies", BIS Working Papers No. 433.

[41] Wong et al (2014) provide empirical evidence that the LTV policy can restrain the level of household leverage in Hong Kong and illustrate the effect of LTV policy on credit supply and demand. For details, please refer to Box 5 of the March 2013 issue of this Report, and Wong, E. et al (2014), "How Does Loan-To-Value Policy Strengthen Banks' Resilience to Property Price Shocks – Evidence from Hong Kong", Hong Kong Institute for Monetary Research Working Paper No.03/2014.

Model specification

In order to assess how the counter-cyclical prudential and demand-management measures affect housing market activities, we construct a vector auto-regression (VAR) model. A VAR model has the advantage of being able to capture the dynamics of variables while controlling for the impact of other economic and financial factors. The model is specified as follows:

$$X_t = A + B_1 X_{t-1} + B_2 P_{t-1} + B_3 Z_{t-1} + \epsilon_t \ ,$$

where X is a vector of endogenous housing market variables (monthly change in housing prices, level of transaction volume, monthly change in outstanding residential mortgage loans), P is a vector of policy variables, and Z represents other controlling economic and financial factors, which include the Hang Seng Index (HSI), the HSI Volatility Index, the unemployment rate, and the average mortgage interest rate.[42] The sample used for the analysis covers the period from January 2009 to June 2014.

There are two policy variables in the model, representing the prudential measures and demand-management measures respectively. They are constructed as step function variables, equal to zero when no measures are in place, and increasing by one for each new "count" of tightening (which denotes a specific policy on either the mass market or the luxury market).[43] Details of the specification are shown in Table B5.A. The estimated coefficient for each policy variable then measures the marginal effect of each count of tightening. In this set-up, there can be more than one count in a certain round of policy tightening. This allows us to use counts as a proxy to measure the intensity of tightening at each policy round, having regard to the large diversity of the measures. It also helps deal with the problem of over-fitting and multicollinearity if all disaggregate policy measures and each round of tightening are otherwise put in a model as separate dummy variables.

Table B5.A
Counts of prudential measures and demand-management measures by policy round for specification of policy variables

Prudential measures

	LTV	DSR	Foreign income source	Non-owner occupiers	Multiple mortgage	Net-worth based mortgage	Number of new counts
Oct 2009	L						1
Aug 2010	L	M, L		M, L			5
Nov 2010	M, L			M, L			4
Jun 2011	M, L		M, L			M, L	6
Sep 2012					M, L		2
Feb 2013		M, L					2

Demand-management measures

	Special stamp duty (SSD)	Buyer's stamp duty (BSD)	Doubling of ad valorem stamp duty rates (DSD)	Number of new counts
Nov 2010	M, L			2
Oct 2012	M, L	M, L		4
Feb 2013			M, L	2

Notes:
1. M and L indicate the mass market and luxury market respectively.
2. Under prudential measures, a cap on loan tenor was introduced in September 2012. It is not considered a specific count of tightening in our analysis because it is mainly designed to strengthen the effectiveness of the DSR cap and stress test. In addition, the increase in the risk-weight floor for banks using the internal rating-based approach, which was introduced in March 2013, is also not considered in our analysis because the policy effect is mainly transmitted through the mortgage interest rates, which is one of the exogenous variables in the model. Kuttner and Shim (2013) explain that raising risk-weights on mortgage loans makes it more costly for banks to extend mortgage loans if bank equity remains unchanged.

Source: HKMA staff.

Empirical findings

Our estimated results show that, after controlling for the impact of other economic and financial factors, prudential measures helped dampen mortgage loan growth and transaction volume but do not appear to have had a *direct* impact on housing prices as the estimated coefficient is not statistically significant. The findings also show that demand-management measures have dampened transaction volume and growth in housing prices, while their *direct* impact on mortgage loan growth was not statistically significant. The latter result may be partly attributable to the situation that buyers who are subject to demand-management measures (particularly BSD and DSD) may be less reliant on credit from Hong Kong to finance their home

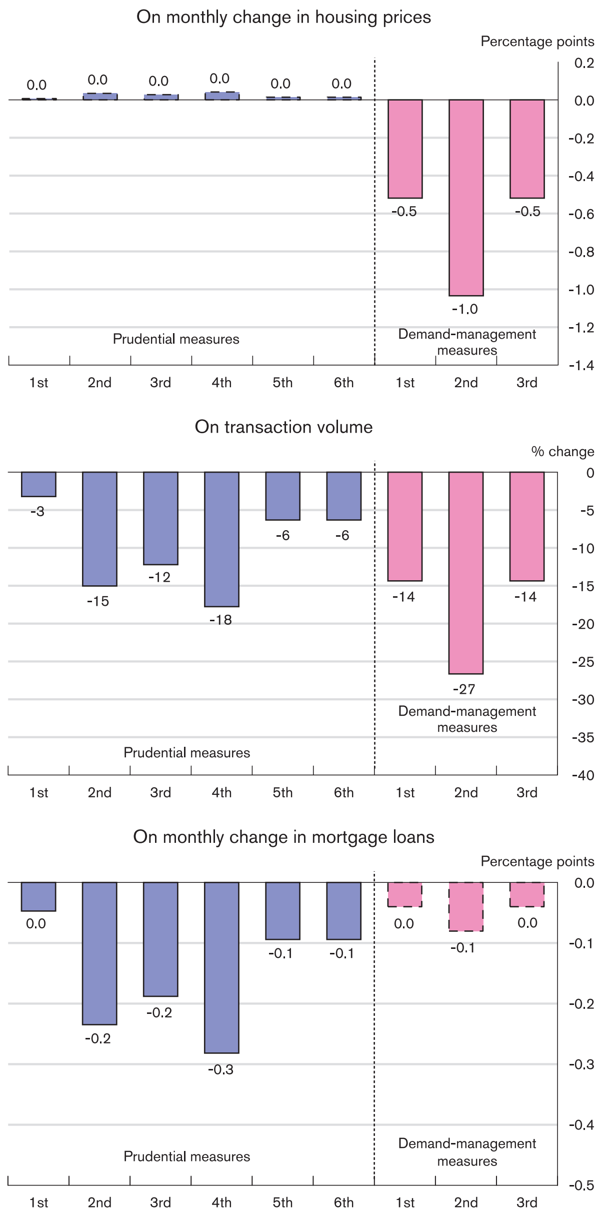
42 Similar studies include Krznar, I. and J. Morsink (2014), "With Great Power Comes Great Responsibility: Macroprudential Tools at Work in Canada", IMF Working Paper No. 14/83, which regresses property prices and mortgage loans in two single equations.

43 The step-function approach is proposed and adopted to model the intensity of prudential measures in Krznar and Morsink (2014) and Kuttner and Shim (2013).

purchases. Nevertheless, there remains an *indirect* effect of demand-management measures on loan growth through its dampening impact on housing prices and transaction volume. The findings that housing price increases can support mortgage loan growth are consistent with the collateral effect as implied by the financial accelerator theory.[44]

Based on the estimated coefficients of the policy variables, the total impact of each round of prudential measures and demand-management measures can be derived following the feed-through between housing prices, transaction volume, and mortgage loans in the VAR model. In Charts B5.3, the vertical bars show the total impact on the monthly change in housing prices and outstanding mortgage loans as well as the level of transaction volume. The second, the third and the fourth rounds of prudential measures, which impose stringent LTV requirements, DSR caps and stress tests, are found to be relatively more effective in limiting mortgage loan growth than other prudential rounds. They are found to have reduced mortgage loan growth by a monthly pace of 0.2% on average, compared with that of 0.1% for other rounds. These three rounds of prudential measures are also found to have had a larger dampening effect on transaction volume (by an average 15%) than other rounds (by 5%). The impact of prudential measures on housing prices is not statistically significant. In comparison, the Government's demand-management measures are found to be more effective in reining in housing price increase and reducing transactions. The latest two rounds of demand-management measures (mainly BSD and DSD), in particular, are found to have dampened housing price increase by a monthly pace of 1% and 0.5% respectively and lowered transaction volume by 27% and 14% respectively. These results are largely consistent with recent international experiences.[45] However, it should be noted that the above results are rough estimates and can be sensitive to the way the policy variables are specified using counts as a proxy to measure the intensity of policy tightening. The results are also limited by the rather short sample period. They should therefore be regarded as a preliminary attempt to quantify the impact of the policy measures.

Chart B5.3
Estimated impact of counter-cyclical measures



Note: Statistically insignificant if the bars are in broken-line borders.
Source: HKMA staff estimates.

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44 See Bernanke, B. (2007), "The Financial Accelerator and the Credit Channel," Speech at the Credit Channel of Monetary Policy in the Twenty-first Century Conference, Federal Reserve Bank of Atlanta.

45 See, for example, Kuttner and Shim (2013).

Concluding remarks

Our findings show that prudential measures can help slow down mortgage loan growth in Hong Kong, but there is no clear evidence that they can affect housing prices in a systematic and predictable manner. We also find that demand-management measures appear to be effective in reducing housing demand and dampening housing price growth in the short term.

5. Banking sector performance

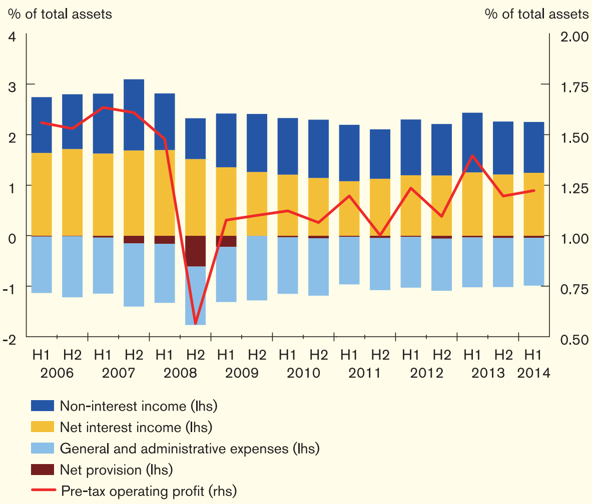
Retail banks maintained solid earnings growth, sound asset quality and a strong capital position. Given their generally favourable liquidity positions, banks in Hong Kong are not expected on the whole to encounter major difficulties in complying with the Basel III liquidity standards that will begin to be phased-in from next year. Nonetheless, banks should remain vigilant to risks associated with rising corporate leverage, increasing household debt-servicing burdens and indebtedness. The continued increase in Mainland related lending coupled with slower economic growth in the Mainland could pose significant challenges for banks in managing the associated credit risk.

5.1 Profitability and capitalisation

Profitability

Despite weaker domestic demand and uncertainties in the external environment, retail banks[46] continued to register an increase in earnings, with pre-tax operating profits growing by 7.3% in the first half of 2014 from the second half of 2013. Their return on assets[47] edged up to 1.22% from 1.2% in the previous six months (Chart 5.1). The increase in profitability was mainly driven by a 7.6% growth in net interest income.

Chart 5.1
Profitability of retail banks



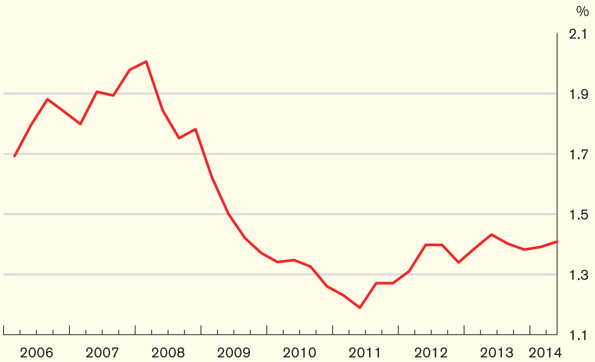
Note: Semi-annually annualised figures.
Source: HKMA.

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

[47] Return on assets is calculated based on aggregate pre-tax operating profits.

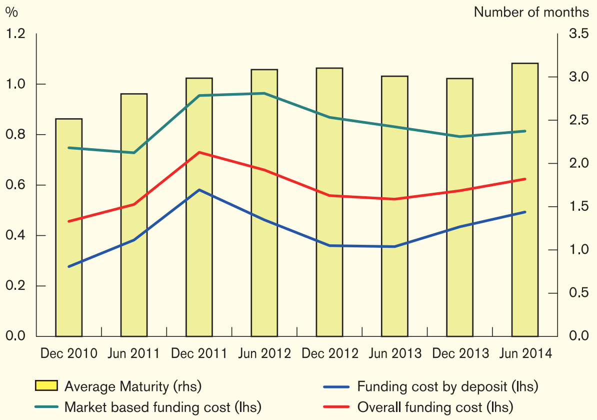
The net interest margin of retail banks remained largely steady in the first half of 2014, averaging 1.4% in first half of 2014, from 1.39% in the second half of 2013 (Chart 5.2). For licensed banks as a whole, their overall interest costs registered an increase of 5 basis points in the first half of 2014, driven by the rise in both deposit and market-based funding costs (Chart 5.3).[48] In addition, the composite interest rate, a measure of the average cost of Hong Kong dollar funds for retail banks, increased by 8 basis points to 0.47% at the end of June 2014 (Chart 5.4).

Chart 5.2
Net interest margin of retail banks



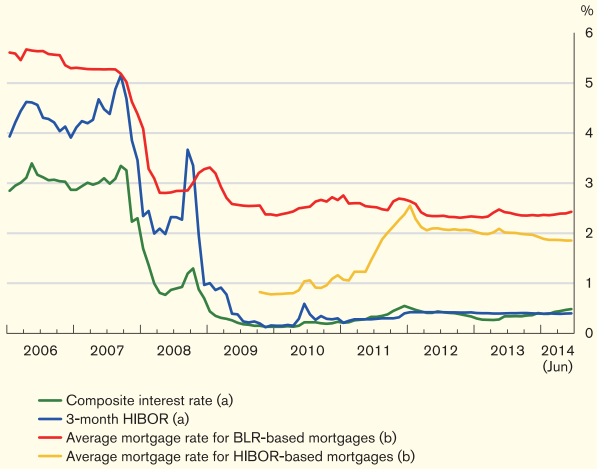
Note: Quarterly annualised figures.
Source: HKMA.

Chart 5.3
Hong Kong and US dollar funding cost and maturity of licensed banks



Source: HKMA.

Chart 5.4
Interest rates



Notes:
(a) End of period figures.
(b) Period-average figures for approved loans. All mortgage rates are estimates only.
Sources: HKMA and staff estimates.

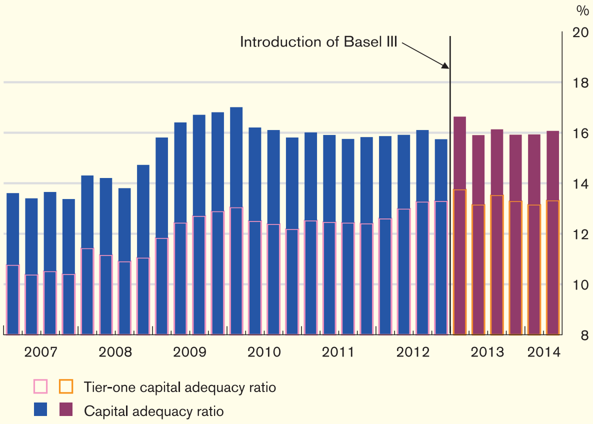
During the first half of 2014, the HIBOR-based mortgage rate declined by 7 basis points while the best lending rate-based (BLR-based) mortgage rate increased by the same extent. Partly in response to the widening of the two mortgage rates, the share of HIBOR-based mortgages amongst newly approved mortgage loans increased significantly to 76.7% at the end of June 2014, from 30.5% at the end of December 2013.

48 Market-based funding cost is measured by the interest costs of banks' non-deposit interest bearing liabilities.

Capitalisation

Capitalisation of the banking sector remained well above the minimum international standards. The consolidated capital adequacy ratio of locally incorporated AIs increased slightly to 16.1% at the end of June 2014, from 15.9% at the end of 2013 (Chart 5.5), with the tier-one capital adequacy ratio (the ratio of tier-one capital to total risk-weighted assets) remaining unchanged at 13.3%.

Chart 5.5
Capitalisation of locally incorporated AIs



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

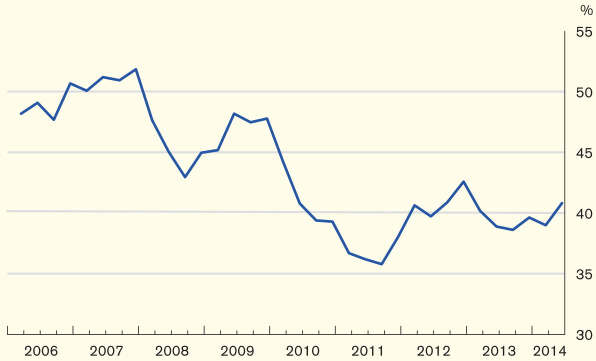
Source: HKMA.

5.2 *Liquidity, interest rate and credit risks*

Liquidity and funding

The liquidity position of the banking sector remained favourable, with the average liquidity ratio[49] of retail banks improving slightly to 40.8% in the second quarter of 2014, from 39.6% in the fourth quarter of 2013 (Chart 5.6), remaining well above the regulatory minimum of 25%.

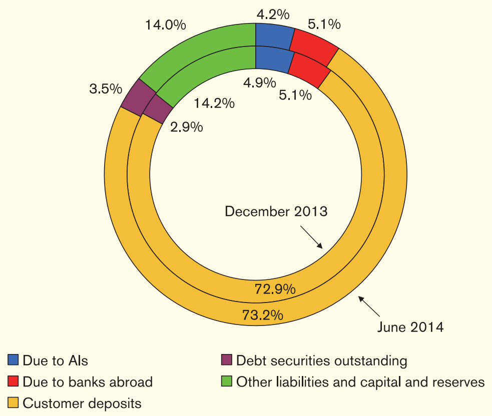
Chart 5.6
Liquidity ratio of retail banks



Note: Quarterly average figures.
Source: HKMA.

Customer deposits continued to be the primary funding source for retail banks, underpinning a stable funding structure. The share of customer deposits to banks' total liabilities was 73.2% at the end of June 2014, slightly higher than 72.9% at the end of 2013 (Chart 5.7).

Chart 5.7
Liabilities structure of retail banks



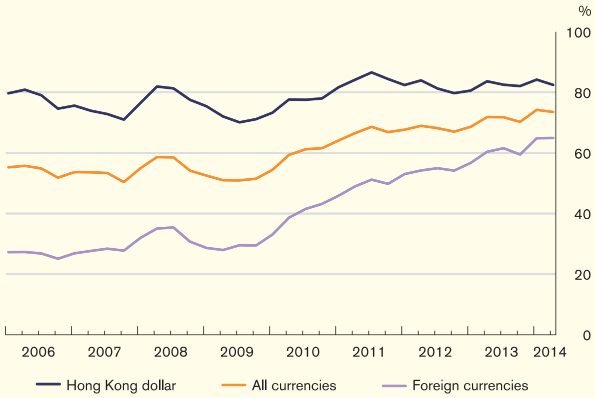
Notes:
1. Figures may not add up to total due to rounding.
2. Figures refer to the percentage of total liabilities (including capital and reserves).
3. Debt securities comprise negotiable certificates of deposit and all other negotiable debt instruments.

Source: HKMA.

[49] This is calculated as the ratio of liquefiable assets (e.g. marketable debt securities and loans repayable within one month subject to their respective liquidity conversion factors) to qualifying liabilities (basically all liabilities due within one month).

The HKD loan-to-deposit (LTD) ratio of all AIs remained steady at 82.5% at the end of June 2014, compared with 82.1% at the end of 2013 (Chart 5.8). In contrast, the foreign currency LTD ratio rose tangibly by 5.5 percentage points to 65% from 59.5% over the same period, partly driven by a faster increase in foreign currency loans which outpaced the moderate growth of foreign currency deposits. Reflecting this, the all currency LTD ratio went up to 73.6% at the end of June, from 70.3% at the end of 2013.

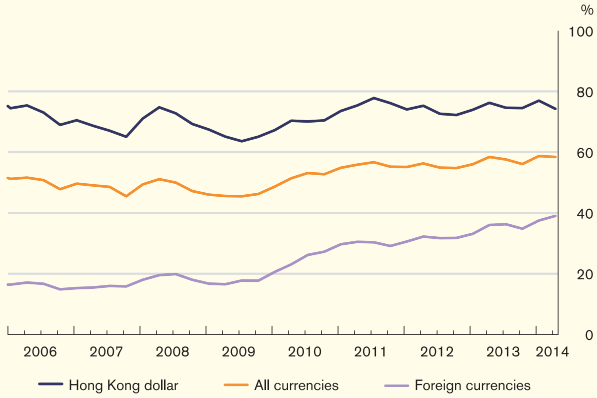
Chart 5.8
Loan-to-deposit ratios of all AIs



Source: HKMA.

Similarly, retail banks' HKD LTD ratio remained steady at 74.3% at the end of June 2014, while their foreign currency LTD ratio rose notably to 39.1% from 34.8%. The all currency LTD ratio for retail banks rose to 58.5% from 56.1% (Chart 5.9).

Chart 5.9
Loan-to-deposit ratios of retail banks



Source: HKMA.

In light of the rise in the foreign currency LTD ratio and the anticipated normalisation of US monetary policy, the HKMA introduced the Stable Funding Requirement (SFR) with effect from January 2014, with a view to preventing the build-up of funding vulnerability within banks and to ensure that banks have sufficient capacity to withstand potential risks arising from the possible significant fund outflows from Hong Kong.

The HKMA has proposed a two-tiered approach for the adoption of the Basel III liquidity standards in Hong Kong.[50] The Basel III Liquidity Coverage Ratio (LCR)[51] is scheduled to begin phasing-in from 1 January 2015, with the minimum ratio requirement initially set at 60% and subsequently increasing by 10 percentage points per annum to reach 100% on 1 January 2019.[52] Assessments based on data regularly collected by the HKMA indicate that AIs in Hong Kong are generally not expected to encounter major difficulties in complying with the new liquidity standards over the transitional period, although some may need to adjust their liquidity profile or liquid asset composition.

50 Under the two-tiered approach, larger and more sophisticated AIs will be classified by the HKMA as "Category One" institutions and will be subject to the Basel III liquidity standards, while other AIs will be classified as "Category Two" institutions and will be subject to a modified version of the existing 25% minimum Liquidity Ratio which will be known as the Liquidity Maintenance Ratio (LMR). For details, see HKMA consultation papers "Implementation of Basel III liquidity standards in Hong Kong (L3)", 12 July 2013, and "Consultation on returns for reporting of liquidity maintenance ratio and liquidity monitoring tools", 16 May 2014, which are available on the HKMA website.

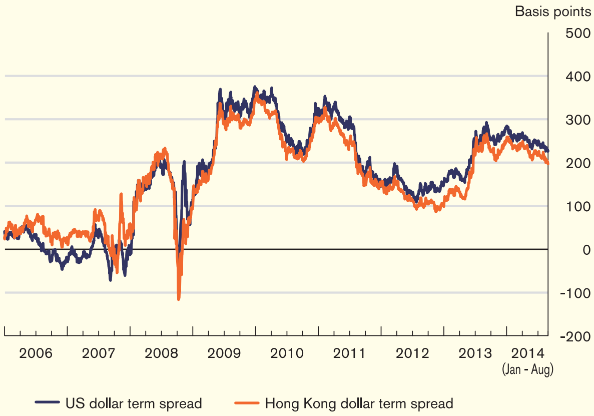
51 LCR is a new minimum liquidity standard introduced in Basel III, designed to ensure that banks have sufficient high-quality liquid assets to survive a significant stress scenario lasting 30 calendar days.

52 The LMR for Category Two institutions will also come into effect on 1 January 2015.

Interest rate risk

The spreads between the long- and short-term interest rates for the US dollar and Hong Kong dollar hovered over 200 basis points during the first half of 2014 (Chart 5.10). This suggests that the incentive for banks to search for yield by borrowing short-term funds to purchase long-term interest-bearing assets has remained high. This could in turn potentially lead to greater maturity mismatches and increased interest rate risk. Banks should remain alert to this and should seek to prudently manage maturity mismatch between funding sources and loans.

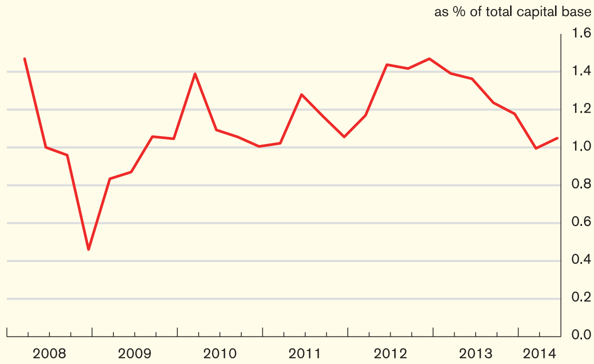
Chart 5.10
Term spreads of Hong Kong and US dollars



Note: Term spreads are defined as 10-year swap rates minus three-month money market rates of the respective currencies.
Source: HKMA staff estimates based on data from Bloomberg.

Nevertheless, interest rate exposures of retail banks remained manageable. It is estimated that under a hypothetical shock of an across-the-broad 200-basis-point increase in interest rates, the economic value of retail banks' interest rate positions could be subject to a decline equivalent to 1.05% of their total capital base as of June 2014 (Chart 5.11).

Chart 5.11
Impact of interest rate shock on retail banks



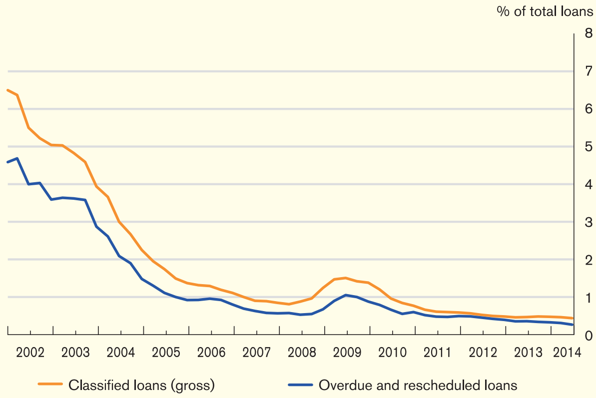
Notes:
1. Interest rate shock refers to a standardised 200-basis-point parallel rate shock to institutions' interest rate risk exposures.
2. The impact of the interest rate shock refers to its impact on the economic value of banking and trading book[53], expressed as a percentage of the total capital base of banks.

Source: HKMA staff estimates.

Credit risk

The asset quality of retail banks' loan portfolios remained healthy, with the classified loan ratio declining slightly to 0.44% at the end of June 2014, from 0.48% at the end of 2013, and the ratio of overdue and rescheduled loans falling further from 0.33% to 0.27% during the period (Chart 5.12).

Chart 5.12
Asset quality of retail banks



Notes:
1. Classified loans are those loans graded as "sub-standard", "doubtful" or "loss".
2. Figures related to retail banks' Hong Kong office(s) and overseas branches.

Source: HKMA.

Loan growth in the banking sector accelerated in the first half of 2014. The domestic lending[54] of AIs grew notably by 11.3% in the period, following an increase of 3.1% in the second half of 2013. The rapid expansion in credit was

[53] 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 and overseas incorporated institutions are required to report aggregate positions in the banking book and trading book.

[54] Defined as loans for use in Hong Kong plus trade-financing loans.

mainly driven by trade finance and loans to corporations.

According to the results of the HKMA Opinion Survey on Credit Condition Outlook of June 2014, the share of surveyed AIs expecting loan demand to remain the same in the next three months had increased notably to 86%, whereas the share expecting higher loan demand had decreased (Table 5.A).

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

As % of total respondents	Sep 2013	Dec 2013	Mar 2014	Jun 2014
Considerably higher	0	0	0	0
Somewhat higher	19	24	24	10
Same	71	71	71	86
Somewhat lower	10	5	5	5
Considerably lower	0	0	0	0
Total	100	100	100	100

Note: Figures may not add up to 100% due to rounding.
Source: HKMA.

Household exposure

Household loans[55] grew at a relatively faster pace of 4.6% in the first half of 2014 from 3.3% in the second half of 2013 (Table 5.B). Partly reflecting a more buoyant residential property market and an increase in property transaction volumes since March 2014, mortgage lending expanded by 3.1% in the first half, following a much weaker growth of 0.8% in the second half of 2013.

Other loans for private purposes (i.e. personal loans) grew by 13.9% in the first half of 2014, compared with 10.5% in the second half of 2013. Personal loans represent one of the key drivers behind the recent rise in household indebtedness. Therefore, the HKMA strengthened prudential requirements on personal lending business in January 2014.[56] Reflecting partly the impact of prudential requirements, there were signs of moderation in the growth rate of personal loans in the second quarter.[57]

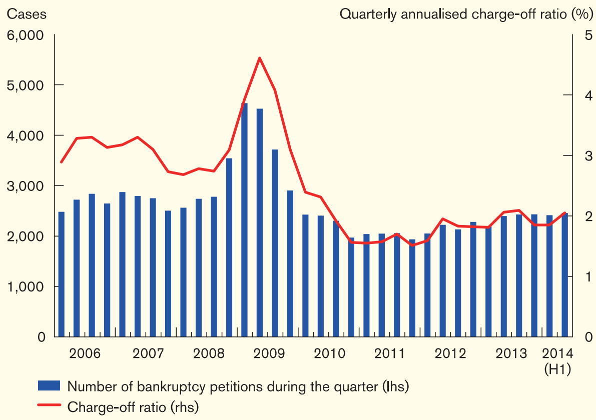
Table 5.B
Half-yearly growth of loans to households of all AIs

	2011		2012		2013		2014
(%)	H1	H2	H1	H2	H1	H2	H1
Mortgages	5.5	1.2	2.5	5.0	3.1	0.8	3.1
Credit cards	-1.4	15.9	-1.6	15.3	-4.0	10.2	-4.1
Other loans for private purposes	9.4	3.8	5.0	9.3	10.6	10.5	13.9
Total loans to households	5.6	2.7	2.6	6.5	3.8	3.3	4.6

Source: HKMA.

The credit risk of unsecured household exposure remained contained in the first half of 2014, with the annualised credit card charge-off ratio and the number of bankruptcy petitions staying relatively low (Chart 5.13).

Chart 5.13
Charge-off ratio for credit card lending and bankruptcy petitions



Sources: Official Receiver's Office and the HKMA.

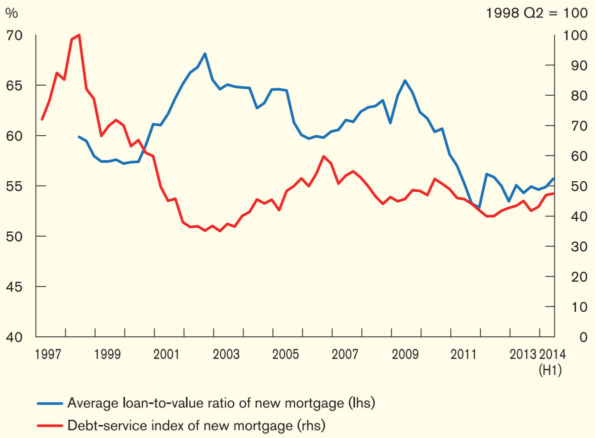
55 Loans to households constitute lending to professional and private individuals, excluding lending for other business purposes. Mortgage lending accounts for a major proportion of household loans while the remainder comprises mainly unsecured lending through credit card lending and other personal loans for private purposes. At the end of June 2014, the share of household lending in domestic lending was 27.5%.

56 AIs are required to review and assess their policies and risk management systems and take immediate measures to bring them in line with the prudential requirements by the end of March 2014. For details, see circular "Risk Management of Personal Lending Business" issued on 14 January 2014.

57 The quarterly growth rate of these loans slowed down to 3.5% in the second quarter of 2014, from 10.1% in the first quarter.

Banks' mortgage portfolios remained healthy, with the delinquency ratio staying at 0.02%. However, it is worth noting that the debt-service index of new mortgages rose to 47 in June 2014 from 43 in December 2013 (Chart 5.14) mainly reflecting an expansion in the average size of mortgage loans. Despite the slight deterioration in household repayment ability, the loan-to-value ratio of new mortgage loans remained stable at low levels of around 55% as compared with 64% before the first round of counter-cyclical measures was introduced in October 2009, suggesting that banks' resilience to property price shocks has strengthened after the six rounds of tightening of loan-to-value ratio caps.

Chart 5.14
Average loan-to-value ratio and household debt-servicing burden in respect of new mortgages



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

Sources: HKMA and staff estimates.

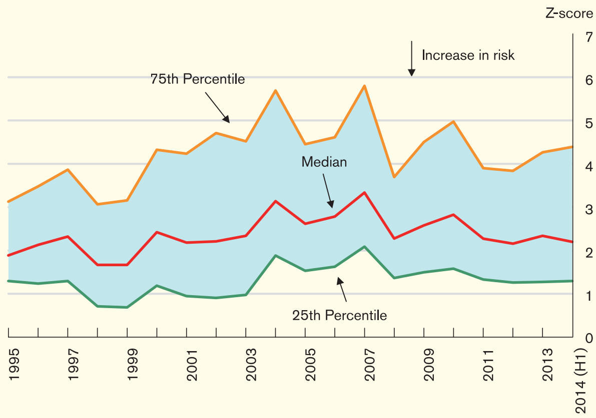
Looking forward, the tangible increase in mortgage loans since March may add additional burden to the already high level of household indebtedness. Once global monetary conditions normalise, interest rates may increase substantially, potentially significantly impacting households' debt-servicing ability. Banks should be vigilant to the impact of a rise in interest rates on their household exposure.

Corporate exposure[58]

Domestic loans to corporations also grew at a significantly faster pace of 14.2% in the first half of 2014, after a 3% increase in the second half of 2013. At the end of June, corporate loans accounted for 72.3% of domestic lending.

While the Altman's Z-score (Chart 5.15) and the number of compulsory winding-up orders of companies remained broadly steady, there are signs that credit risk in respect of banks' corporate exposures may be building up. In particular, the debt leverage of the corporate sector has increased in recent years, with the ratio of assets to shareholders' funds reaching 1.8 times at the end of 2013 (Chart 5.16). Meanwhile, the decline of interest coverage ratios suggests a deterioration of local corporations' debt-servicing ability.

Chart 5.15
Altman's Z-score: A bankruptcy risk indicator of listed non-financial companies in Hong Kong

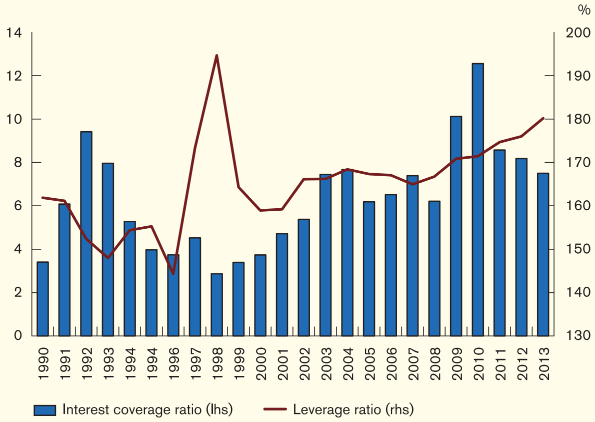


Note: A lower Z-score indicates a higher likelihood of a company default.

Source: HKMA staff estimates based on data from Bloomberg.

58 Excluding interbank exposure.

Chart 5.16
Leverage ratio and interest coverage ratio of listed non-financial companies in Hong Kong



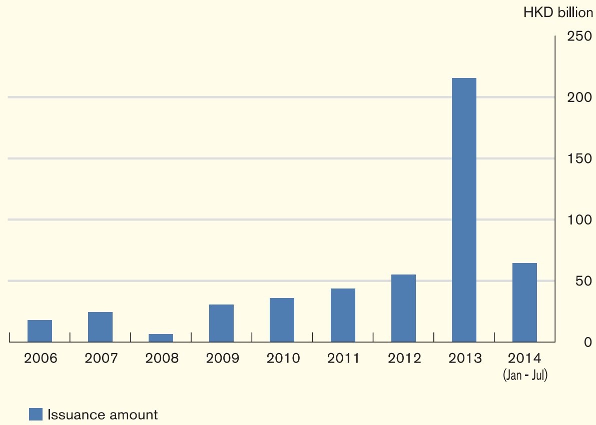
Notes:
1. The leverage ratio is defined as the ratio of total assets to shareholders' funds. A higher value indicates higher leverage.
2. Interest coverage ratio is defined as the ratio of earnings before interest and taxes to interest expense.

Source: HKMA staff estimates based on data from Bloomberg.

The unprecedented low interest rate environment in major advanced economies may encourage corporations to take excessive foreign exchange exposure if they borrow a particular currency merely because of attractive borrowing rates and without regard to the possible impact on the currency mismatch between their funding and earnings. Such currency mismatch could translate into significant losses and thus increase their default risk if exchange rates move unfavourably.

Publicly available information for assessing corporations' currency mismatch risk, however, is scant. Nevertheless, the risk should not be dismissed, as information from the syndicated loan market suggests that banks in Hong Kong have been actively participating in arranging syndicated loans for regional corporations in recent years and these loans are mostly denominated in currencies other than the home currency of the relevant corporations, e.g. US dollar loans (Chart 5.17). Although the development is consistent with the fact that Hong Kong is a funding hub in the region, the question of how much of these corporate loans is hedged against foreign exchange risk or matched by corporate revenues in US and Hong Kong dollars could have significant implications for the credit risk of the banking sector. Banks should remain vigilant about currency mismatch risk.

Chart 5.17
Hong Kong banks' involvement in US dollar syndicated loans of overseas corporations in Asia Pacific region



Notes:
1. Regional corporations cover non-financial sector companies in the major economies of the Asia Pacific region, and are defined by their country of risk.
2. Overseas banks also participated in the arrangement of these syndicated loans.

Source: HKMA staff estimates based on data from Bloomberg.

Mainland-related lending and non-bank exposures

The banking sector continued to expand its business in Mainland China during the review period. Total Mainland-related lending increased by 14.2% to HK$2,956 billion (14.4% of total assets) at the end of the second quarter of 2014 from HK$2,588 billion (13.3% of total assets) at the end of 2013 (Table 5.C).

Table 5.C
Mainland-related lending

	Dec 2013 HK$bn	Mar 2014 HK$bn	Jun 2014 HK$bn
Mainland-related loans excluding trade finance	2,276	2,461	2,546
Trade finance	312	406	410
Total	**2,588**	**2,867**	**2,956**

Source: HKMA.

Given the sustained development of the Mainland China economy, it is natural for Mainland related lending to expand. Understanding the risk profile of these loans is however crucial. Unlike homogenous credit products such as residential mortgage loans, Mainland-related lending is characterised by a high degree of heterogeneity among lenders and borrowers (Tables 5.D and 5.E). In particular, borrowers consist of Mainland non-private and private entities, as well as non-Mainland entities. The widely-varying risk profiles among borrowers could pose significant challenges for banks in managing their credit risk for Mainland-related lending.

Table 5.D
Mainland-related lending by type of AIs

	Dec 2013 HK$bn	Mar 2014 HK$bn	Jun 2014 HK$bn
Overseas-incorporated AIs	1,116	1,244	1,263
Locally-incorporated AIs*	971	1,111	1,164
Mainland banking subsidiaries of locally-incorporated AIs	501	512	530
Total	**2,588**	**2,867**	**2,956**

* Including loans booked in the Mainland branches of locally-incorporated AIs.

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

Source: HKMA.

Table 5.E
Mainland-related lending by type of borrowers

	Dec 2013 HK$bn	Mar 2014 HK$bn	Jun 2014 HK$bn
Mainland non-private entities	1,280	1,453	1,480
Mainland private entities	491	528	561
Non-Mainland entities	817	886	916
Total	**2,588**	**2,867**	**2,956**

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

Source: HKMA.

Table 5.F
Other non-bank exposures

	Dec 2013 HK$bn	Mar 2014 HK$bn	Jun 2014 HK$bn
Negotiable debt instruments and other on-blance sheet exposures	573	530	584
Off-balance sheet exposures	441	415	396
Total	**1,014**	**944**	**980**

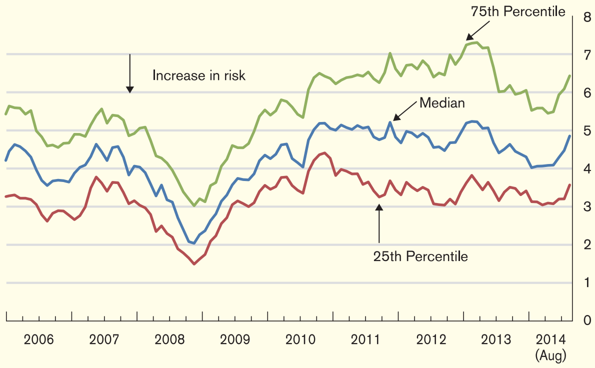
Note: Figures may not add up to total due to rounding.

Source: HKMA

To help banks to manage such risks, the HKMA has continued to step up supervisory efforts[59] focusing on the robustness of banks' risk management systems, including banks' credit risk and liquidity risk management. Banks are also now required to report more granular information about their Mainland business.

Partly reflecting slower economic growth in the Mainland, the aggregate distance-to-default index[60] of the Mainland's corporate sector declined from the first quarter of 2013 until the first quarter of 2014 (Chart 5.18). The index has started to improve since then. The improvement may be partly supported by recent measures by Mainland authorities to loosen liquidity, as shown by faster growth in money supply in the Mainland.[61] Nonetheless, since the longer-term effects of these measures on corporations are still uncertain, banks should maintain prudent management of credit risks in the Mainland market.

Chart 5.18
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.

[59] These efforts include: (1) regular and thematic onsite examinations of banks' credit underwriting processes; (2) introduction of SFR to ensure banks with high loan growth are supported by adequate long-term funding; and (3) regular supervisory stress testing to assess banks' resilience to credit shocks.

[60] 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.

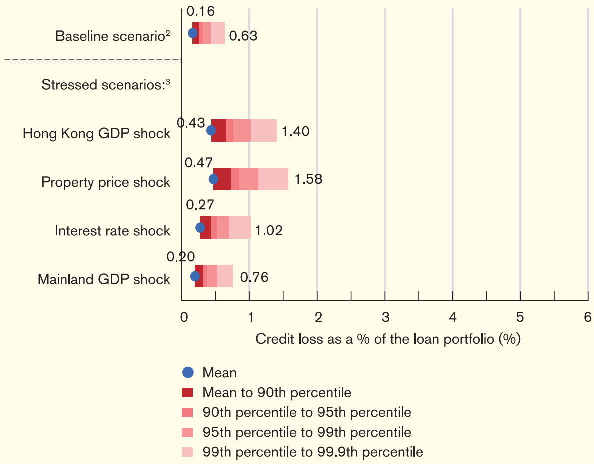
[61] For details, refer to section 2.2 of the report.

Macro stress testing of credit risk[62]

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 severe macroeconomic shocks, similar to those experienced during the Asian financial crisis. Chart 5.19 presents the simulated future credit loss rate of retail banks in the second quarter of 2016 under four specific macroeconomic shocks[63] using information up to the second quarter of 2014. The expected credit losses for retail banks' aggregate loan portfolios two years after the different hypothetical macroeconomic shocks are estimated to be moderate, ranging from 0.2% (Mainland GDP shock) to 0.47% (Property price shock).

Taking account of tail risk, banks' maximum credit losses (at the confidence level of 99.9%) under the stress scenarios range from 0.76% (Mainland GDP shock) to 1.58% (Property price shock), which are significant, but smaller than the loan loss of 4.39% following the Asian financial crisis.

Chart 5.19
The mean and value-at-risk statistics of simulated credit loss distributions[1]



Notes:
1. The assessments assume the economic conditions in 2014 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 2014 Q3 to 2015 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 2014 Q3 to 2015 Q2.
   Interest rate shock: A rise in real interest rates (HIBORs) by 300 basis points in the first quarter (i.e. 2014 Q3), followed by no change in the second and third quarters and another rise of 300 basis points in the fourth quarter (i.e. 2015 Q2).
   Mainland GDP shock: Slowdown in the year-on-year annual real GDP growth rate to 4% in one year.

Source: HKMA staff estimates.

The prospective exit from unconventional monetary policy (UMP) by the US Fed may potentially lead to a disruption in the supply of international US dollar credit. Box 6 studies this issue both theoretically and empirically. The major findings support the view that the contractionary effect of the Fed's exit from UMP on global liquidity would be partly offset by the expansionary effect of UMPs of other central banks. The net effect, however, is crucially dependent on whether the normalisation of liquidity in the US would lead to serious financial market disruption, in particular in the FX swap market. If the exit from UMP by the Fed coincides with a risk-off phase for global investors, a severe dollar shortage in global financial markets is possible. This suggests that liquidity risks associated with the flow of international US dollar credit can be high, which could pose significant challenges for policymakers.

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

[62] 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.

[63] These shocks are calibrated to be similar to those that occurred during the Asian financial crisis, except the Mainland China GDP shock.

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

	Jun 2013	Mar 2014	Jun 2014
Interest rate			
1-month HIBOR fixing[2] (quarterly average)	0.21	0.21	0.21
3-month HIBOR fixing (quarterly average)	0.38	0.38	0.37
BLR[3] and 1-month HIBOR fixing spread (quarterly average)	4.79	4.79	4.79
BLR and 3-month HIBOR fixing spread (quarterly average)	4.62	4.62	4.62
Composite interest rate[4]	0.32	0.41	0.47
		Retail banks	
Balance sheet developments[5]			
Total deposits	1.4	-0.4	5.3
Hong Kong dollar	0.5	-0.1	7.9
Foreign currency	2.5	-0.8	2.4
Total loans	5.6	4.3	4.8
Domestic lending[6]	5.2	4.3	4.9
Loans for use outside Hong Kong[7]	7.3	4.2	4.4
Negotiable instruments			
Negotiable certificates of deposit (NCD) issued	15.1	16.5	-3.3
Negotiable debt instruments held (excluding NCD)	-0.3	-5.8	5.3
Asset quality[8]			
As a percentage of total loans			
Pass loans	98.42	98.42	98.51
Special mention loans	1.11	1.12	1.05
Classified loans[9] (gross)	0.47	0.46	0.44
Classified loans (net)[10]	0.33	0.34	0.32
Overdue > 3 months and rescheduled loans	0.36	0.31	0.27
Profitability			
Bad debt charge as percentage of average total assets[11]	0.03	0.04	0.04
Net interest margin[11]	1.41	1.39	1.40
Cost-to-income ratio[12]	40.9	40.8	42.9
Liquidity ratio (quarterly average)	38.9	39.0	40.8
		Surveyed institutions	
Asset quality			
Delinquency ratio of residential mortgage loans	0.02	0.02	0.02
Credit card lending			
Delinquency ratio	0.25	0.22	0.22
Charge-off ratio — quarterly annualised	2.06	1.85	2.05
— year-to-date annualised	1.88	1.85	1.90
		All locally incorporated AIs	
Capital adequacy ratio (consolidated)[13]	15.9	15.9	16.1

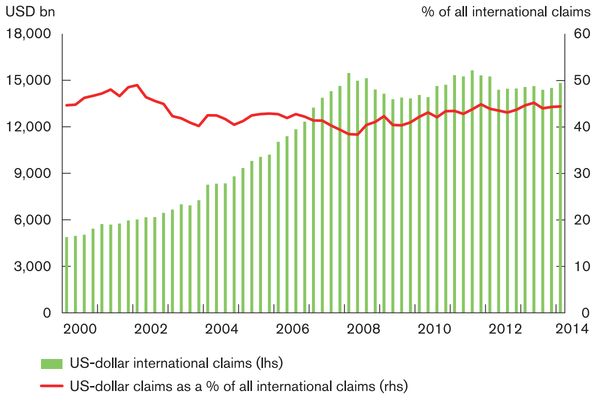
Notes:

1. Figures are related to Hong Kong office(s) only except where otherwise stated.
2. The Hong Kong dollar Interest Settlement 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 in 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 retail banks' Hong Kong office(s) and overseas branches.
9. Classified loans are those loans graded as "substandard", "doubtful" or "loss".
10. Net of specific provisions/individual impairment allowances.
11. Year-to-date annualised.
12. Year-to-date figures.
13. With effect from 1 January 2013, a revised capital adequacy framework (Basel III) was introduced for locally incorporated authorized institutions.

Box 6
Unconventional monetary policies and international US-dollar credit

The prospective exit from unconventional monetary policy (UMP) by the US Fed and tighter dollar liquidity conditions may potentially lead to a disruption of the supply of international US-dollar credit. Such a disruption could have important implications for global financial stability due to the fact that about half of international claims are denominated in the US dollar (Chart B6.1).

Chart B6.1
US-dollar international claims

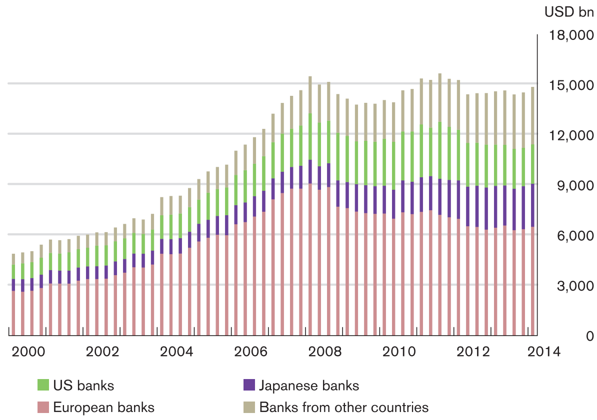


Notes:
1. The claims are vis-à-vis all sectors and include interoffice claims of banks.
2. US-dollar international claims include US-dollar cross border claims and local credit extended in US dollars in countries other than the US.

Source: BIS locational banking statistics (by nationality).

There is a counter argument that UMP by the Bank of Japan (BoJ) and possibly the European Central Bank (ECB) may help cushion US-dollar liquidity, and thus the Fed's exit from its UMP may not necessarily lead to a significant contraction in international US-dollar credit. This argument is supported by the fact that non-US global banks (i.e. those international banks headquartered outside the US), particularly European and Japanese banks channel the lion's share of international bank credit (Chart B6.2). It is argued that UMP by the BoJ and possibly the ECB would provide ample liquidity for their domestic banks. The home-currency liquidity can be converted into US-dollar funding through foreign exchange (FX) swaps to fill the US-dollar funding gap. The net impact on the supply of international US-dollar loans is therefore undetermined in theory.

Chart B6.2
US-dollar international claims by nationality of banks



Note: European banks include those in Belgium, France, Germany, Italy, the Netherlands, Spain, Sweden, Switzerland and the UK.

Source: BIS locational banking statistics (by nationality).

Apart from UMPs, the functioning of the FX swap market and default risk of global banks would also affect the supply of international US-dollar credit. As shown during the global financial crisis, the impairment of FX swap markets and heightened default risk of global banks contributed to a prolonged global US dollar shortage.

This box attempts to broaden our understanding of how UMPs, the functioning of FX swap markets and the default risk of global banks would affect the supply of US-dollar lending of global banks. We start off the analysis by introducing a theoretical framework. We will then discuss how far this theoretical framework can account for recent developments in respect of the US-dollar lending of foreign bank branches (FBBs) in Hong Kong. Finally, we will test the theoretical framework econometrically using a novel dataset from the BIS.

The theoretical framework

Our theoretical framework is modified from that developed by Ivashina et al. (2012)[64]: Consider a European bank that provides euro loans (L) in the local market and US-dollar loans (L^*) in the international market. We assume that the bank can raise costless euro and US-dollar funding in the respective markets, but only up to a limit (denoted by D and D^* respectively). Any amount of funding exceeding the limit incurs an increasing marginal cost. The bank is assumed to minimise the FX risk. So, in order to provide US-dollar loans, the bank needs to raise US-dollar funding in the US or to convert its euro funding into US dollars in the FX swap market. In the former case, the funding cost is assumed to factor in a risk premium (P) to compensate for the bank's default risk, while in the swap market a fee (S) is required. The demand curves for L and L^* are assumed to be downward sloping, with θ and θ^* being the respective demand shock parameters.

Under some assumptions on the demand and cost functions, the model can be solved mathematically. The model predicts that in equilibrium, the level of US-dollar loans (L^*) of a profit-maximising European bank is a linear function such that L^* is positively correlated with D, D^* and θ^*, and negatively correlated with θ, P and S.

The model prediction is largely consistent with economic intuition. Most importantly, other things being equal, more abundant liquidity either in home or in the US market (i.e. larger D and D^* respectively) would induce the European bank to lend more US-dollar loans, which is consistent with the hypothesis that monetary policies adopted by the Fed and the home-country central bank are determinants of the supply of US-dollar loans.

[64] Ivashina, Victoria, David S. Scharfstein and Jeremy C. Stein (2012), "Dollar Funding and the Lending Behavior of Global Banks," FEDS paper 2012-74, Federal Reserve Board.

For other supply-side factors, higher default risk (higher P) would increase the bank's US-dollar funding cost in the US, thus curtailing its US-dollar loans. Disruption in the FX swap market (higher S) would also reduce the supply of US-dollar loans of the European bank as it becomes more costly to raise cross-currency funding.

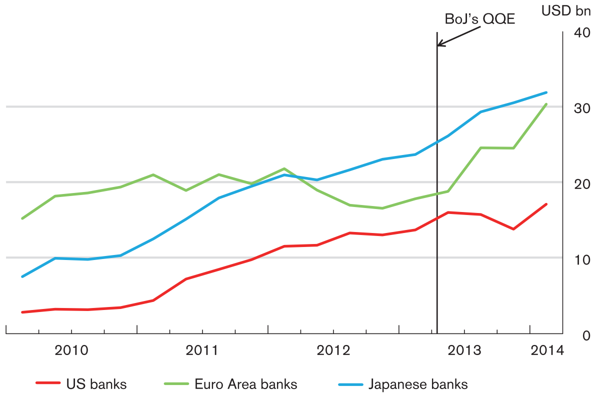
Anecdotal evidence from foreign bank branches in Hong Kong

The operation of FBBs in Hong Kong is a natural experiment to test the theoretical framework, as most global banks have branches in Hong Kong, and many of these branches act as regional headquarters to provide loans to borrowers in Asia. So, it can be argued that FBBs in Hong Kong face very similar loan demand conditions. In theory, this feature allows us to properly control demand factors, and as such, significant differences in loan growth among FBBs in Hong Kong would arguably be attributable to supply factors. Therefore, we can assess the explanatory power of the theoretical framework by examining the extent to which D, D^*, P and S can account for recent developments in respect of US-dollar lending of FBBs in Hong Kong.

Chart B6.3 presents US-dollar loans since 2010 for the US, Japanese and euro-area bank branches in Hong Kong. For US bank branches, the Fed's UMP would be the dominant factor affecting their lending as US banks' source of US-dollar funding is mainly in the US. The upward trend (i.e. the red line in Chart B6.3) is consistent with the continued expansion of the Fed's balance sheet.

US-dollar loans of Japanese bank branches in Hong Kong exhibited a similar trend (i.e. the blue line in Chart B6.3) to that of US bank branches before April 2013, suggesting the Fed's UMP also affected Japanese bank branches' US-dollar loans. However, since April 2013 when the BoJ started its quantitative and qualitative easing (QQE), the US-dollar loans of Japanese bank branches increased more rapidly as compared with that of the "control group" (i.e. US bank branches). The evidence suggests that BoJ's QQE does affect the supply of US-dollar loans of Japanese banks, which is consistent with the model prediction.

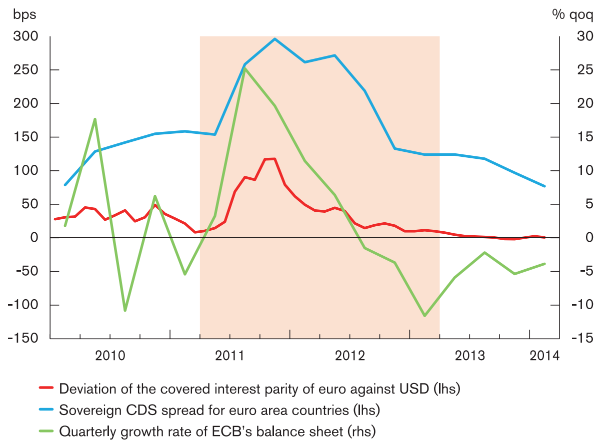
Chart B6.3
US-dollar loans of foreign bank branches in Hong Kong by selected nationalities



Source: HKMA.

(i.e. higher S; the red line). The rapid growth of US-dollar loans of euro-area bank branches in Hong Kong since 2013Q2 is underpinned by a continued improvement in the three aforementioned factors.

Chart B6.4
Selected factors potentially affecting the supply of US-dollar loans of euro-area banks



Sources: IMF International Financial Statistics, Bloomberg and HKMA staff estimates.

For US-dollar loans of euro-area bank branches in Hong Kong, the development is affected by various factors. There was an upward trend of US-dollar lending until 2011Q1 (i.e. the green line in Chart B6.3), which is broadly in line with that of Japanese and US bank branches. This points to a significant effect of the Fed's UMP. From 2011Q2 to 2013Q1, the trend reversed, which is consistent with the deceleration of the growth rate of the ECB's balance sheet (i.e. the green line in Chart B6.4) and high default risk of euro-area banks[65] (i.e. a rise in P; see the blue line). There was also a spike in the swap cost

The empirical model and estimation results

We further test the theoretical framework econometrically using a novel dataset from the BIS. Since June 2012, the BIS has collected quarterly data of dollar-denominated external claims and liabilities of 12 core global bank nationalities[66] vis-à-vis 76 counterparty countries.[67] The breakdown by nationality of global banks facilitates an investigation of how monetary policy in the home country would affect US-dollar loans of a global bank. More importantly, the information in respect of home-recipient country pairs is conducive to a clear identification of the supply-side effect using the econometric approach by Khwaja and Mian (2008).[68] Despite the short length of this dataset (from June 2012 to December 2013), there is a sufficiently large number of samples (more than 4,000 samples), by referring to which a reliable statistical result can be obtained.

65 Default risk is proxied by the sovereign credit default swap (CDS) spread for euro-area countries.

66 Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Spain, Sweden, Switzerland, the UK and the US.

67 The data are only available for central bank staff of the BIS reporting countries.

68 Khwaja and Mian (2008), "Tracing the impact of bank liquidity shocks: Evidence from an emerging market", *American Economics Review* 98, pp. 1413-1442.

Following the theoretical framework, an empirical model is specified as follows:

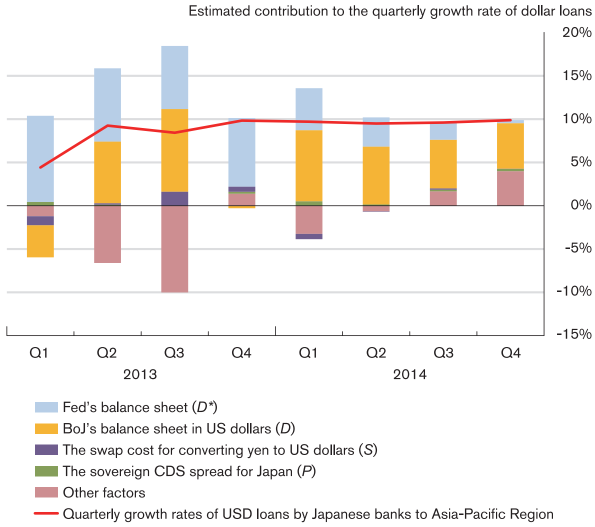
$$\Delta L^*_{ijt} = \alpha_{it} + \beta_1 \Delta D_{jt} + \beta_2 \Delta D^*_t + \beta_3 \Delta P_{jt-1} + \beta_4 \Delta S_{jt-1} + \gamma X + \varepsilon_{ijt}$$

where ΔL^*_{ijt} is the quarterly growth rate of US-dollar loans to a recipient country *i* by global banks headquartered in country *j* from *t-1* to *t*. α_{it} is recipient country-time fixed effect to account for the demand shock in country *i* (i.e. θ*). ΔD_{jt} and ΔD_t* are funding shocks in country *j* and the US respectively. They are proxied by the growth rate of the balance sheet of the central bank in country *j* and that of the Fed respectively. ΔP_{jt-1} is measured by the change in the sovereign *CDS* spread for country *j* in *t-1*, while ΔS_{jt-1} is gauged by the two-quarter moving average of the change in the deviation from covered interest parity for converting country *j*'s currency into the US dollar in *t-1*. *X* is a vector of control variables.[69]

The preliminary estimation result is broadly in line with the prediction of the theoretical framework, as all the explanatory variables are estimated to have an expected sign. Except for ΔP_{jt-1}, all explanatory variables are found to be statistically significant.

Based on the estimation result, we analyse the contribution by different factors to the quarterly growth rate of US-dollar loans of Japanese banks to the Asia-Pacific region (excluding Japan). The Fed's UMP is found to be a major driver in 2013, but the importance receded in 2014 as the Fed began to taper its long-term asset purchases (Chart B6.5).[70] The BoJ's UMP is found to become the principal factor in 2014. The effects of other factors are estimated to be small for the whole period.

Chart B6.5
Estimated contribution by factors to the quarterly growth rate of US-dollar loans of Japanese banks to the Asia-Pacific region



Notes:
1. The Fed's balance sheet is assumed to be determined only by the pace of tapering. The tapering is assumed to be completed by October 2014 such that the Fed's balance sheet remains constant thereafter.
2. The BoJ's balance sheet is assumed to expand by Japanese yen 70 trillion in the fiscal year of Apr 2014 – Mar 2015, consistent with its QQE plan. The size of the BoJ's balance sheet is converted into US dollars in estimation. The exchange rate of yen/USD is assumed to be unchanged since 2014Q3.
3. The change of swap cost and that of sovereign CDS spread for Japan since 2014 Q3 are assumed to follow the respective trends in the recent 4 quarters.

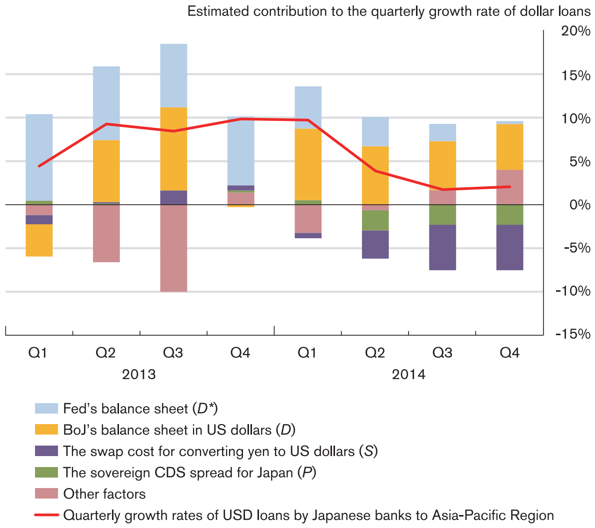
Source: HKMA staff estimates.

One caveat of the analysis is that Chart B6.5 at best only shows the estimated effect for a normal state, which assumes that the swap market would function properly and banks' default risk stays at a low level. To complement the analysis, we consider a hypothetical stress scenario that the interplay of UMPs is accompanied by disruption in the FX swap market and heightened default risk of banks in 2014. The result (Chart B6.6) shows that the supply of US-dollar loans of Japanese banks can be significantly disrupted.

[69] These include the forecast of nominal GDP growth rate for country *j* to control for loan demand in country *j* (i.e.θ) and the average ratio of total funding (excluding the amount due to interoffice and trading liabilities) to assets for country *j*'s bank branches in the US in *t-1* to control for the presence of country *j*'s banks in the US wholesale funding market.

[70] The result before 2014Q2 is obtained based on the actual movement of the factors, while the result thereafter is generated based on some assumptions on the path of the factors. See footnotes under Chart B6.5 for details.

Chart B6.6
Estimated contribution by factors to the quarterly growth rate of US-dollar loans of Japanese banks to the Asia-Pacific region under a stress scenario



Notes:
1. For assumptions on the balance sheets of the Fed and BoJ, see footnotes (1) and (2) under Chart B6.5 respectively.
2. The change of swap cost and that of sovereign CDS spread for Japan are assumed to increase linearly from 2014Q1 to 2014Q4 to the respective peaks of 107 basis points and 296 basis points. These assumptions simulate a hypothetical scenario that Japanese banks face a sharp rise in the swap cost and default risk that is similar to that faced by euro-area banks during the European sovereign debt crisis.

Source: HKMA staff estimates.

Conclusion

This study provides both theoretical and empirical findings on how the interplay of the UMPs of major central banks would affect the supply of international US-dollar loans by global banks. On the whole, our findings support the view that the contractionary effect of the Fed's exit from UMP on global liquidity would be partly offset by the expansionary effect of UMPs of other central banks. The net effect, however, is crucially dependent on whether the normalisation of liquidity in the US would lead to serious financial market disruption, in particular in the FX swap market. If the exit from UMP by the Fed coincides with a risk-off phase for global investors, then a severe dollar shortage in the global financial markets is possible. This suggests that liquidity risks associated with the flow of international US-dollar credit can be high, which could pose significant challenges for policymakers.

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

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 (EFBN)

Debt instruments issued by the HKMA for the account of the Exchange Fund. Introduced in March 1990, the Exchange Fund Bills and Notes programme has expanded over the years, with a maturity profile ranging from three months to 15 years. 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.

Liquidity Ratio

All authorized institutions in Hong Kong are required to meet a minimum monthly average liquidity ratio of 25%. This is calculated as the ratio of liquefiable assets (e.g. marketable debt securities and loans repayable within one month subject to their respective liquidity conversion factors) to qualifying liabilities (basically all liabilities due within one month). The method of calculation and its components are specified in the Fourth Schedule to the Banking Ordinance.

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

3m moving average	Three-month moving average
3m-on-3m	Three-month-on-three-month
ASEAN	Association of Southeast Asian Nations
AIs	Authorized Institutions
BIS	Bank for International Settlements
bn	Billion
BLR	Best lending rate
BoJ	Bank of Japan
BoP	Balance of Payments
BSD	Buyer's stamp duty
CBRC	China Banking Regulatory Commission
CCPI	Composite Consumer Price Index
CCS	Cross-currency swap
CDs	Certificates of deposit
CDS	Credit default swap
CEI	Composite index of coincident economic indicator
CIs	Certificates of Indebtedness
CNH	Offshore renminbi exchange rate in Hong Kong
CNY	Onshore renminbi exchange rate
C&SD	Census and Statistics Department
CPI	Consumer Price Index
CU	Convertibility Undertaking
DF	Deliverable forward
DSD	Doubling of the ad valorem stamp duty rates
DSR	Debt servicing ratio
ECB	European Central Bank
EFBN	Exchange Fund Bills and Notes
EMEs	Emerging Market Economies
EUR	Euro
FBBs	Foreign bank branches
Fed	Federal Reserve
FOMC	Federal Open Market Committee
FSB	Financial Stability Board
FX	Foreign exchange

GARCH	Generalised autoregressive conditional heteroscedasticity
GDP	Gross Domestic Product
GFC	Global financial crisis
G-SIBs	Global systemically important banks
HIBOR	Hong Kong Interbank Offered Rate
HKD	Hong Kong dollar
HKMA	Hong Kong Monetary Authority
HK$M3	Hong Kong dollar broad money supply
HSCEI	Hang Seng China Enterprises Index
HSI	Hang Seng Index
IMF	International Monetary Fund
IPO	Initial Public Offering
IT	Information technology
LCR	Liquidity Coverage Ratio
LEI	Composite index of leading economic indicator
LERS	Linked Exchange Rate system
LIBOR	London Interbank Offered Rate
LMR	Liquidity Maintenance Ratio
lhs	Left-hand scale
LTD	Loan-to-deposit
LTV	Loan-to-value ratio
mn	Million
MTN	Medium-term Note
NBS	National Bureau of Statistics
NCD	Negotiable certificates of deposit
NEER	Nominal effective exchange rate
NIE	Newly industrialised economies
NPL	Non-performing loan
OIS	Overnight indexed swap
OLS	Ordinary least squares
OTC	Over-the-counter
p.a.	Per annum
PBoC	People's Bank of China
PC	Principal component
PMI	Purchasing Managers' Index
PPI	Producer Price Index
qoq	Quarter-on-quarter
QE	Quantitative Easing
QQE	Quantitative and Qualitative Monetary Easing

R&VD	Rating and Valuation Department
REER	Real effective exchange rate
rhs	Right-hand scale
RMB	Renminbi
ROA	Return on assets
RTGS	Real time gross settlement
SARS	Severe acute respiratory syndrome
SEHK	Stock Exchange of Hong Kong
SFR	Stable Funding Requirement
SHIBOR	Shanghai Interbank Offered Rate
SOEs	State-owned enterprises
SSD	Special stamp duty
SSE	Shanghai Stock Exchange
SVAR	Structural vector autoregression
S&P	Sale and Purchase Agreements of Building Units
S&P 500	Standard & Poor's 500 Index
TLTRO	Targeted Longer-Term Refinancing Operation
UK	United Kingdom
UMP	Unconventional monetary policy
US	United States
USD	US dollar
VAR	Vector auto-regression
VIX	Chicago Board Options Exchange Market Volatility Index
yoy	Year-on-year

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

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