What have we learnt about the international transmission of monetary policy in recent years? Perspectives from Hong Kong SAR

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Abstract

This paper discusses how the unconventional monetary policies in advanced economies have impacted Hong Kong SAR through the financial channel. Following the 2008–09 global financial crisis, the monetary expansion in advanced economies has led to extremely loose liquidity conditions on a global scale and caused significant spillovers to Hong Kong SAR through the channels of interest rate diffusion and capital flows. Credit and household indebtedness have grown at a fast pace as a result, while home prices have risen to highly stretched levels. These developments have increased the risk of a build-up of macrofinancial vulnerability in Hong Kong SAR. To guard against and mitigate these spillovers, the Hong Kong SAR authorities have introduced various types of macroprudential measures targeting credit growth and the property market. Evidence from the available research suggests that these measures have helped safeguard financial stability and have influenced loan growth, interest costs, property market transactions and speculative activity.

Keywords: International transmission channels, macroprudential policy, financial stability, Hong Kong SAR, global financial crisis, unconventional monetary policies

JEL classification: E51, E61, G18, G28

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1. Background

The monetary expansion undertaken in the world's advanced economies in recent years has no parallel in modern economic history. After the collapse of Lehman Brothers in September 2008, central banks in the advanced economies lowered their policy interest rates to historically low levels and started large-scale asset purchases in the financial markets. These measures created an exceptionally loose monetary environment and helped restore financial stability and support the recovery of the advanced economies. But they also caused significant spillovers to emerging market economies (EMEs), mainly through the financial channel by giving rise to highly accommodative global liquidity conditions. Many EMEs were faced with massive capital inflows, low interest rates, fast credit growth and asset price increases that could have fuelled the accumulation of domestic macrofinancial imbalances. The spillovers through the trade channel, whereby an exceptionally loose monetary environment helped bolster the real activity of the advanced economies and hence world trade and EMEs' export performance, have been less important, however.[2]

This paper focuses on the spillovers to Hong Kong SAR through the financial channel and the policy response of the Hong Kong SAR authorities. Section 2 discusses the international transmission mechanism and its overall impact on Hong Kong SAR's macrofinancial conditions. Section 3 illustrates how the authorities in Hong Kong SAR mitigate the risk of a build-up of domestic imbalances. Section 4 concludes.

2. International transmission of advanced economies' monetary policy

In the years following Lehman's collapse, monetary expansion in the advanced economies has led to extremely loose liquidity conditions on a global scale and caused significant spillovers to Hong Kong SAR through the channels of interest rate diffusion and capital flows. Credit and household indebtedness have grown at a fast pace as a result, while home prices have risen to highly stretched levels. These developments have increased the risk of a build-up of macrofinancial vulnerability in Hong Kong SAR.

a. Interest rates

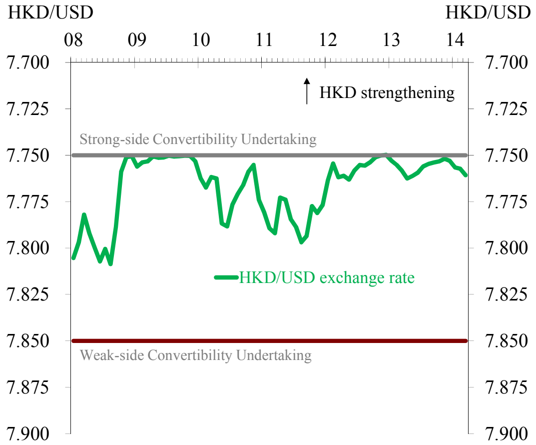
US monetary policy is imported into Hong Kong SAR through the Linked Exchange Rate system, with the domestic currency (Hong Kong dollar, or HKD) linked to the US dollar (USD) within a very narrow band of HKD 7.75–7.85 to USD 1. Currency stability is maintained through an automatic interest rate adjustment mechanism and a firm commitment by the Hong Kong Monetary Authority (HKMA) to honour its

[2] For example, since the global financial crisis of 2008–09, demand for Asian exports from the G3 has remained sluggish. Despite some encouraging signs of recovery recently, it is uncertain to what extent a stronger recovery in the advanced economies would provide support for the region's growth.

Convertibility Undertakings (CUs).[3] Moreover, changes in the US policy interest rate have a direct impact on the discount rate (or Base Rate) in Hong Kong SAR, which is set at 50 basis points above the prevailing US Fed Funds target rate.[4] So there are no large deviations between the HKD and USD interest rates in the long term.[5]

HKD/USD exchange rate

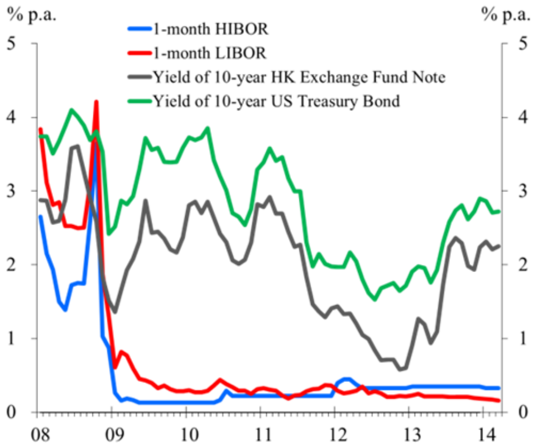
Chart 1



Source: HKMA.

Interbank rates and bond yields

Chart 2



Sources: HKMA and St-Louis Fed.

[3] Under the strong-side CU, the HKMA undertakes to buy USD from licensed banks at HKD 7.75. Under the weak-side CU, the HKMA undertakes to sell USD at HKD 7.85.

[4] The Base Rate is the interest rate that forms the foundation upon which the discount rates for repo transactions through the HKMA Discount Window are computed. It is currently set at 50 basis points above the prevailing US Fed Funds target rate or the average of the five-day moving averages of the overnight and one-month Hong Kong Interbank Offered Rate (HIBOR), whichever is the higher.

[5] Wong and Wong (2011) find empirical evidence that under the Linked Exchange Rate system, HIBORs track LIBORs closely in the long term. There could still be short-term deviations between the HKD and USD interbank rates, reflecting in part domestic liquidity conditions.

With the Linked Exchange Rate system enjoying a high degree of market credibility, the HKD has remained stable in the past few years, and the HKD interbank rates and long-dated bond yields have fallen to historically low levels and have rarely diverged from their USD counterparts by a significant margin (Charts 1 and 2). For example, the overnight and three-month HKD interbank rates have hovered below 0.13% and 0.55%, respectively, since mid-2009, while the yield on 10-year Exchange Fund Notes has fallen to an average 1.9% (though it has risen to around 2.2% in recent months amid market concerns about the US Federal Reserve's tapering plan).[6] The composite interest rate, which measures the average cost of HKD funds for retail banks, has also stayed below 0.55% since mid-2009. The low wholesale funding costs have also fed through into retail interest rates. The savings deposit rate has dropped to 0.01% throughout the period. Moreover, with an average net interest margin of around 1.35%, the overall lending interest rate could have fallen below 2%. In particular, the average mortgage interest rate for newly approved loans once fell below 1% in the second half of 2009 and remained below 2.5% in 2013, compared with an average of about 5% over the past 20 years.

b. Capital flows

International transmission of advanced economies' monetary policy has also taken place through capital flows induced by overseas investors' global search for yield and investment opportunities. In Hong Kong SAR, one of the most visible and readily available indicators of HKD fund flow pressures is the change in the Aggregate Balance resulting from Currency Board market operations by the HKMA.[7] There have been three recent phases during which the Aggregate Balance has risen sharply, for a total increase of about HKD 747 billion (or USD 96 billion) (Chart 3).[8] The first phase (September 2008 to March 2009), involving inflows of HKD 220 billion, was driven by the repatriation of funds by local banks and corporations from abroad to meet liquidity needs at home at the height of the global financial crisis and partly by the introduction of the full deposit guarantee scheme that made Hong Kong SAR a safe haven. The second and third phases (April to December 2009 and the fourth quarter of 2012) were mainly attributable to portfolio inflows from overseas investors searching for yield as the various monetary programmes in the United States and Europe took effect and global risk appetite increased as a result. These two phases involved massive inflows of HKD 420 billion and HKD 107 billion, respectively.

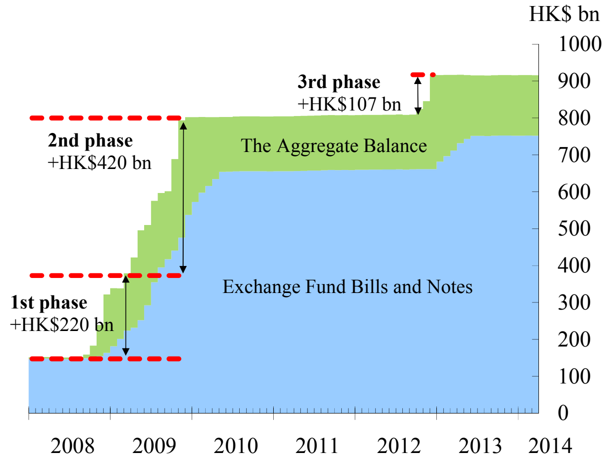
6 Exchange Fund Notes are HKD fixed income debt instruments issued by the Hong Kong SAR government for the account of the Exchange Fund under the Exchange Fund Ordinance.

7 Such operations refer to the triggering of the strong-side Convertibility Undertaking, for instance, and strong inflow pressures will ultimately show up as an increase in the Aggregate Balance, which is 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.

8 The HKMA has issued additional Exchange Fund Bills to meet banks' demand, leading to an increase in the outstanding Exchange Fund papers and a corresponding decrease in the Aggregate Balance. These operations, representing a change in the composition of the Monetary Base, were in line with Currency Board principles, as the Monetary Base remained fully backed by foreign exchange reserves.

Aggregate Balance and outstanding Exchange Fund Papers

Chart 3



Source: HKMA.

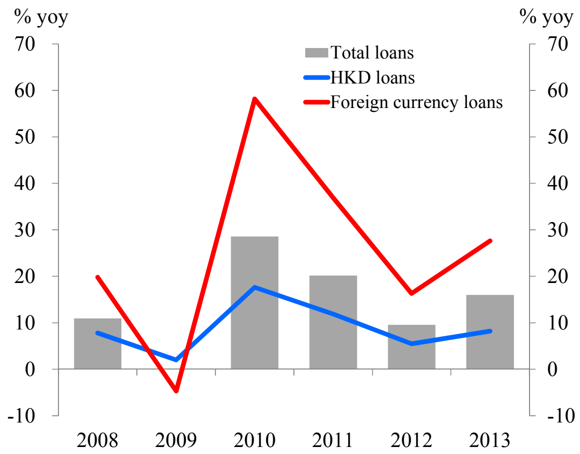
c. Credit

The low interest rate environment imported into Hong Kong SAR and the massive capital inflows have considerably increased bank liquidity in Hong Kong SAR and allowed for easier credit access for the non-bank private sector. Between 2009 and 2013, total bank credit in Hong Kong SAR almost doubled (Chart 4). Within this total, bank credit denominated in HKD grew by a cumulative 50% (or an annualised 11%), compared with 28% growth (or an annualised 6.3%) in Hong Kong SAR's nominal GDP in the same period. As a result, the ratio of domestic credit to GDP increased from 145% to about 170%. There was a notable increase in lending to financial concerns, in part driven by buoyant equity market activities amid "search-for-yield" inflows. Personal loans also expanded rapidly, but the growth rate in mortgage loans has been contained at a cumulative 36% by macroprudential measures notwithstanding the sharp rise in home prices. These developments will be discussed in greater detail later in this paper.

Meanwhile, foreign currency bank credit (mainly in USD) in Hong Kong SAR grew by a cumulative 220% (or an annualised 34%) between 2009 and 2013 amid advanced economies' monetary expansion. As foreign currency loans have been rising much faster than foreign currency deposits in Hong Kong SAR, the foreign currency loan-to-deposit ratio has risen from a low base to around 60% at end-2013. Within this figure, the USD loan-to-deposit ratio has risen from around 30% in 2009 to about 85%. While the ratios remain below critical levels, the pace of increase is a cause for concern.

Growth in bank credit

Chart 4



Source: HKMA.

The accommodative global liquidity conditions have been the key underlying driver of these developments. First, to the extent that USD credit is usually priced off global benchmarks, monetary accommodation in the US makes for immediately easier financial conditions offshore wherever there is a substantial stock of USD funds, as in Hong Kong SAR. The low USD interest rates then provide an incentive for firms to substitute USD credit for local currency credit. Second, monetary expansion in the advanced economies is putting upward pressure on many Asian currencies which carry higher interest rates and whose economies have been growing at faster rates. Appreciation expectations can provide a further incentive to borrow in foreign currency given the potential for reductions in the capital value of liabilities.

As for Hong Kong SAR, these incentives have led to a phenomenal rise in USD borrowing by Mainland China-related firms in Hong Kong SAR.[9] Specifically, given appreciation expectations for the RMB at home and arbitrage opportunities from onshore-offshore USD interest rate differentials, firms in Mainland China have used their deposits at home to secure letters of credit and helped their overseas affiliates obtain USD loans in Hong Kong SAR against this "collateral", thereby raising loan demand in Hong Kong SAR. Partly as a result, the external claims of the Authorized Institutions (AIs) in Hong Kong SAR vis-à-vis Mainland non-banks rose to HKD 845 billion at the end of 2013 from HKD 145 billion at the end of 2009.[10] These developments also reflect Hong Kong SAR's evolving role as a USD funding and lending centre in the region.

Rising dollar credit could make banks in the region become more vulnerable to liquidity risk in international dollar funding. Liquidity risk has increased especially for banks that do not have a sufficient dollar deposit base. These banks must rely on global wholesale funding markets and this makes banks vulnerable to dollar liquidity shocks and increases systemic risks. International credit on dollar liquidity

9 See HKMA (2013a) and He and McCauley (2013).

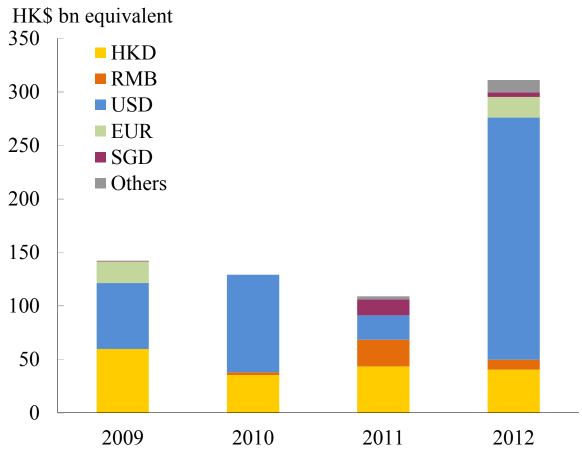
10 AIs are institutions authorised under the Banking Ordinance to carry on the business of taking deposits. All AIs in Hong Kong SAR are supervised by the HKMA.

could become tight, for instance, if the risk appetite of global financial intermediaries decreased in the event of an abrupt deterioration in the global economic environment. In particular, to the extent that the funding of dollar credit involves short-term dollar interbank borrowing from overseas, which is large relative to the dollar assets of the private and public sectors, it increases the risk of currency and maturity mismatch, giving rise to substantial financial stability risks.

Meanwhile, credit in the form of bond issuance has increased remarkably in Hong Kong SAR, reaching HKD 414.0 billion in 2012. This is about twice the amount seen in 2009 and has been driven by local corporate issuances, which accounted for over 70% of the total and were mainly denominated in USD (Chart 5). This rapid rise in USD corporate bond issuance partly reflects a development associated with capital market deepening and more market-based financing. The financing of USD credit in the form of bond issuance also helps avoid heavy reliance on short-term bank credit for corporate funding.[11]

Corporate bond issuance by currency

Chart 5



Note: Only notes with original maturity of more than one year are included.

Sources: Newswires and HKMA staff estimates.

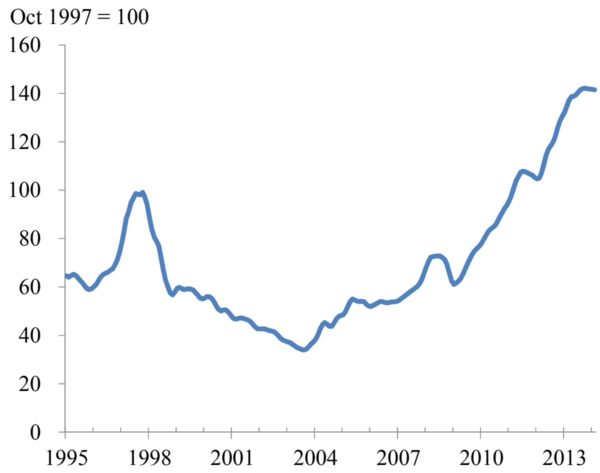
As a result of rising bank credit and bond issuance, corporate leverage has trended higher in Hong Kong SAR. According to the balance sheet statistics of major listed non-financial companies, the debt leverage (defined as the ratio of total assets to shareholders' funds) of Hong Kong SAR's corporate sector had risen to 1.76 times at the end of 2012, from about 1.66 times in 2007. At the same time, the interest coverage ratio of Hong Kong SAR's corporate sector, which gauges the ability to cover interest expenses with earnings, dropped to 8.1 times in 2012, from over 12.6 times two years ago. While these two debt burden indicators remain significantly more favourable than during the Asian financial crisis, when the leverage level and interest coverage ratio were at 1.94 times and 2.9 times, respectively, in 1998, the recent rise in corporate leverage suggests that the debt-servicing ability of the corporate sector could be put to the test when interest rates rise.

[11] See HKMA (2013c).

d. Property prices

Abundant global liquidity and lower interest rates could also have distorted asset prices and particularly home prices in Hong Kong SAR, which have risen sharply, with the level in 2013 about twice that seen in 2009 (Chart 6). This rapid run-up in home prices reflects low interest rates, the search for yield, and very tight housing supply conditions. Mortgage interest rates went as low as 1% in the second half of 2009 and have stayed below 2.5%. A large housing demand-supply imbalance has also persisted, with supply having fallen below the estimated demand by a large margin since mid-2006. These developments, together with the US Federal Reserve's forward guidance of keeping its policy rate at low levels for a rather long period, have led to strong market expectations that home prices will keep rising. On the other hand, property valuations have become highly stretched relative to household affordability, with the price-to-income ratio reaching 14.6 in the fourth quarter of 2013, a level comparable to the 1997 peak.[12] The possibility of a housing market bubble has been an important macroeconomic and financial stability concern in recent years. Essentially, a housing downturn could have a severe adverse impact on the Hong Kong SAR economy, with consumer confidence, household spending, economic growth and labour market conditions all weakening significantly.

Home prices — Chart 6



Source: Rating and Valuation Department.

e. Household indebtedness

Partly as a result of easy credit and the low interest rate environment, there has been a notable increase in household indebtedness (which comprises mortgage and consumer credit), from 55% of GDP at the end of 2009 to 62% at the end of 2013 (Chart 7). While mortgage loan growth has been contained by macroprudential

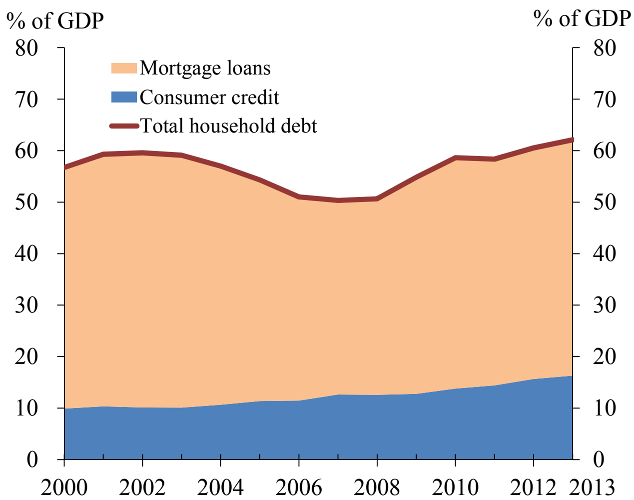
[12] The price-to-income ratio measures the average price of a typical 50-square-metre flat relative to the median annual income of households living in private housing.

measures, consumer credit surged by a cumulative 76% (or an annualised 15%) between 2009 and 2013. The rise in household indebtedness made household debt payments more sensitive to changes in interest rates, although the household debt-to-GDP ratio remained low by international standards and the overall household balance sheets were still in relatively good shape with a substantial rise in the value of assets offsetting the increase in debt.

Another sign of economic vulnerability has emerged in the form of a notable deterioration in Hong Kong SAR's current account balance, from a surplus of 15% of GDP in 2008 to around 2% in 2013. While also partly attributable to weaker external demand, this mainly reflected much stronger domestic consumption and a marked decline in household savings.[13] It also appeared that instead of labour income growth, consumer credit and positive housing wealth effects might have supported the majority of the consumption growth in recent years. However, access to consumer credit could tighten eventually and housing wealth is subject to large volatility. These could pose risks to macroeconomic and financial stability in Hong Kong SAR, particularly when the advanced economies normalise their monetary policy.

Household indebtedness

Chart 7



Sources: HKMA and Census and Statistics Department.

3. Policy response

To guard against and mitigate the spillovers arising from advanced economies' unconventional monetary policy, the authorities in Hong Kong SAR have introduced various types of macroprudential measures targeting credit growth and the property market. In what follows, the key macroprudential measures implemented in Hong Kong SAR are highlighted and their effectiveness discussed.

13 See the HKMA (2013b).

a. Macroprudential measures targeting credit growth

The HKMA adopts a "continuous supervision" policy to supervise banks through a variety of techniques such as on-site examinations, off-site reviews, prudential meetings, cooperation with external auditors and sharing information with other supervisors. It also introduces specific macroprudential measures when deemed necessary. In view of the strong bank credit growth in 2010 and early 2011, the HKMA issued a circular in April 2011 to require banks to reassess their business plans and funding strategies for the rest of the year. In particular, the rapid pace of credit growth had raised concerns about the potential stress on banks' liquidity positions and credit risk controls in a crisis-prone environment of global excess liquidity and heightened domestic overheating pressures. In the second half of the year, a matched term funding requirement (tenor matching) was introduced for banks. In the same year, the HKMA required banks to increase their regulatory reserves to build up a bigger cushion against possible deterioration in asset quality in the future.

These credit-related measures have had an impact on loan growth and all-in interest rate costs. Loan growth began to slow in July 2011, and the composite interest rate, which is a measure of the average cost of retail banks' HKD funds, increased by a total of 32 basis points in that year. He and McCauley (2013) further show that the credit-related measures have had the effect of driving up the cost of HKD and USD credit in the syndicated loans market, with the interest rate spreads reaching levels characteristic of the global financial crisis of 2008–09. They also find empirical support that, after the HKMA circular in April 2011, banks responded to tighter liquidity regulations by raising costs for borrowers of medium-term loans.

More recently in October 2013, amid signs of resurgence in loan growth, the HKMA introduced the Stable Funding Requirement (SFR), obliging banks with loan growth exceeding 20% to maintain a specific level of stable funds starting from the beginning of 2014. The aim of the SFR is to ensure that AIs can maintain stable business operations continuously when market liquidity comes under significant stress and to help mitigate the risk arising from the tapering of the US Federal Reserve's asset purchase programme and possible volatilities in the global financial markets. After the announcement of the SFR, loan growth moderated in late 2013. In view of rising household indebtedness, the HKMA issued a circular in January 2014 calling on banks to review the underwriting standards for their personal lending business, including the prudent use of instruments such as a debt-servicing ratio limit, maximum loan tenor, portfolio-based limit structure, and internal stress testing assuming a 300-basis-point increase in the loan interest rate.

As regards the rise in Mainland-related business conducted by AIs, the HKMA stepped up surveillance of these activities and requested AIs to report more detailed information on their non-bank Mainland exposures. Thematic examinations on the AIs active in these areas were also conducted. Moreover, with local banks expanding their branch networks into Mainland China, the HKMA also conducted regular on-site examinations of these Mainland operations.

Overall, capitalisation of Hong Kong SAR's banking sector has remained well above minimum international standards. The consolidated capital adequacy ratio of locally incorporated AIs was stable at 15.9% at the end of 2013. Liquidity conditions continue to be sound, with the average liquidity ratio of retail banks at end-2013 staying at 39.6% and remaining well above the regulatory minimum of 25%. Asset quality has also remained good. The ratio of classified loans to total loans stayed low at 0.48% at the end of 2013, while the delinquency ratio for credit card lending was 0.2%. The HKMA will continue to closely monitor developments in the banking sector and ensure that banks remain resilient and prudent.

b. Macroprudential measures targeting the property market and mortgage business

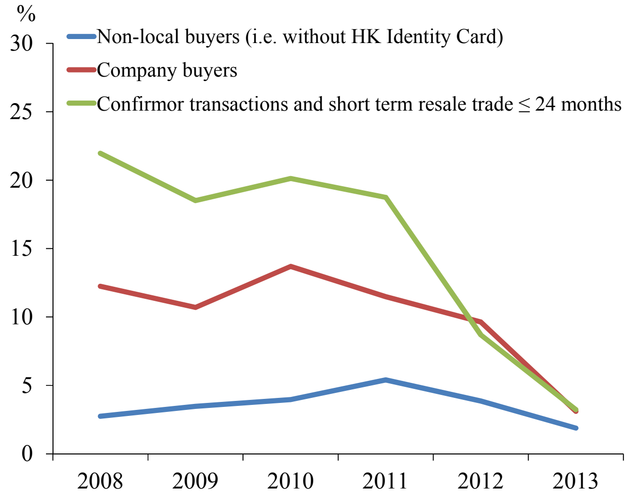
As regards the property market, the HKMA has used macroprudential measures for more than two decades to prevent bank credit from fuelling property-price bubbles and to ensure that banks and their customers have sufficient cushions on their balance sheets to weather volatilities in property prices. These policies do not target property prices but may help dampen the amplitude of property price cycles. Since 2009, the HKMA has implemented six rounds of macroprudential measures on mortgage lending business, by lowering the caps on the loan-to-value (LTV) ratio and debt service ratio (DSR) gradually, extending the prudential target from luxury homes to investment properties and later to those where borrowers repay their debt with foreign income or have multiple mortgages, and imposing a risk-weighted floor of 15% for residential mortgages.

The HKMA has also coordinated efforts with the fiscal and land authorities. As a long-term solution, the land authorities have introduced land- and housing-supply measures to redress the tight supply conditions. Meanwhile, the fiscal authority has introduced demand-management measures to dampen speculative and investment activities to buy time for supply-side measures to take effect. In November 2010, a special stamp duty (SSD) of as much as 15% was introduced for properties resold within two years. In October 2012, the SSD rate was raised to as much as 20% and covered properties resold within three years. At the same time, a 15% buyer's stamp duty (BSD) was imposed on residential properties acquired by companies and non-locals, which had accounted for about 13% of total transactions. Then, in February 2013, the rates of existing *ad valorem* stamp duty (also known as DSD) were doubled for transactions in all types of properties, except for those residential properties where the purchasers are local individual buyers who do not own any other residential properties in Hong Kong SAR at the time of acquisition.

The HKMA prudential measures have been effective in reducing the leverage of banks and households in mortgage finance. The annual growth rate in residential mortgage loans has slowed from 14.1% in 2010 to 6.7% in 2011, 7.6% in 2012 and 3.9% in 2013. The average LTV ratio for new mortgages has dropped from 64% in September 2009 before the policy measures to 54% in December 2013, while the average DSR has decreased from over 40% to 35%. As regards the stamp duty measures, the SSD has practically wiped out speculative activities such as confirmor transactions and short-term resale trades, while the BSD and the DSD have effectively reduced the investment activities of companies and non-local buyers (Chart 8).

Buyer profile for residential properties and short-term resale trades

Chart 8



Source: Financial Services and the Treasury Bureau.

Wong et al (2011) find empirical support that tighter LTV caps would reduce household leverage (as measured by the ratio of mortgage loans to GDP), and that the effect on leverage plays a major role in reducing mortgage default risk. They also find that the effect of LTV caps on loan growth is likely to be state-dependent, being more effective when there is excess credit demand but less so when there is excess credit supply. However, there is no clear evidence that lowering the LTV caps can dampen property prices. In comparison, preliminary findings in Chan and Yuen (2014) show that higher transaction taxes in the form of additional stamp duties appear to be effective in constraining housing demand and restraining housing price growth.[14] Nevertheless, further evidence needs to be accumulated to better understand whether the effects of tax policies on housing prices and transaction volumes will be sustained.

4. Concluding remarks

The transmission of international monetary policy is often much more complicated than one would imagine, particularly given the increased interconnectedness of the global financial system. As for Hong Kong SAR, it imports US monetary policy under the Linked Exchange Rate system, and HKD interest rates have stayed at ultra-low levels since late 2008. Credit and household indebtedness have grown at a fast pace, while the massive influx of global liquidity has bolstered asset prices and particularly home prices. Proactive steps have been taken to rein in excessive credit growth and cool down property market activities. More recently, there have been concerns about advanced economies' eventual exit from their unconventional monetary policy actions and the potential impact on the rest of the world. The fluctuations in emerging market currencies and equities in May 2013 and in early

[14] See He (2014) for more discussion and references therein.

2014 due to fears of QE tapering is clearly a warning shot. In the light of these potential financial stability concerns, the authorities in Hong Kong SAR will continue to guard against the build-up of vulnerabilities, such as excessive reliance on wholesale and external funding, and take a proactive approach to mitigating risks associated with the eventual normalisation of monetary policy in the advanced economies.

References

Chan, S-T and R Yuen (2014): "How do macro-prudential measures and stamp-duty measures affect Hong Kong's property market and the mortgage business of banks? An Evaluation", unpublished manuscript, Hong Kong Monetary Authority.

He, D (2014): "The effects of macro-prudential policies on housing market risks: evidence from Hong Kong", *Bank of France Financial Stability Review*, April 2014.

He, D and R N McCauley (2013): "Transmitting global liquidity to East Asia: policy rates, bond yields, currencies and dollar credit", *BIS Working Papers* no. 431, October 2013.

Hong Kong Monetary Authority (2012): "How do we monitor Hong Kong dollar fund flows?", *HKMA Quarterly Bulletin*, June 2012.

——— (2013a): "Changing business models of Hong Kong branches of US and European global banks", *HKMA Half-yearly Monetary and Financial Stability Report*, March 2013.

——— (2013b): "Recent movements of the current account balance in Hong Kong", *HKMA Half-yearly Monetary and Financial Stability Report*, March 2013.

——— (2013c): "Driving forces behind the recent rapid growth of the Hong Kong bond market", *HKMA Half-yearly Monetary and Financial Stability Report*, September 2013.

Wong, E and J Wong (2011): "Effects of the loan-to-deposit ratio of the Hong Kong banking sector on domestic interest rates", *HKMA Occasional Papers* no. 02/2011, October 2011.

Wong, E, T Fong, K Li and H Choi (2011): "Loan-to-value ratio as a macro-prudential tool – Hong Kong's experience and cross-country evidence", *HKMA Working Papers* no. 01/2011, February 2011.