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Macroprudential policies to mitigate housing market risks

Country case study: Hong Kong SAR

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Background

This paper takes stock of Hong Kong SAR's recent experience with macroprudential measures targeting the housing market and examines the effectiveness of these policies in containing housing risks.[1] It is broadly divided into four parts: (i) housing as a source of risk; (ii) the objectives of macroprudential measures and macroprudential instruments in practice; (iii) policy effectiveness; and (iv) costs, benefits and unintended consequences.

1. Housing as a source of risk

To assess the build-up of risks associated with the housing market, the authorities in Hong Kong SAR look into a host of housing market indicators such as housing prices and transactions (Graph 1, left-hand panel) as well as various financial and banking data including mortgage interest rates and loans extended. However, official data usually have some time lag. The authorities therefore also look into more timely data from property agencies including market sentiment and flat viewing activities, and at times compile their own in-house indicators such as the news-based housing market sentiment2 (Graph 2, right-hand panel).

[1] This paper is based on information up to July 2023. For a past contribution to the same topic, see, for example, Hong Kong Monetary Authority, "Hong Kong's property market and macroprudential measures", *BIS Papers*, no 94, December 2017, pp 141–52.

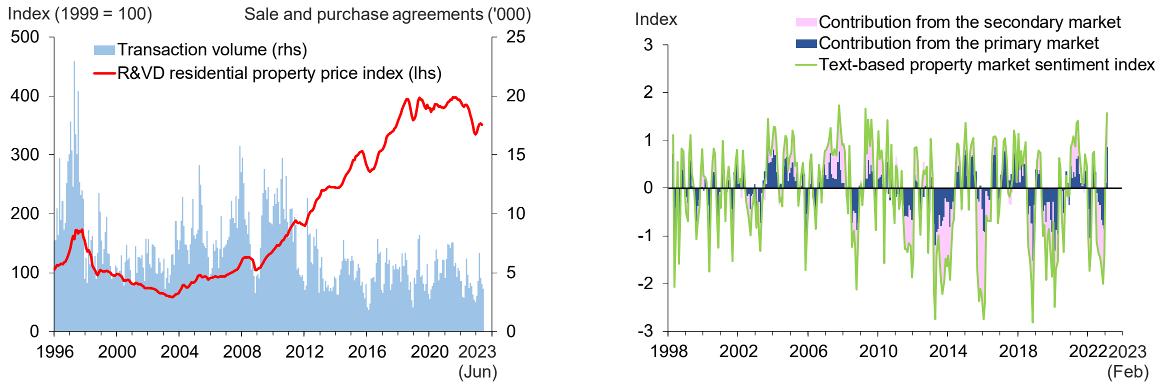
[2] See, for example, K Wong, M Cheng and M Kwong, "Unveiling the dynamics of Hong Kong property market through textual analysis", *Hong Kong Monetary Authority Research Memorandums*, no 2020/01, April 2020.

Quantitative indicators and recent trends

Graph 1

A. Housing prices and transactions: official data

B. Housing market sentiment: in-house indicators



Sources: Rating and Valuation Department (R&VD); Land Registry; WiseNews; Hong Kong Monetary Authority (HKMA) staff estimates.

More recently, the economists at the Hong Kong Monetary Authority (HKMA) have dived into big data and data science for monitoring the housing market. For example, they have strengthened their regular surveillance and data collection framework by collecting over 1.6 million residential property transaction records from the Land Registry, which gives them a big, granular data set on over 2 million residential mortgage records.3 In addition, in April 2019 the HKMA also initiated the Granular Data Repository (GDR) programme, under which participating banks are required to report transaction-level residential mortgage data to the HKMA on a monthly basis. As of May 2022, the GDR data set contained almost 598,000 outstanding residential mortgage loans (RMLs) associated with around 678,000 borrowers. The data set is highly granular, with each reported RML carrying around 200 unique data fields. Going forward, the HKMA will continue to explore the use of big data and data science to help better monitor the housing market.

The housing risk monitoring framework in Hong Kong also takes into account some Hong Kong-specific factors or institutional arrangements that may contribute to mitigating or amplifying housing risks. First, housing supply and demand imbalance is a major issue in Hong Kong. In particular, a supply shortage (eg due to a lack of land supply) may fuel upward pressures on housing prices. Second, mortgage products in Hong Kong are homogeneous – from the mortgagor's perspective it makes little difference which bank is offering the mortgage facility.4 Consequently, there is a strong tendency for banks to compete for market share by lowering interest rates. Third, variable interest rate mortgage plans are much more popular in Hong Kong, with about 80–90% of newly approved mortgage loans being linked to the one-

[3] The resultant analysis of the residential mortgage market can be found in "Box 4: Using transactional big data to monitor Hong Kong's residential mortgage loans offered by non-bank institutions" of the March 2022 issue of the HKMA's Half-Yearly Monetary and Financial Stability Report (HMFSR). Another analysis of the non-residential mortgage market can be found in "Box 3: Monitoring Hong Kong's non-residential property market with transactional big data" of the September 2021 issue of the HMFSR.

[4] Please also see A Yuen, "Discussant's remarks at AMPF 2021 and MAS-BIS Conference on Macro-Financial Stability Policy", 28 May 2021, available on the HKMA website.

month Hong Kong Interbank Offered Rate (Hibor) subject to an interest rate cap.[5] This means that borrowers may take the brunt of rising interest rates. Fourth, the participation of non-local buyers may increase the volatility in the housing market, especially when there is supply-demand imbalance. Finally, residential properties can be an important type of collateral for other lending (eg business loans for small firms). As such, a housing downturn and reduced collateral value may spill over to other economic sectors through the collateral channel. Currently, the supply-demand imbalance and the rising mortgage interest rate under adjustable rate mortgage plans are the more relevant factors that may contribute to amplifying housing risks.

2. Macroprudential policies: governance, objectives and instruments

The HKMA is the government authority in Hong Kong responsible for maintaining monetary and banking stability. As Hong Kong is an international banking centre, one of the HKMA's primary functions is to regulate and supervise banking business, with a view to promoting the stability and integrity of the financial system (including the banking system). In Hong Kong, macroprudential policies for property mortgage lending are under the remit of the HKMA. Given that Hong Kong's housing market has experienced sharp swings in the past and the RML business of banks accounts for over 20% of the banking sector's total loans for use in Hong Kong, it is particularly important for the banking sector to be resilient to a possible downturn in the local housing market.

Consequently, the banking regulator in Hong Kong has introduced a maximum 70% loan-to-value (LTV) ratio on RMLs since 1991 and has always monitored housing market developments closely. Against the backdrop of a sharp rise in housing prices amid widespread monetary easing by the major economies, the HKMA implemented a total of eight rounds of macroprudential tightening measures between 2009 and 2017. The objective of these macroprudential policies is very clear: to strengthen the risk management of banks and the resilience of the banking sector. It should be noted that, unlike for some other economies, the objective is not about taming housing prices.[6]

In practice, these macroprudential tightening measures include: (i) lowering caps on LTV ratios and limits on debt service-to-income (DSTI)[7] ratios for mortgage loans; (ii) applying stress testing on mortgage borrowers with respect to changes in the mortgage interest rate;[8] (iii) setting maximum loan

[5] Amid the rising interest rate trend, there has been some interest in fixed mortgage interest rate plans due to competitive pricing packages offered by banks for the first two years of the loan repayment period.

[6] Hong Kong's experience suggests that macroprudential measures can only have a temporary or limited impact on housing prices, partly because they cannot usually change price trends that are driven by fundamental factors, such as a housing shortage in the case of Hong Kong.

[7] In Hong Kong, the DSTI is known as the debt servicing ratio (DSR).

[8] Banks should stress-test mortgage applicants' repayment ability, assuming an increase in mortgage rates of at least 2 percentage points (currently), and limit the stressed DSTI to a stipulated cap.

tenors;9 and (iv) capital requirements for mortgage lending.10 In terms of scope, the HKMA first targeted residential properties at the upper end of the market, and later extended this to investment properties, to multiple mortgages, and to cases where mortgage repayment is made by income from foreign sources (Tables 1 and 2). In addition, these measures also apply to non-residential property mortgages.

Macroprudential tightening measures since 2009

Table 1

Loan-to-value (LTV) ratio caps

<table>
<tr><th rowspan="2">Property type</th><th rowspan="2">Property value (HK$)</th><th colspan="8">Macroprudential measures (LTV caps) implemented in</th></tr>
<tr><th>Oct-09</th><th>Aug-10</th><th>Nov-10</th><th>Jun-11[1]</th><th>Sep-12[2]</th><th>Feb-13</th><th>Feb-15</th><th>May-17[3]</th></tr>
<tr><td rowspan="6">Self-use residential properties</td><td>>= 20m</td><td>60</td><td rowspan="2">60</td><td rowspan="2">50</td><td rowspan="3">50</td><td rowspan="3">50</td><td rowspan="3">50</td><td rowspan="3">50</td><td rowspan="3">50</td></tr>
<tr><td>>=12m and < 20m</td><td rowspan="5">70</td></tr>
<tr><td>>=10m and <12m</td><td rowspan="4">70</td><td rowspan="2">60</td></tr>
<tr><td>>=8m and <10m</td><td rowspan="2">60</td><td rowspan="2">60</td><td rowspan="2">60</td><td rowspan="3">60</td><td rowspan="3">60</td></tr>
<tr><td>>=7m and <8m</td><td rowspan="2">70</td></tr>
<tr><td><7m</td><td>70</td><td>70</td><td>70</td></tr>
<tr><td>Non-self-use residential properties</td><td>All values</td><td rowspan="4"></td><td>60</td><td rowspan="3">50</td><td rowspan="3">50</td><td rowspan="3">50</td><td rowspan="2">50</td><td rowspan="2">50</td><td rowspan="2">50</td></tr>
<tr><td>Company held properties</td><td>All values</td><td rowspan="3"></td></tr>
<tr><td>Commercial and industrial properties</td><td>All values</td><td rowspan="2">40</td><td rowspan="2">40</td><td rowspan="2">40</td></tr>
<tr><td>Standalone car park spaces</td><td>All values</td><td></td><td></td><td></td></tr>
</table>

[1] Applicable LTV caps lowered by 10 percentage points for all property mortgages to borrowers whose income is derived mainly from outside of Hong Kong [2] For borrowers who have borrowed other outstanding mortgages and whose income is derived mainly from outside of Hong Kong, applicable LTV caps lowered by another 10 percentage points. [3] Applicable LTV caps lowered by 10 percentage points for borrowers who have borrowed other outstanding mortgages and whose income is derived mainly from Hong Kong.

Source: HKMA.

9 The maximum loan tenor of all new property mortgage loans is limited to 30 years regardless of whether the applicants have outstanding property mortgage loans for one or more properties at the time of loan application.

10 For example, in 2013 the HKMA decided to introduce a risk weight floor of 15% for all residential mortgages granted by banks using the internal ratings-based approach.

Macroprudential tightening measures since 2009

Table 2

Debt service-to-income (DSTI) limits

	Property type	Macroprudential measures (DSTI limits) implemented in							
		Oct-09	Aug-10	Nov-10	Jun-11	Sep-12[2]	Feb-13[3]	Feb-15	May-17[4]
DSTI	Self-use residential properties	50-60[1]	50	50	50	50	50	50	50
	Non-self-use residential properties or company held properties							40	40
	Industrial, commercial properties and standalone car park spaces								
Stressed DSTI	Self-use residential properties	N/A	60	60	60	60	60	60	60
	Non-self-use residential properties or company held properties							50	50
	Industrial, commercial properties and standalone car park spaces								

[1] The applicable DSTI limit was implemented in 1997 [2] Applicable DSTI and stressed DSTI limits lowered to 40% and 50% respectively for borrowers who have borrowed other outstanding mortgages [3] Mortgage rate upward adjustment for stress testing property mortgage loan applicants' DSTI increased from at least 2 percentage points to at least 3 percentage points. [4] Applicable DSTI and stressed DSTI limits lowered by 10 percentage points for borrowers whose income is derived mainly from outside of Hong Kong, for all borrower and property types.

Source: HKMA.

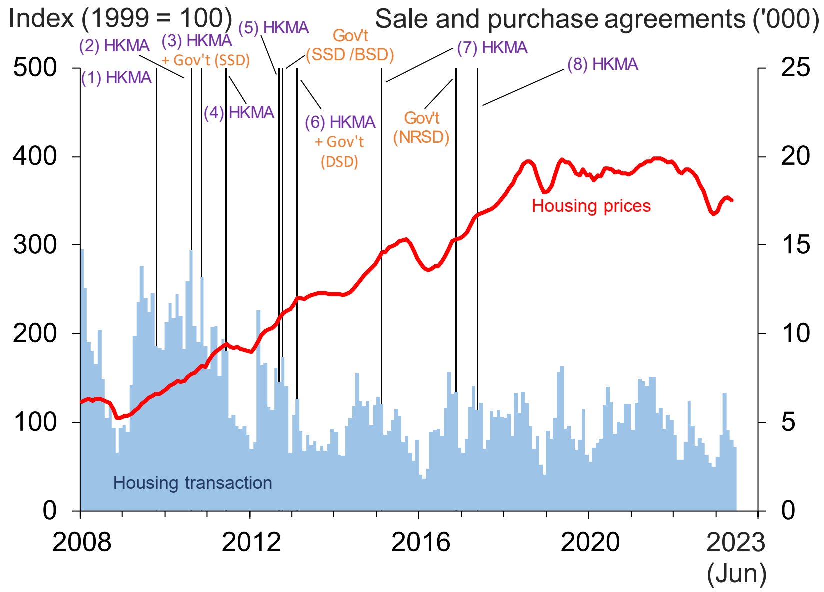
Regarding the timing of implementation, macroprudential tightening measures were implemented mostly during housing booms, as shown by the vertical lines marked "HKMA" in Graph 2, which refer to the rounds of macroprudential measures implemented by the HKMA.11

On top of the HKMA's measures, the Hong Kong Government has also launched several rounds of demand side management measures since 2010 to ensure the healthy and stable development of the housing market, as indicated by the vertical lines marked "Gov't" (Government) in Graph 2. Specifically, these include: (i) Special Stamp Duty (SSD) at 10–20% if any residential property is resold within a short period (36 months or less); (ii) Buyer's Stamp Duty (BSD) at 15% for the acquisition of a residential property by a non-Hong Kong resident buyer; and (iii) ad valorem stamp duty on buyers already owning residential property for acquisition of an additional residential property – initially called Doubled Ad Valorem Stamp Duty (DSD) and later dubbed New Residential Stamp Duty (NRSD) after standardising the stamp duty rate at 15%. These demand side management measures have helped dampen speculative, non-local and investment demand in the housing market. The Government has also introduced policies to increase land and housing supply, in order to reduce the housing supply-demand imbalance.

11 For a discussion on the transmission channels through which the macroprudential measures are expected to work, see, for example, HKMA, "Hong Kong's property market and macroprudential measures", *BIS Papers*, no 94, December 2017. For example, the LTV policy helps to increase banks' resilience to housing price shocks through both direct and indirect channels. The direct channel improves the resilience of banks by lowering leverage, because mortgagors would hold a larger equity buffer at origination, contributing to a lower likelihood of negative equity and thus a lower default risk. The indirect channel works through lower credit growth by preventing banks from excessively underwriting fresh mortgage loans.

Macroprudential and tax measures since 2009	Graph 2

Housing market developments and the timing of policy implementation



The labels "(1) HKMA", "(2) HKMA", etc correspond to the dates in Tables 1 and 2. Specifically, "(1) HKMA" refers to the first round of measures implemented in October 2009; "(2) HKMA" denotes the second round in August 2010, and so on, up to the eighth round in May 2017.

Sources: R&VD; HKMA.

Unlike for monetary policies, there has been far more limited literature on how macroprudential measures should be calibrated. The complex dynamics underlying the housing market in Hong Kong have made it very difficult, if not impossible, to develop an ex ante framework governing how the HKMA should operate its macroprudential policies.[12] As a result, the HKMA's strategy has been to explore all possible options and tread extremely carefully in each round of policy adjustment. For example, the LTV or DSTI adjustments are mostly implemented in steps of 10 percentage points (see also Tables 1 and 2 above).

Operationally, the HKMA has established a cross-departmental committee to regularly review whether the prevailing macroprudential measures need to be adjusted, taking into account a host of factors including the housing price trend, transaction volumes, domestic economic fundamentals and the external environment.

As part of the calibration of measures, the HKMA has to ensure effective communication with the public to avoid surprising the market and creating any volatilities. In the past, this has been effected through different channels to explain the policy objectives of the macroprudential measures, in particular how they can strengthen the risk management of banks (ie the main objective) while reminding the public to carefully assess and manage the relevant risks when making a property purchase, taking out a mortgage or making other borrowing decisions.

[12] This paragraph draws heavily from A Yuen, "Discussant's remarks at AMPF 2021 and MAS-BIS Conference on Macro-Financial Stability Policy", 28 May 2021, available on the HKMA website.

More recently, following the Covid-19 pandemic and with interest rates rising, there has been a correction in residential property prices since 2022. Despite a rebound early this year, market data showed that at the end of June residential property prices were down 13% from their peak in 2021. The situation in the non-residential property market was similar. Externally, as major economies continue to face high inflationary pressures, interest rates may remain elevated for some time. Any slowdown in the global economy due to high interest rates would inevitably affect the local economy. Taking all relevant factors into account, the HKMA considers that there is room to adjust the countercyclical macroprudential measures for property mortgage loans, while continuing to maintain banking stability and ensuring the proper risk management of property mortgage loans. Effective on 7 July 2023, the public will be able to take out property mortgage loans at higher LTV ratios.[13]

3. Effectiveness

3.1 Measuring success

The macroprudential measures have effectively enhanced the resilience of banks and borrowers against the possible impact of a sharp correction in housing prices. First, the average LTV ratio and DSTI of new residential mortgage loans have been consistently lower than 60% and 40% respectively, as well as being lower than the values when these measures were first introduced (Graph 3, left-hand panel). This suggests that the banking system has built in a buffer to safeguard its resilience and households have reduced leverage. Second, despite various economic and housing market shocks, the asset quality of residential mortgage loans has remained robust, with the delinquency ratio staying at a very low level (0.07% in May 2023; Graph 3, right-hand panel). As such, the overall credit risk of banks' mortgage business is well contained and manageable. Third, research findings also suggest that the macroprudential measures are effective in containing household leverage, strengthening banks' risk management for mortgage loans, and reducing systemic risks stemming from the boom and bust cycle of the housing market.[14]

[13] For details, see the circular "Prudential measures for property mortgage loans" issued by the HKMA on 7 July 2023.

[14] See, for example, E Wong, T Fong, K-F Li and H Choi, "Loan-to-value ratio as a macroprudential tool – Hong Kong's experience and cross-country evidence", *Hong Kong Monetary Authority Working Papers*, no 01/2011, February 2011.

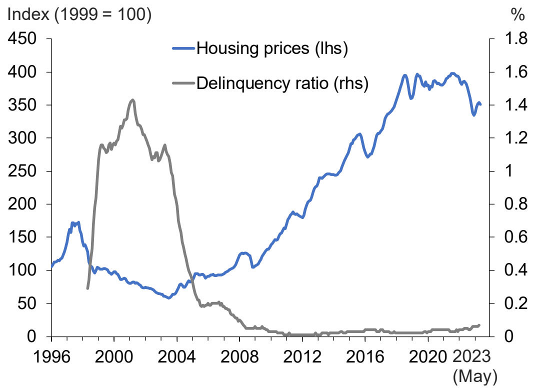
Policy effectiveness in the residential property market

Graph 3

A. Impact of macroprudential measures: LTV ratio and DSTI

	Before launch	Recent situation
Average LTV	**64%** (Sep 2009)	**56%** (2022 avg)
Average DSTI	**41%** (Aug 2010)	**37%** (2022 avg)

B. Housing prices and RML delinquency ratio



Sources: HKMA; C&SD.

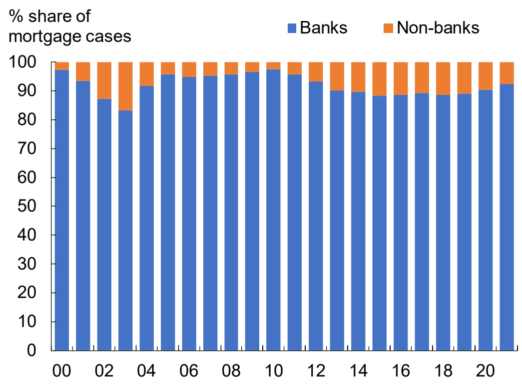
3.2 Leakages

In addition to banks, money lenders, property developers and their related finance companies also offer mortgage loans to home buyers in Hong Kong. These non-bank institutions fall outside the HKMA's supervisory remit, and their mortgage loans often exceed the HKMA's macroprudential limits, therefore leading to policy leakages. To address this issue, the HKMA implemented a seventh round of macroprudential measures in 2015, requiring banks to terminate credit relationships with finance companies offering mortgages that do not comply with the HKMA's requirements. As for developers, the HKMA set higher risk weights for banks' credit exposure to those property developers offering high LTV mortgages.

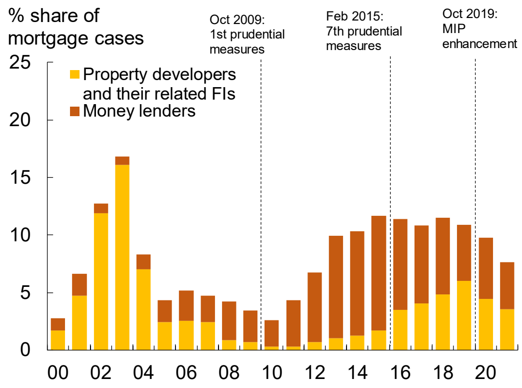
In order to monitor the activities of the non-bank institutions and assess the effectiveness of these mitigating measures, the HKMA has used big data techniques to analyse transaction-level data as mentioned earlier. These big data show that: (i) the aggregate market share of mortgages provided by non-bank institutions constitutes around 10% of the number of new mortgage loans made, which is not very significant (Graph 4, left-hand panel); and (ii) policy leakage has been reduced after the HKMA implemented measures to tighten bank funding to these non-banks in 2015 (Graph 4, right-hand panel). Specifically, the popularity of non-bank mortgages increased after the introduction of the first round of macroprudential measures in 2009, but their market share has been gradually reduced since 2016. In particular, the share of mortgages issued by money lenders fell as banks tightened their lending policy to these entities under the seventh round of macroprudential measures. Meanwhile, the share of property developers and their related financial institutions edged up for a period but subsequently declined after the 2019 enhancement of the Mortgage Insurance Programme (MIP), which allowed banks to offer higher LTV mortgage loans under expanded conditions (see more discussion below).

Leakages and the effectiveness of mitigating measures — Graph 4

A. Share of residential mortgage cases made by banks and non-banks



B. Share of residential mortgage cases made by non-banks



"FIs" stands for financial institutions. "MIP" refers to the Mortgage Insurance Programme.

Sources: Land Registry; EPRC; HKMA staff estimates.

Our big data analysis also reveals that household leverage risks remain manageable as over half of private housing mortgages have been fully paid down, and multiple mortgages are not common in the private residential property market. Specifically, more than half of private housing units did not have any outstanding mortgage at the end of 2021, and only about 1% of them had multiple mortgages. Among those properties with multiple mortgages, the majority had second mortgages only, and triple mortgages or above were rare.

4. Costs, benefits and unintended consequences

Some commentators have criticised the macroprudential measures because some first-time home buyers or genuine end users might find it financially more difficult to buy a house. For example, a lower LTV ratio would raise the down payment required, which potential buyers could find it difficult to pay despite the fact that their debt servicing ability is satisfactory. In this regard, Hong Kong's Mortgage Insurance Programme (MIP) aims to reduce the down payment burden on borrowers. A specific target group of borrowers (ie first-time home buyers with regular income and buying for self-use) can obtain mortgage loans under the programme with an LTV ratio between 70 and 90%. It should be noted that the MIP has strict requirements on the applicant's repayment ability. In fact, the delinquency ratio of RMLs under the MIP was 0.01% at end-December 2022, which is even lower than the 0.06% delinquency ratio of RMLs for the whole banking sector, suggesting the loan quality under the MIP is very high.

Concluding remarks

The objective of the HKMA's macroprudential measures is to strengthen the risk management of banks and the resilience of the banking sector. The macroprudential measures have effectively built in buffers in the banking system and contained household leverage, thereby safeguarding the resilience of banks against the potential impact of a sharp correction in housing prices. In the process, the HKMA has proceeded extremely carefully in each round of policy calibration and maintained an effective communication strategy. Indeed, despite a 15% correction in housing prices in 2022, the asset quality of banks' residential mortgage loans has remained robust, with the delinquency ratio staying at a very low level. Timely measures were also implemented to reduce policy leakages and side effects including those relating to, respectively, the mortgages extended by non-bank institutions and the down payment burden on first-time home buyers. Since big swings in the housing market can have huge repercussions on financial and macroeconomic stability, this calls for frequent and comprehensive monitoring of housing market activities. In this regard, the HKMA will continue to explore new data sources and data science techniques. More importantly, the authorities in Hong Kong will remain vigilant and adjust the macroprudential and other housing measures as and when appropriate.