Monetary policy decision-making: how are household and firm heterogeneity incorporated?

Transmission of high interest rates to households and firms: perspectives from Hong Kong SAR

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Abstract

Hong Kong SAR implements the Linked Exchange Rate System, which restricts the Hong Kong Monetary Authority's discretion on matters of monetary policy. Nevertheless, the Hong Kong economy is subject to monetary policy shocks from the United States. This note discusses the main interest rate transmission channels that impact households and non-financial firms. It highlights several factors driving uneven interest rate responses for Hong Kong, including income and outstanding residential mortgage loans for the household sector, and access to external finance and the interest rate structure for non-financial firms. The note further presents some measures undertaken in Hong Kong to mitigate heterogeneity.

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Keywords: monetary policy, Linked Exchange Rate System, residential mortgage, small and medium-sized enterprises.

1. Introduction

Monetary policy, typically implemented through interest rates and money supply adjustments, is widely used to stabilise the economy. However, the effects of monetary policy are not uniform across different segments of the population and industries, leading to heterogeneous outcomes.

In the case of Hong Kong SAR, even though it follows the Linked Exchange Rate System (LERS), which restricts the Hong Kong Monetary Authority's (HKMA's) discretion on matters of monetary policy, the Hong Kong economy remains subject to monetary policy shocks from the United States. In light of the monetary regime in Hong Kong, this note presents our views and experiences regarding the relevance and strength of various channels through which US interest rates are transmitted to households and non-financial firms in Hong Kong. The interest rate transmission does not imply that Hong Kong has an active monetary policy.

The rest of this note is organised as follows. The next two sections explain the LERS and discuss the main interest rate transmission channels through which a US interest rate hike impacts households and non-financial firms in Hong Kong. Drawing on HKMA studies and granular data, Sections IV and V illustrate the ways in which various dimensions of differences across households and firms matter for interest rate transmission. On the household side, Section IV highlights the roles of household income and outstanding residential mortgage loans in driving uneven responses, as well as the use of countercyclical macroprudential measures and the Mortgage Insurance Programme as mitigating factors. In Section V, access to external finance and the interest rate structure are identified as two sources of heterogeneity among non-financial firms. Section V also shares our experience in supporting small and medium-sized enterprises (SMEs) through countercyclical capital buffers and the SME Financing Guarantee Scheme (SFGS).

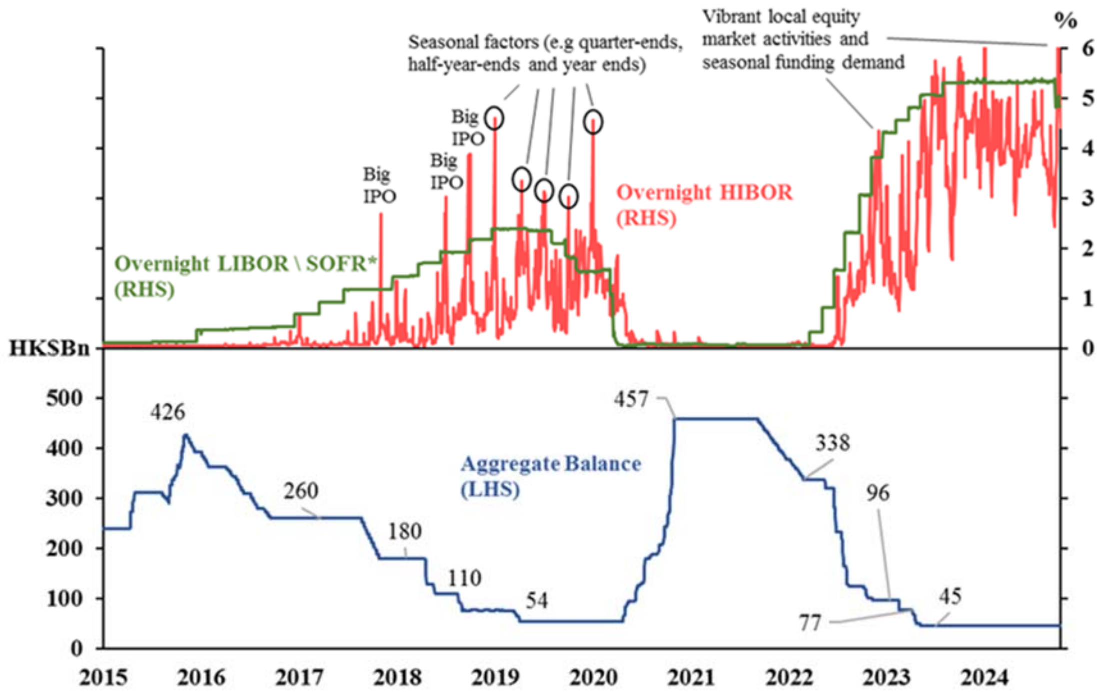
2. Interest rate transmission in Hong Kong

Hong Kong follows the LERS, which keeps the Hong Kong dollar (HKD) trading within the Convertibility Zone of HKD 7.75–7.85 to 1 US dollar. Importantly, the LERS is characterised by the Currency Board arrangement, which restricts the HKMA's discretion on matters of monetary policy.

In accordance with the LERS and through an automatic interest rate adjustment mechanism, HKD interbank interest rates generally track their USD counterparts. As an example, during the last US rate hike cycle, which began in March 2022, the Hong Kong dollar eased on widened interest rate spreads to the rising US interest rate. With funds flowing out from the HKD system, the weak-side Convertibility Undertaking was triggered 49 times, and the Aggregate Balance (ie the sum of the balances in the clearing accounts kept with the HKMA) contracted from over HKD 450 billion in 2021 to around HKD 45 billion in 2023. Tighter liquidity conditions drove the HKD interbank rates to gradually rise and track the USD interbank rates (Chart 1). In practice, HKD long-dated interest rates would track the US rates more closely, while short-dated interest rates would also respond to local supply and demand for the Hong Kong dollar.

Aggregate balance and overnight interest rates

Chart 1



The USD London interbank offered rate (Libor) has been discontinued since 1 July 2023 and replaced by the secured overnight financing rate (SOFR) as its alternative reference rate.

Source: HKMA

The interbank interest rates are transmitted to the retail interest rates as banks adjust their deposit and lending rates taking into account the level of interbank rates (as well as their own funding cost structures).

3. Aggregate interest rate transmission channels

Changes in interest rates have the usual aggregate effects on the Hong Kong economy, through influencing aggregate demand and supply. On the demand side, a rise in interest rates induces households to substitute current consumption with saving in return for raising future spending. Consumption is also negatively impacted due to wealth and collateral effects. On the supply side, higher interest rates increase firms' cost of borrowing and lower collateral values. This section elaborates on these channels based on empirical studies by the HKMA and others.

On the demand side, Cutler (2004) found that a 100 basis point (bp) increase in the real interest rate would reduce the level of consumption by 0.39% in the short run, which is similar to the estimates for some other countries such as the United Kingdom. Recent literature, however, suggests that the substitution effect associated with a rising interest rate could be mitigated in economies with a well developed financial market, as this provides households with greater access to financial instruments, thereby reducing their need for precautionary saving (Aizenman et al (2019)). This finding suggests that the direct impact of the interest rate on private consumption might have been weakened in Hong Kong along with the development of the local financial market over the past 20 years.

With mortgages accounting for the major portion of household loans in Hong Kong, higher interest rates could negatively affect private consumption through their impact on mortgagees' debt service burden and thereby households' expendable income. The magnitude of such an impact is also expected to increase with the size of the outstanding mortgage loans. By constructing a quarterly indicator on the outstanding mortgage debt servicing ratio (DSR) of households in Hong Kong, Chan et al (2017) find that a higher mortgage debt service burden would act as a drag on private consumption, with a 1 percentage point increase in the indicator reducing household consumption by 0.76% in the long run.

Higher interest rates could also lead to a reduction in consumption through their dampening effect on equity and property prices, resulting in negative wealth and collateral effects. Among different types of assets, property assets serve as the key transmission channel in Hong Kong, as residential property constitutes the major portion of household assets. According to the estimation by Lo (2019), a 10% increase in real property wealth at an aggregate level would lead to around a 1.1–1.2% boost in private consumption, whereas a 10% increase in stock market wealth would boost private consumption by a smaller extent of around 0.5%. These estimates are consistent with the findings of our analysis (HKMA (2016)), in which interest rate transmission works through the property price channel with a time lag, and the property price channel would eventually exert a strong drag on private consumption. In contrast, transmission through the equity price channel was found to be very limited.

On the supply side, rises in interest rates would act as a drag on firms' capital investments, both directly through an increase in the cost of borrowing, and indirectly through a reduction in the collateral value of their assets. In addition, changes in interest rates may also indirectly affect the pricing decision of property developers through their impact on housing prices. In particular, financially distressed developers, characterised by high leverage and low liquidity, may be particularly vulnerable to interest rate increases and may have to resort to fire sales of their units in order to meet their liquidity demand [under an adverse scenario]. The resulting price cut in the primary market by distressed developers would also exert downward pressure on secondary market prices and undermine overall market activities.

4. Household heterogeneity

Recent advances in the heterogeneous agent New Keynesian (HANK) model literature have demonstrated that households with positive and negative liquid wealth holdings have differentiated consumption responses to interest rate adjustments.[1] Moreover,

1 See Kaplan et al (2018) and Holm et al (2021) for details.

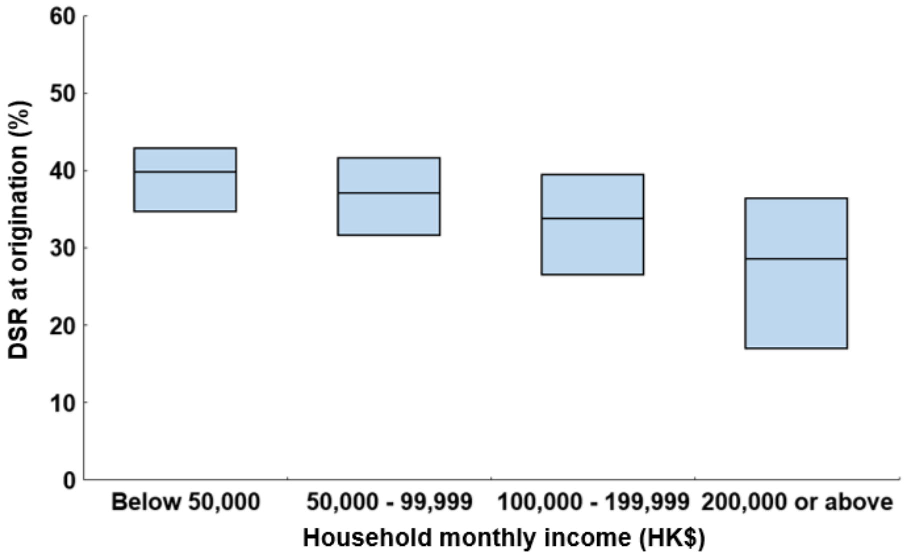
households with limited liquid wealth have large indirect effects because they have high marginal propensity to consume out of a fall in their income.

These findings suggest that, for Hong Kong, low-income households and households whose wealth is largely locked up in their residential properties (such as liquidity-constrained first-time homebuyers with low savings for down payments) could be more exposed to interest rate risks.[2] Furthermore, young households, which, according to life-cycle theories, tend to be credit-constrained and exhibit hand-to-mouth consumption behaviour, may be more susceptible to the adverse impact of an interest rate hike.

Our data indeed show such a relationship between household income and interest rate risks. Using granular data on outstanding residential mortgage loans (RMLs) reported by Authorized Institutions,[3] we find evidence that household exposure to interest rate risks in Hong Kong is skewed towards the lower- and medium-income households. In particular, these granular data reveal that households in the lowest income group have a median DSR at origination of around 40%, which is much higher than that of the households in the highest income group, at 29% (Chart 2). This implies that lower-income households with an outstanding RML in Hong Kong could be more vulnerable to interest rate shocks, especially given the fact that over 90% of the RMLs in Hong Kong are floating rate mortgages.

DSR at origination by income group

Chart 2



The length of the box plot shows the interquartile range of the DSR at origination, with the upper, middle and lower bars of each box representing the 75th percentile, the median, and the 25th percentile respectively.

Source: HKMA staff estimates based on granular data on RMLs.

2 A study using US and UK data finds that mortgagors, but not owners and renters, adjust their expenditure strongly to interest rate changes (Cloyne et al (2020)).

3 The HKMA initiated the Granular Data Reporting (GDR) programme in April 2019, under which Authorized Institutions are required to report transaction-level RML data to the HKMA on a monthly basis. As of July 2024, the GDR data set contained over 615,000 outstanding RMLs associated with around 650,000 borrowers/guarantors.

While aiming to strengthen banks' risk management and resilience to a possible downturn in the local housing market, the countercyclical macroprudential measures for property mortgage loans may also indirectly address the difference in the transmission of interest rate shocks arising from such heterogeneity. The measures were introduced partly due to the fact that RMLs have always accounted for more than 20% of the banking sector's lending for use in Hong Kong. The HKMA implemented a total of eight rounds of macroprudential tightening measures between 2009 and 2017. These tightening measures included, but were not limited to: (i) lowering caps on the loan-to-value (LTV) ratio and limits on the DSR for mortgage loans; and (ii) applying stress testing on mortgage borrowers with respect to changes in the mortgage interest rate. By adjusting the caps on the LTV ratio and the limits on DSR, these macroprudential tightening measures helped restrain the mortgage debt service burden across all individuals, thereby indirectly mitigating the difference in the impact of interest rate shocks on households at different income levels. In addition, these measures also restrained the growth in mortgage debt service burden in the event of an interest rate hike, helping alleviate the potential headwinds to private consumption.

The Mortgage Insurance Programme (MIP) has served as a complement to the countercyclical macroprudential measures by alleviating the liquidity constraints on first-time homebuyers, particularly those with lower savings for down payments. The MIP was launched by the Hong Kong Mortgage Corporation (HKMC)[4] in 1999 to promote wider home ownership in Hong Kong by reducing the down payment required for financially sound first-time homebuyers to purchase their self-occupied properties.[5] Through several rounds of amendments to the MIP between 2019 and 2024, our granular data on RMLs revealed that the median age of new mortgage borrowers using the MIP was 34, in contrast to 43 years old among the non-MIP borrowers (Chart 3). This suggests that the MIP advanced home purchases by about nine years on average. Meanwhile, empirical evidence also shows that the MIP can enhance banking stability without undermining the effectiveness of the macroprudential tools.[6] Indeed, reflecting the prudent underwriting criteria and high mortgage loan quality under the MIP, the delinquency ratio of these loans remained at a very low level of 0.02% in 2023, even lower than the 0.08% delinquency ratio of all the outstanding RMLs of the Hong Kong banking sector at end-December 2023.

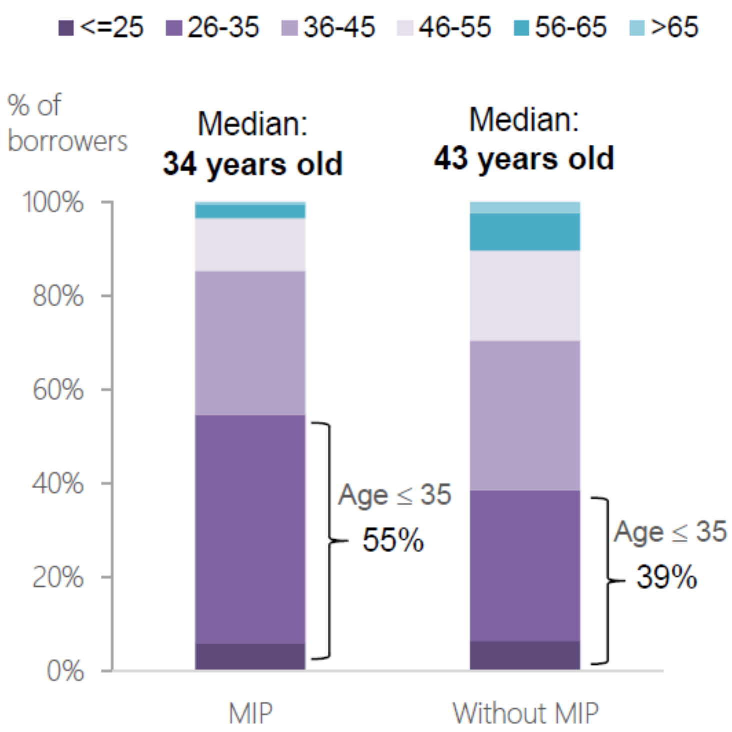
4 The HKMC was established in 1997 and is owned by the Hong Kong SAR government. Its primary missions include: (i) to enhance the stability of the banking sector by offering a reliable source of liquidity, thereby reducing the concentration and liquidity risk of mortgage lending by banks; (ii) to promote wider home ownership in Hong Kong; and (iii) to facilitate the growth and development of the debt securities and mortgage-backed securities markets in Hong Kong.

5 The MIP is designed to protect banks from credit losses on the portion of loans over the threshold set by the macroprudential measures in the event of mortgage default. Under the MIP, mortgage loans of up to 90% of the LTV ratio are available for eligible homebuyers.

6 See Wong et al (2011).

Age distribution of mortgage borrowers by MIP usage

Chart 3



Source: HKMA staff estimates based on granular data on RMLs.

5. Firm heterogeneity

An interest rate hike also has heterogeneous impacts on firms, along several dimensions. We highlight two of these. First, firms may have differentiated interest rate structures. Heterogeneity in the reliance on floating rate debt and in the type of reference interest rate would affect the transmission of interest rate shocks to firms. Second, it is well known that large firms in general have better access to external financing than smaller firms.[7] The heterogeneity may stem from market frictions and imperfections.

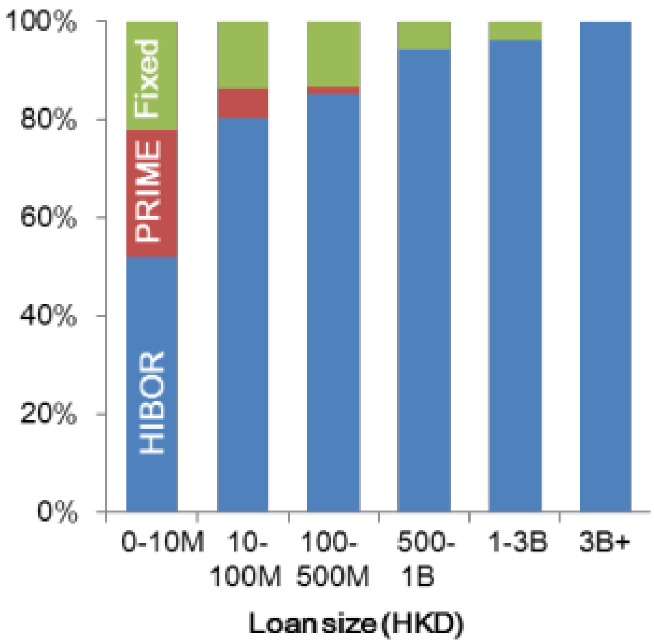
In terms of the interest rate structure of the firms in Hong Kong, the majority of corporate loans extended by banks have a floating rate structure (Chart 4). Loans to large corporates are mainly priced with reference to the Hong Kong interbank offered rates (HIBORs) or USD market interest rates, whereas smaller corporates like SMEs are more reliant on loans priced with reference to the prime lending rate (Wu and Liu (2020)). Since HIBORs track the USD market interest rates while the adjustment of the prime rate tends to lag behind, firms with loans priced with reference to HIBORs could be more susceptible to interest rate changes. In fact, during the US interest rate hike

7 See Beck et al (2008), for example.

cycle in 2022–23, the one-month HIBOR rose markedly, by about 500 bp, while the prime rate was raised by only 87.5 bp. This suggests that the transmission of higher interest rates was more apparent for large corporates during this rate hike cycle.

Distribution of loan reference rate by loan size

Chart 4



HKD loans only. Data as of end-August 2019. Percentage share of loans based on outstanding amount of sample banks.

Sources: Wu and Liu (2020); HKMA.

On the one hand, the smaller and slower upward adjustment in the prime rate may mean a more moderate transmission through interest rate changes to SME loans, which are mainly prime-based. On the other hand, the availability of credit for SMEs is also an important aspect to consider. In view of the concerns over credit availability and the challenges facing SMEs amid uncertainties in the external and local environment over the past couple of years, the HKMA has worked with the banking sector to roll out a series of measures to support the financing needs of SMEs (eg more flexible repayment arrangements, credit products and services to assist SMEs' transformation), subject to prudent risk management principles, and set up a joint Taskforce on SME Lending. In October 2024, the HKMA also lowered the countercyclical capital buffer (CCyB) ratio from 1% to 0.5% to release bank capital to facilitate lending. In addition, the Hong Kong government has extended and enhanced the SFGS.[8]

Experience during the pandemic suggests that the release of the CCyB and SFGS were effective in supporting lending in times of stress, and these policy measures

8 In October 2024, the Hong Kong government announced that for both existing and new loans, borrowing enterprises under the SFGS will be allowed to apply for principal moratorium for up to 12 months, while the maximum loan guarantee periods of the 80% and 90% guarantee products will be extended to 10 years and eight years respectively. In addition, the partial principal repayment options will be offered for new loans under the two guarantee products.

were complementary. An HKMA study finds that banks deployed their extra capital headroom from the release of the CCyB to support mainly less risky corporate loans (those less hit by the pandemic), while credit flows to hard-hit sectors were well supported by the SFGS (Wong et al (2022)). Using granular data from the GDR programme and a deep neural network model, a follow-up HKMA study on the SFGS reaches a similar conclusion – the scheme has been particularly effective in supporting those SMEs operating in vulnerable industries or seeking loans for uncertain purposes during the pandemic (Poon et al (2024)). It further shows that the scheme has a stabilising effect on the perceived creditworthiness of the borrowers.

With the various policy measures, it is expected that banks will continue to be supportive of SME financing. Indeed, according to our regular survey on SMEs' credit conditions, the share of respondents reporting tightening of banks' credit approval stance remained broadly steady in recent quarters. This result suggests that transmission to SMEs through the credit availability channel may not be strong.

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