HONG KONG MONETARY AUTHORITY

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UNDERSTANDING HOUSEHOLD INDEBTEDNESS IN HONG KONG

Key points:

- *While rising household debt-to-GDP in Hong Kong has been receiving increasing attention, this widely used single indicator-based approach cannot provide a full assessment of risks associated with household indebtedness, as it refers only to the gross debt of households, without taking into account the entirety of household balance sheet, risks to lenders and the associated macroeconomic imbalances.*

- *In view of this, we develop a framework for understanding the conditions under which rising household debt-to-GDP poses risks to the macroeconomy and to financial stability, and where Hong Kong stands when evaluated under such a framework.*

- *Our assessment finds that rising household debt should not pose a major threat to Hong Kong's financial and macroeconomic stability:*

  - *From the borrower's perspective, Hong Kong has a relatively high gross savings rate, extremely strong household balance sheet with one of the highest net-worth-to-liabilities ratio and safe-assets-to-liabilities ratio in the world, as well as low debt-servicing burden. These suggest that the household sector as a whole has a strong buffer to cushion potential financial and economic shocks stemming from rising household debt.*

  - *From the lender's perspective, the risks arising from the distribution of debt among households including excessive loans to marginal borrowers and aggressive risk-taking by some households are well under control by banks' prudent underwriting standards and the HKMA's prudential measures. That said, there are pockets of risks* *in mortgages provided by property developers which warrant closer monitoring.*

- *Finally, from a more economy-wide perspective, there are no salient signs that rapid growth in household debt reflects or contributes to macroeconomic imbalances or an overheating economy, as what was observed before the Asian financial crisis.*

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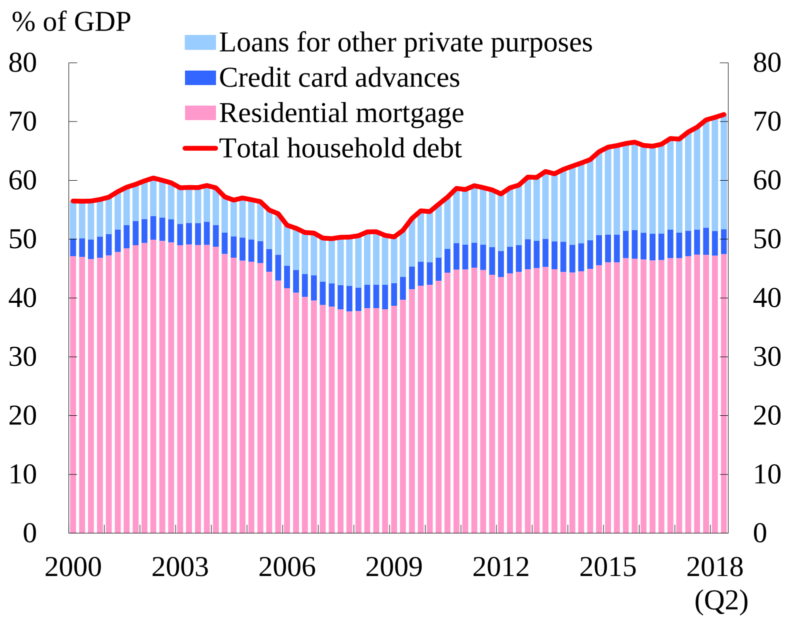
I. BACKGROUND

Rising household debt-to-GDP in Hong Kong has been receiving increasing attention. According to monetary statistics compiled by the Hong Kong Monetary Authority (HKMA), Hong Kong's household debt-to-GDP ratio has been on the rise since the global financial crisis (GFC), reaching a historical high of 71.2% in 2018 Q2 (Chart 1). Such a rising trend is mainly driven by the rapid expansion of loans for other private purposes which rose from 7.8% of GDP in 2009 Q1 to 19.5% of GDP in 2018 Q2. On the other hand, both residential mortgage loans and credit card advances (as % of GDP) have remained largely stable during this period, staying at 47.5% and 4.2% respectively in 2018 Q2.

Chart 1: Household debt-to-GDP ratio and its components



Note: Only borrowings from authorized institutions (AIs) are covered.
Source: HKMA.

To assess the riskiness of this phenomenon in Hong Kong, one needs to have a framework of understanding the conditions under which rising household debt-to-GDP poses risks to the macroeconomy and to financial stability; and where Hong Kong stands when evaluated under such a framework.

II. HOUSEHOLD DEBT-TO-GDP - WHAT DOES IT TELL US?

Household debt-to-GDP is a widely used indicator to gauge whether there are signs that households are overly leveraged which could have implications for macroeconomic and financial stability risks.

However, one cannot come to a conclusion about an economy's vulnerability by relying solely on this simple measure. It should be noted that **this measure refers only to the gross debt of households, without taking into the entirety of household balance sheet, risks to lenders and the associated macroeconomic imbalances**. The common practice of looking at gross debt is partly due to the ease of comparison across economies, as gross debt data are more readily available and partly because of the concerns that higher total asset value that goes along with higher gross debt could still reflect the possibility of credit-fuelled asset price boom. To have a more thorough understanding of the vulnerability of households and hence the economy to macroeconomic and financial stability risks, **it will require further investigation into the household balance sheet, lender's underwriting standard and the associated macroeconomic conditions**. In this regard, high gross household debt-to-GDP ratios only serve to flag the need to look further into the situation and more in-depth investigation will be needed to obtain a true picture of household's financial health and the associated risks.

III. WHAT MAKES RISING HOUSEHOLD DEBT A CONCERN?

To assess whether rising household debt-to-GDP warrants concern to an economy, it is important to understand when rising household debt-to-GDP might be a problem, i.e. through what channels rising household debt can lead to economic and financial stability risks, and accordingly, what characteristics other than gross household debt-to-GDP will need to be investigated.

Below are conditions under which rising household debt-to-GDP will be a problem:

- Rising household debt could result in **unsustainably low aggregate savings rate, if not supported by rising net worth**. This situation, if persists, could result in household debt overhang, undermining economic growth and macroeconomic stability in the longer term.

- Household debt can be an indication of **credit-fuelled asset price boom**. During an upturn, rises in asset prices could fuel excessive household debt partly because of inflated value of collateral. Households may underestimate the risk due to rapid rises in their net worth driven by asset price inflation. With such a build-up of financial imbalance, a cycle turn can reduce households' net worth quickly, creating a strong ripple effect on the financial system (e.g. loan defaults) and the broader economy (e.g. depressing consumption growth).

- High household debt most likely comes with **high debt-servicing burdens**. The latter can potentially amplify the impact of adverse shocks to income and higher interest rates. During times of stress, borrowers with higher debt will typically cut back on their spending, while lenders will tighten up lending, making borrowers even harder to smooth consumption. This can cause the economy to go into a prolonged recession.

- From a more economy-wide perspective, rapid growth in household debt accompanied by excessive consumption and over-investment can lead to **an overheating economy – a persistently positive output gap, inflation well above the desired level and a wider current account deficit**. Such macroeconomic imbalances make the economy more vulnerable to shocks.

IV. IS RISING HOUSEHOLD DEBT A CONCERN FOR HONG KONG?

Building upon the conceptual framework outlined above, we shall evaluate in this section whether rising household debt entails risks for households, the financial system and the wider economy in Hong Kong **from both the borrower's and lender's perspectives, and whether there is the presence of macroeconomic imbalances**.

a. <u>Borrower's perspective</u>

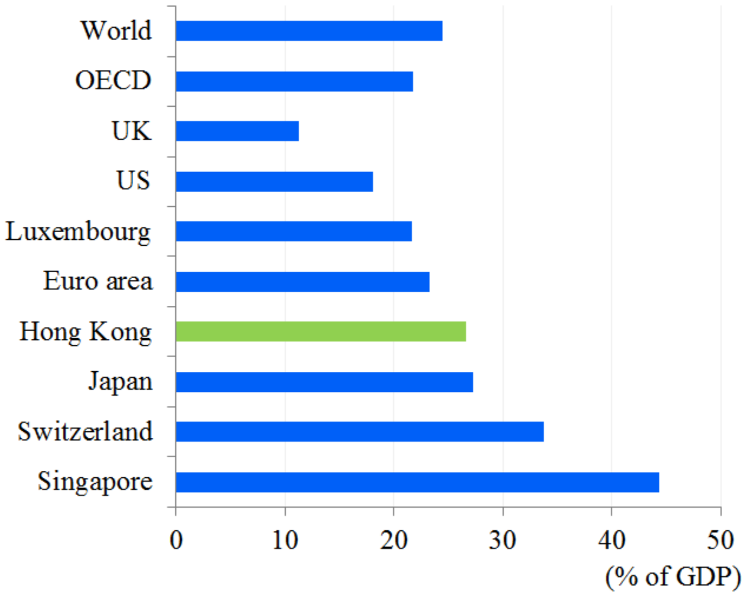
From the borrower's perspective, one can examine households' finances, including the household savings rate, the household balance sheet and the debt-servicing burden on households to assess whether they can, on aggregate, help effectively cushion against potential adverse shocks. To investigate the extent to which households are vulnerable to macroeconomic and financial stability risks, we will try to address the questions below sequentially.

- ***Does Hong Kong have a low and declining savings rate?***

  Hong Kong has a relatively high gross savings rate compared with most advanced economies. It is important to note that official household savings rate data (preferably from micro-based surveys) are not available for Hong Kong. As a result, we look at the gross savings rate to get a sense of where

Hong Kong stands. Although the gross savings rate started to decline in 2009, this trend reverted in 2015 and the savings rate rose from 24.9% (of GDP) in 2015 to 26.6% in 2017, even as the household debt-to-GDP ratio rose. When compared to other economies, the gross savings rate in Hong Kong, at close to 27%, is higher than the OECD average of 21.8% and world average of 24.5% (Chart 2).[1]

Chart 2: Gross savings rate in 2016



Note: Hong Kong figure refers to that in 2017.
Sources: HKMA staff estimates and World Bank.

- ***Is rising household debt supported by increase in net worth?***

Despite the rising trend of household debt, households' balance sheet positions have strengthened. Our estimations found that household assets have grown at a much faster rate than liabilities after the GFC. As such, households' net worth (the difference between assets and liabilities) has increased considerably since 2009, with the household net worth-to-liabilities ratio rising from 10 times in 2009 to 12.6 times in 2016 (Chart 3).[2] In fact, the household net

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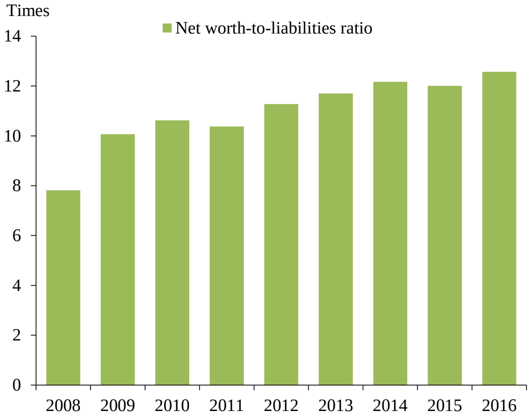
[1] 2016 figures from the World Bank.

[2] Since official household balance sheet data are not available in Hong Kong, an attempt was made to obtain broad-brush estimates of the key components using a macro approach. Under this approach, assets of households are estimated by multiplying the aggregate value of assets by the percentage share of household ownership. Data on the aggregate value of property and financial assets (e.g. deposits, debt securities, stocks, life insurance and pension funds) are obtained from various sources through surveys or relevant administrative data. However, in most cases the percentage shares owned by households in these aggregate values are not readily available. As such, estimations and assumptions are made. For the liabilities of households (mainly comprise of mortgage and personal loans), estimates are directly obtained from banking statistics by the HKMA, supplemented by estimates of credit extended by non-banks obtained through surveys. The net worth-to-liabilities and safe assets-to-liabilities ratios (will be discussed below) of Hong Kong's household sector in this study are derived using this approach.

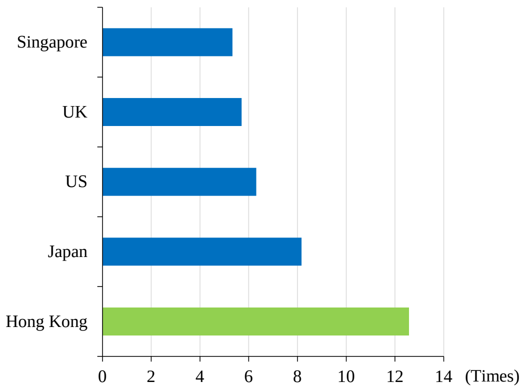
worth-to-liabilities ratio was much higher in Hong Kong than in the major advanced economies as well as other Asian economies, where it was mostly found to be only around 5-6 times (Chart 4).

Chart 3: Household net worth-to-liabilities ratio for Hong Kong



Source: HKMA staff estimates.

Chart 4: Household net worth-to-liabilities ratio for selected economies



Note: Hong Kong, Japan and the UK figures refer to those at end-2016, while the US and Singapore figures refer to those at end-2017.

Sources: HKMA staff estimates, and statistical agencies or central banks of selected economies.

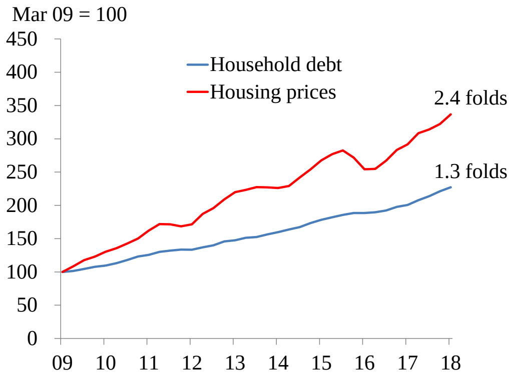
- ***Is there evidence of a credit-fuelled asset price boom?***

Although the increase in household debt has been supported by rising net worth of households in Hong Kong, there is still a possibility that the increase in households' net worth in Hong Kong could be largely driven by asset price inflation, particularly given the sharp rise in property prices which in turn contribute to rising household assets (i.e. credit-fuelled asset price boom). In this case, household net worth will be vulnerable to property price shocks, with a property market cycle turn leading to a systemic household insolvency problem (i.e. negative net worth).

We will therefore need to assess (1) whether there is evidence of a credit-led property price boom, and (2) whether rising household debt is causing household balance sheet to become vulnerable to a downturn in the property market.

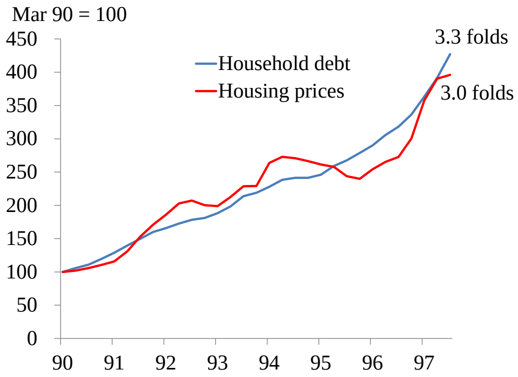
First, we found no strong evidence of a credit-led asset price boom at this round of the property market upcycle. In particular, household debt has increased much slower than property prices after the GFC (2.4 folds vs 1.3 folds, see Chart 5). This is in sharp contrast to the situation before the Asian financial crisis (AFC), when both household debt and property prices increased rapidly at similar pace (3 folds) from 1990 to 1997 (Chart 6).

Chart 5: Household debt and housing prices (Post-GFC period: 2009 – Present)



Sources: HKMA and R&VD.

Chart 6: Household debt and housing prices (Period preceding the AFC: 1990 – 1997)

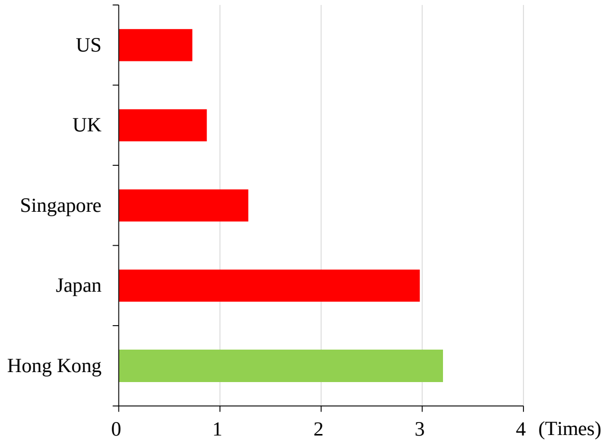


Sources: HKMA and R&VD.

Second, Hong Kong's household sector is found to have a high safe assets-to-liabilities ratio, suggesting that households have a strong buffer to withstand property price shocks. Even if we consider a very narrow definition of safe assets to include only deposits, the safe assets-to-liabilities ratio for Hong Kong's household sector was very high at 3.2 times in 2016.[3] This implies that even in the event where property market downturn is causing a sharp deterioration in households' asset position, Hong Kong's households on aggregate still have sufficient safe assets to cover their outstanding debts. Therefore, the risk of a systemic insolvency problem would be low. The safe assets-to-liabilities ratio of households in Hong Kong is far higher than other economies, including also those with relatively wealthy households such as Singapore and Japan (Chart 7). In contrast, household liabilities are larger in size than household safe assets in the US and the UK.

[3] Our estimates of household liabilities have already included household loans from non-bank institutions, and therefore mortgage loans from property developers, which are mainly provided through their own financial subsidiaries, should have been reflected in the estimates. Nevertheless, we also derive a more conservative estimate by adding estimated mortgage loans by property developers to the original estimate of household liabilities. The resulting safe assets-to-liabilities ratio is found to be similar.

Chart 7: Household safe assets-to-liabilities ratio for selected economies



Notes:
1. Safe assets comprise deposits, as well as currency if data are available. In the case of Hong Kong, deposits only.
2. Hong Kong, Japan and the UK figures refer to those at end-2016, while the US and Singapore figures refer to those at end-2017.

Sources: HKMA staff estimates, and statistical agencies or central banks of selected economies.

- ***Does rising household debt in Hong Kong come with high household debt service burden?***

There is indeed a reason to be concerned about the impact of fast expansion of household debt on debt service burden. Before the AFC, Hong Kong did see a rapid expansion of household debt along with soaring debt service burden. Our estimates suggest that the outstanding mortgage debt service ratio (OMDSR) rose from 22% in 1994 Q4 to a peak of 29% in 1998 (Chart 8). The high debt-servicing burden partly contributed to a prolonged recession after the outbreak of the AFC with a sharp drop of 7.4% in real private consumption per household in 1998 relative to 1997.

Nevertheless, unlike the AFC episode, households' mortgage debt-servicing burden in the post-GFC period has remained stable since 2008, and stayed at its historical lows (Chart 8).[4,5] Apart from the low interest rate environment, macro-prudential measures on banks' mortgage lending have contributed to

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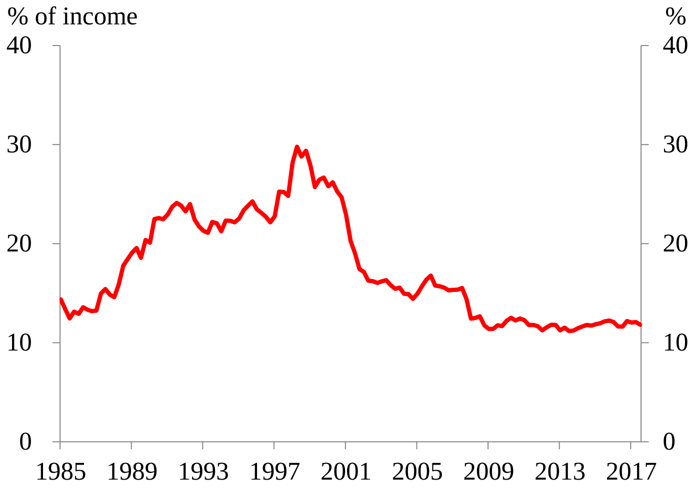
[4] A similar trend is observed for the "median mortgage payment and loan repayment to income ratio" computed based on data collected through the Hong Kong Population Census and By-census. In particular, that ratio declined from 28% in 2001 to 18% in 2016.

[5] The outstanding mortgage debt service ratio (OMDSR) as shown in Chart 8 takes into account households' debt repayment on banks' residential mortgage only. Given the small size of developer mortgages relative to banks' mortgages (See "Prudential Measures for Property Mortgage Loans" (Chinese version only) issued on 19 May 2017, which is available on the HKMA website), the OMDSR is estimated to be little changed if developer mortgages are included in the OMDSR estimation.

low debt-servicing burdens in the post-GFC period. While households' debt-servicing burden would increase going forward as interest rate is on the rise, the existing low debt service burden and the prudential requirements on loan-to-value (LTV) ratio and debt-servicing ratio (DSR) (particularly with the stressed DSR caps based on an additional 3-percentage-point rise in mortgage rate) that confine borrowers to households with strong repayment ability should make the increase in debt-servicing burden manageable.[5]

Chart 8: Outstanding mortgage debt service ratio



Source: HKMA staff estimates.

b. Lender's perspective

Overall, our assessment from the borrower's perspective suggests that, on aggregate, the current development in household debt would not pose significant threat to household sector's solvency and debt-servicing ability.

However, one important limitation of the above analysis is that the aggregate ratios of household balance sheet cannot reveal the extent of risks stemming from the distribution of household debt among households. An economy with a healthy aggregate household balance sheet could still be subject to a systemic household debt problem if the distribution of household debt skews towards households with low income and/or a weak balance sheet position (i.e. marginal households) and/or a significant portion of households take excessive risks (e.g. over-leveraged households).[6]

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[6] Since the net worth-to-liabilities and safe assets-to-labilities ratios for Hong Kong's household sector are estimated using a macro approach instead of obtaining from household surveys, the unavailability of distributional statistics means that the issue needs to be assessed in an alternative way.

Such risks can be assessed from a lender's perspective. The question here is that how much household debt is concentrated in marginal households that are prone to excessive risk-taking. The answer can be found by looking into banks' underwriting standards. If banks have maintained conservative underwriting standards for individual household borrowers, then the risks stemming from the distribution would be relatively low. Below, we analyse such risks from a lender's perspective by type of household debt:

- ***Residential mortgage loans (RMLs):***

  Given that RMLs account for the lion's share of banks' household debt (over 60% of the total), underwriting standards for RMLs hold the key to determining the riskiness of household debt of the Hong Kong banking sector. Commensurately, RMLs have long been the main target of macro-prudential policies implemented by the HKMA.

  The eight rounds of macro-prudential measures have contained the risks of household debt at least through two channels. First, they contain the risk of credit-fuelled asset price boom, as reflected by the moderate growth in RMLs since the GFC relative to the rise in property prices. Second, the prudential measures on banks' mortgage lending, such as caps on loan-to-value (LTV) ratio and debt-servicing ratio (DSR) applied on individual borrowers, have effectively restrained household's leverage and debt-servicing burden on mortgages offered by banks, and effectively prevented banks from extending excessive mortgages to marginal households. The average LTV for new mortgages approved declined to 47% in July 2018 from 64% before the measures were first introduced, while the DSR also decreased to 35%. Importantly, the measures are forward-looking, taking into account the impact of future rises in mortgage rates by conducting stress-test on individual households' debt-servicing burden.

  That said, there are pockets of risks with the rapid growth of mortgages offered by property developers despite their small size relative to bank mortgages. Based on data collected by the HKMA, mortgages offered by property developers grew rapidly by 53% in 2017 while their size was only 2.6% of bank mortgages. This fast expansion of mortgages provided by property developers can pose potential risks to financial and macroeconomic stability given that developers tend to have relatively lax underwriting standards and lend to potentially risky borrowers. Property developers offer loans with high LTV ratios at about 70-90%, with reportedly loose requirement on debt service ratios. While these loans are subject to higher risks of negative equity because of the lower down-payment, the lower debt service requirement is also likely to attract more marginal borrowers who could have difficulties to repay once interest rates increase significantly.

Measures implemented by the HKMA in May 2017[7] can help limit banks' exposure to property developers and partly mitigate financial stability risks associated with developer mortgages. But continued vigilance on the developer mortgages should be warranted given the potential implications for macroeconomic stability. Although mortgages offered by property developers and generally loans from finance companies are not under HKMA's purview, the HKMA has been monitoring this development closely.

- ***Personal loans:***

(i) *Credit card advances*

As far as lending to marginal households is concerned, credit card advances are one main type of household loans to look at. However, recent development shows that the risk remains low. First, credit card advances are not the key driver of rising household debt in recent years. Second and more importantly, a large portion of outstanding credit card advances have served as a means of payment rather than loans over the past decade. In particular, the share of the rollover amount (i.e. representing those interest-bearing borrowing as total receivables from customers are not fully repaid) has declined from over 50% in early 2000s to about 20% in recent years.

(ii) *Loans for other private purposes*

Loans for other private purposes have been the main driver of the rise in household debt over the past few years, growing strongly at 18.8% per annum over the past five years. The growth is in line with the fast expansion of private banking business in Hong Kong for both domestic and non-domestic customers, with assets under management by major private banks in Hong Kong growing at an average annual rate of 20% between 2011 and 2016.

[7] The HKMA introduced measures on 12 May 2017 to strengthen the risk management of banks for lending to property developers: (i) tightening the caps on ratios for construction financing; (ii) requiring banks to set aside an adequate amount of capital with reference to the level of mortgage exposures of property developers.

Based on information collected from a selected group of banks active in personal lending, it is estimated that **over 70% of loans for other private purposes are secured loans comprising lending secured by financial assets granted to private banking and wealth management customers and top-up financing secured by properties**. While the risk of excessive loans to marginal households is likely to be lower as customers are mainly high net-worth individuals, and some of the borrowers are not domestic residents such that loans extended to them should not be compared with Hong Kong's GDP, excessive risk-taking supported by credit-fuelled asset price boom remains a valid concern. Higher financial asset prices leading to rising value of collateral and thus fast expansion of credit could impair households' balance sheet when the market turns.

In this regard, **prudent risk management of banks is important**. Since 2014, the HKMA has required banks to review underwriting standards of their personal loan products and maintain prudent risk management practices. The HKMA observes that banks have generally established prudent credit limits, conservative collateral valuation (e.g. prudent haircuts) and prompt margin call mechanisms.

In particular, prudent collateral valuation will be crucial in reducing leverage and thus the risk of credit-fuelled asset price boom. Lending to private and wealth management customers are usually secured by liquid and marketable financial assets, such as deposits, stocks, bonds, insurance policies and mutual funds. In order to manage the credit risk associated with such lending, banks apply haircuts to the collateral value in determining credit limits, normally in the form of a cap on loan-to-value (LTV) ratios. In practice, banks generally take into account liquidity and price volatility, as well as issuers' financial strength of the underlying collateral in setting LTV ratios. In general, the haircuts applied by banks in Hong Kong for such lending are prudent:

- **Cash deposits**: As the safest form of assets, banks adopt higher LTV ratios for cash deposits. The maximum LTV ratios for HKD and USD cash deposits can be up to 95%. The ratios for cash deposits denominated in other actively traded foreign currencies are around 80% to 90% to reflect foreign exchange risks.

- **Equity stocks**: As compared to cash deposits, equity stocks are more volatile financial assets, for which banks adopt lower LTV ratios. While the maximum LTV ratios for Hang Seng Index constituent stocks can be up to 60%, those for other equity stocks are set at less than 40% and even down to 0% for small-cap stocks and stocks with high shareholding concentration.

- **Bonds**: Banks set the LTV ratios for bonds mainly based on credit ratings assigned by external credit rating agencies. While the maximum LTV ratios for investment-grade bonds are around 70% to 80%, those for non-investment grade are less than 50%.

- **Insurance policies**: Banks put in place internal screening processes to select eligible insurers. Only those insurance policies issued by eligible insurers can be accepted as collateral. The maximum LTV ratios for insurance policies are then determined based on policy types. For instance, the maximum LTV ratios for guaranteed life insurance policies are generally set at 80% to 90% of cash surrender value of the policies (i.e. the amount that insurers will pay out to policy holders/assignees when insurance policies are surrendered).

- **Mutual funds**: The LTV ratios for mutual funds largely depend on the composition of underlying assets. While the maximum LTV ratios for money market funds can be up to 90%, the ratios for other mutual funds range from around 40% to 80%.

- **Property**: The same prudential measures on mortgage loans apply to any mortgage refinancing or top-up loans.

Overall, **the prudent haircuts on collaterals together with prudent credit limits and margin call mechanisms of banks in Hong Kong should greatly reduce the risks of credit-fuelled asset price booms and vulnerability of household balance sheet associated with the strong growth in loans for other private purposes**.

Taken together, the systemic risks stemming from the distribution of household debt should be low given banks' prudent risk management underpinned by HKMA's prudential measures and supervision on banks' lending business.

c. <u>Presence of macroeconomic imbalances</u>

Finally, an over-leveraged economy often comes at the expense of an overheating economy and macroeconomic imbalances. Despite rising household debt, there are currently no salient signs of macroeconomic imbalances in Hong Kong. Hong Kong's output gap is estimated to be relatively small (Table 1). In recent years, Hong Kong has witnessed a close-to-zero output gap (0.4%), fairly modest average consumer price inflation (around 2.3%) and persistent current account surplus (about 4% of GDP). The lack of significant macroeconomic imbalances also helps increase the resilience of the local economy to potential risks associated with a shock to the household balance sheet. In contrast, back in the mid-1990s, the Hong Kong economy showed clear signs of overheating, with a significantly positive average output gap (1.4%), high average inflation (7.1%) and a large average current account deficit (-4.4% of GDP).

Table 1: Comparison of macroeconomic conditions in Hong Kong

	1995-97	**2015-17**
Output gap (% deviation)	1.4	0.4
Average consumer price inflation (%)*	7.1	2.3
Current account balance (% of GDP)	-4.4	3.9

Note: * Figures refer to the average annual rates of change in the Composite CPI from 1994 to 1997 and from 2014 to 2017.
Sources: C&SD, IMF WEO database and HKMA staff estimates.

V. CONCLUSION

While household debt-to-GDP ratio has been a widely used indicator in evaluating household financial vulnerability, this single indicator-based approach cannot provide a full assessment of risks associated with household indebtedness. In this regard, we develop a systematic framework for identifying conditions under which rising household debt might pose a major threat to macroeconomic and financial stability. Specifically, rising household debt will raise a red flag when accompanied by low savings rate, weak household balance sheets, high debt-servicing burden, and clear signs of credit-fuelled asset price boom as well as macroeconomic imbalances.

Using this conceptual framework, our assessment of the current situation in Hong Kong finds that rising household debt would not pose a major threat to Hong Kong's financial and macroeconomic stability. From the borrower's perspective, Hong Kong's relatively high gross savings rate, strong household balance sheet and low debt-servicing burden suggest that the household sector as a whole has a strong buffer to cushion financial and economic shocks, which helps to mitigate potential risks stemming from rising household debt.

From the lender's perspective, the risks arising from the distribution of debt among households including excessive loans to marginal borrowers and aggressive risk-taking by some households are well under control by banks' prudent underwriting standards and the HKMA's prudential measures. However, there are pockets of risks in mortgages provided by property developers, which warrant closer monitoring.

Finally, from a more economy-wide perspective, there are no salient signs that rapid growth in household debt reflects or contributes to macroeconomic imbalances or an overheating economy, as what was observed before the AFC. Rather, the current sound macroeconomic fundamentals enable the economy to better safeguard against potential risks associated with the rising household debt.