

2. Global setting and outlook

Thanks to a rising vaccine uptake, sustained policy support and a gradual adaptation to “pandemic life”, the global economic recovery has so far surpassed expectations. Yet, the pace of recovery is deeply uneven, with EMEs generally lagging behind AEs. Strong pent-up demand and pervasive supply chain bottlenecks have fuelled inflationary pressure, particularly in the US, raising concerns about a premature tightening of global financial conditions. Going forward, the global outlook hinges on factors such as vaccination progress and the future development of the pandemic, as well as whether a sound “Pandexit” strategy will be in place to mitigate economic scarring while rebuilding policy buffers as soon as practicable.

In East Asia, while some economies have recovered at a faster pace on the back of goods exports, economic conditions remain weak, especially in those economies with slower vaccination progress and more dependence on tourism. A premature global financial tightening would risk derailing the recovery of the economies that are lagging behind or dealing with notable growth in US dollar debt.

In Mainland China, the economy continued to improve steadily in the first half of 2021 but the recovery was uneven, with some in-person and small businesses still lagging behind. Accordingly, the government kept up its support of the real economy with accommodative measures while containing potential systemic risks by, for example, limiting banks’ exposure to vulnerable borrowers such as highly leveraged property developers.

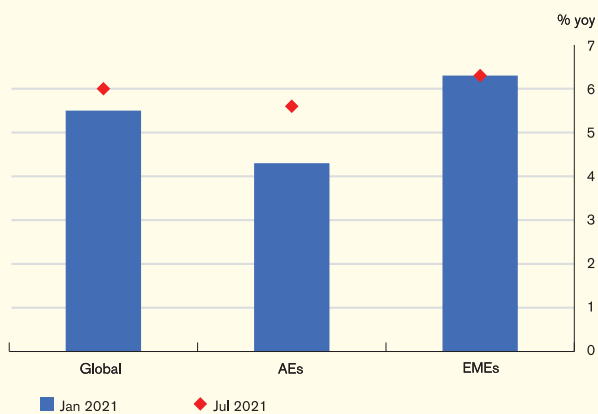
2.1 External environment

Against the stark backdrop of the COVID-19 pandemic, the global economic recovery has been remarkably strong – thanks to climbing vaccination rates, sustained policy support and a gradual adaptation to “pandemic life”, such as the rising popularity of e-commerce and remote working, which allow households and firms to

better cope with disruptive restriction measures. Reflecting the solid growth outturns among major AEs in the first half of 2021, the International Monetary Fund (IMF) in July maintained its full-year projection of global gross domestic product (GDP) growth at 6.0%, same as in April and upgraded from its previous forecast of 5.5% in January (Chart 2.1).

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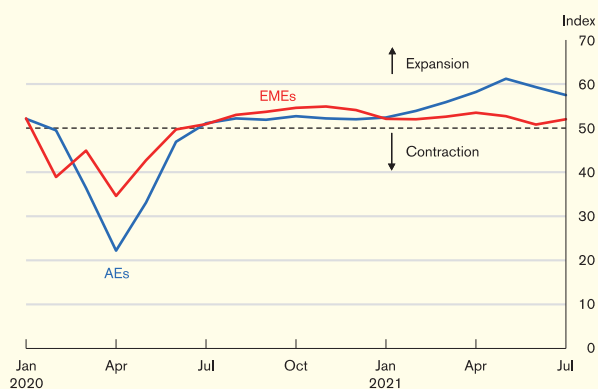
Chart 2.1
IMF's 2021 real GDP growth projections



Source: IMF.

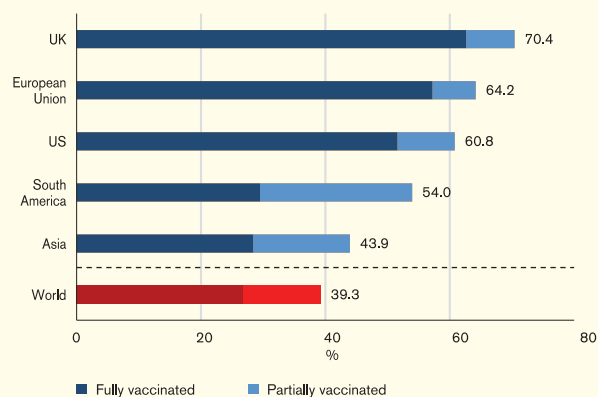
However, the recovery has been highly uneven across economies, owing to variations in the extent of policy support, the vaccine coverage and the pandemic development, as well as structural factors such as the degree of reliance on hard-hit sectors including tourism and hospitality. Among AEs, the US rebounded faster than its counterparts in Europe, due in part to its swift economic reopening and generous stimulus packages. In contrast, EMEs have generally been lagging behind (Chart 2.2), as reopening was hampered by the relatively slow vaccine rollouts (Chart 2.3), and also because of their more limited policy space.

Chart 2.2
Composite Purchasing Managers' Index (PMI) in AEs and EMEs



Source: CEIC.

Chart 2.3
Share of vaccinated population in selected economies

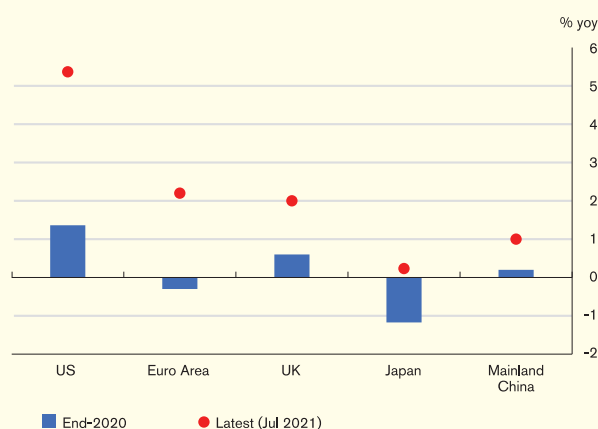


Note: Data as of 29 August 2021.

Source: Our World in Data.

As the global economy reopened, strong pent-up demand and pervasive supply chain bottlenecks stemming from the pandemic, such as global shortages in semiconductors and logistics capacity, resulted in a heightened supply-demand imbalance, leading to a global build-up of inflationary pressure (Chart 2.4). This build-up of price pressures has been particularly acute in the US, where generous fiscal transfers contributed to increases in both disposable personal income and labour shortage. Against this backdrop, market-based US inflation expectations went up notably, especially for the nearer term (Chart 2.5).

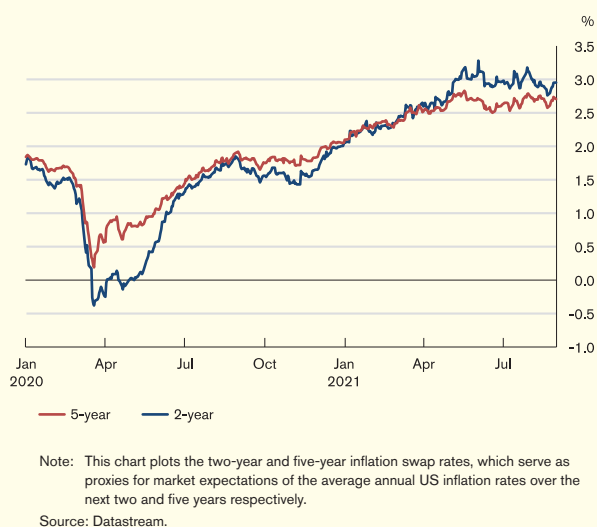
Chart 2.4
Headline consumer price inflation rate in selected major economies



Source: CEIC.

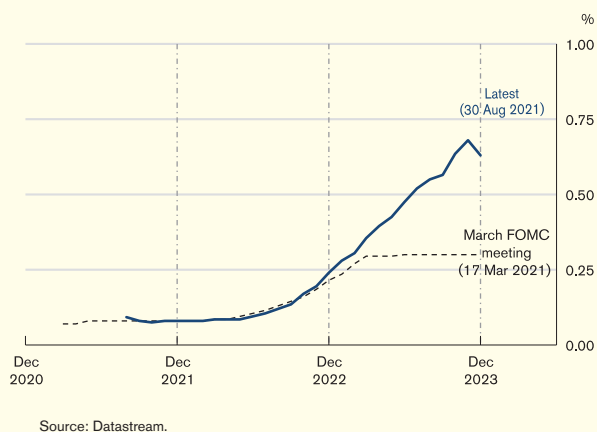
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Chart 2.5
Market-based US inflation expectations



While the Fed has suggested more than once that the inflationary pressures are likely to be transitory, repeated upside surprises in US inflation in recent months prompted the market to bring forward the timing of the Fed's first rate hike and to expect a steeper Fed funds rate path in the future (Chart 2.6). These developments, together with a revelation from the minutes of the June Federal Open Market Committee meeting that Fed officials had begun discussion on scaling back the quantitative easing programme, raised concerns about a tighter monetary policy ahead.

Chart 2.6
Implied interest rates from federal funds futures



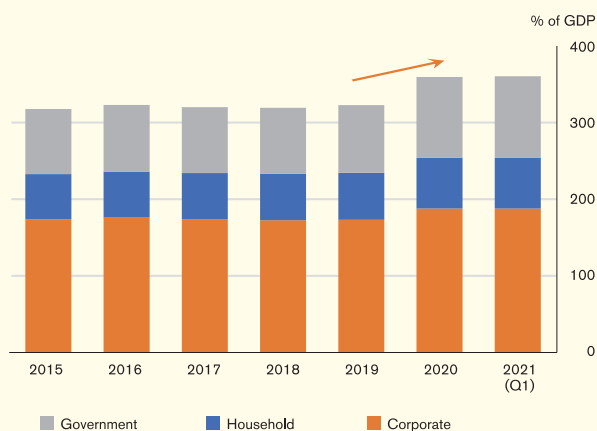
Going forward, if US inflation turns out to be more persistent than expected, for instance, due to sustained price pressures in consumption categories that respond strongly to reopening or a larger-than-expected pass-through of rising housing prices to the rental component of inflation, this could challenge the markets' expectations of "low for even longer", raising the risks of disruptive financial market repricing and a premature tightening of global financial conditions. Under this scenario, many EMEs could be vulnerable to renewed growth slowdowns and capital outflows, given their tepid recovery and limited room for policy manoeuvre.

Uncertainties over the future development of the pandemic pose another wild card to the near-term global outlook. Should major economies need to reimpose containment measures due to the spread of more infectious strains of COVID-19 such as the Delta variant, or because of a lack of herd immunity given lacklustre vaccination rates, the nascent global economic recovery could risk being derailed.

Further down the road, the path to a full recovery hinges on whether policymakers can develop sound "Pandexit" strategies that, on one hand, promote the healing of economic scars left by the pandemic (e.g. reduced labour force participation) and avoid a "cliff effect" by not withdrawing support measures prematurely, while replenishing policy buffers as soon as practicable on the other hand. However, the latter is easier said than done, as surging global debt levels could complicate policymakers' efforts in normalising monetary policy (Chart 2.7).

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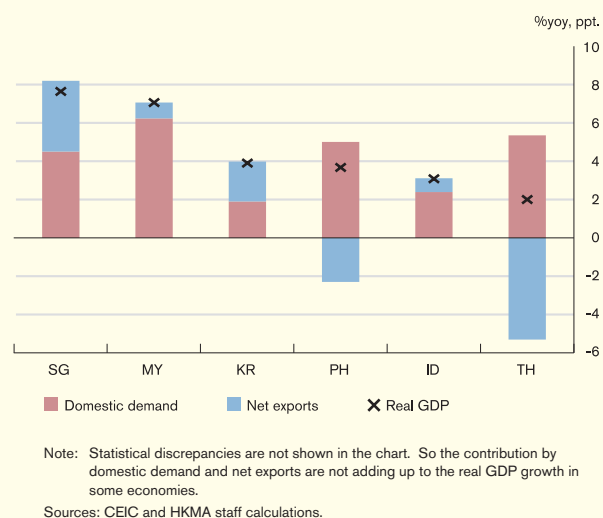
Chart 2.7
Global debt to GDP ratio



Yet, prolonging the status quo of extraordinarily accommodative policies risks undermining financial stability by encouraging excessive risk-taking. As a case in point, investors' search for yield amid the abundant global liquidity has led to the rapid growth of risky corporate debt assets, including leveraged loans (LLs) and their securitised products, namely Collateralised Loan Obligations (CLOs). Investment funds are the second largest holder of these assets after banks, giving rise to financial stability concerns about the liquidity risk of open-ended funds and the spillover risk to banks. Box 1 finds that open-ended funds which invest heavily in LLs are subject to high liquidity risk and fire-sale pressure in times of stress, calling for close monitoring and policies to address the vulnerabilities in these funds.

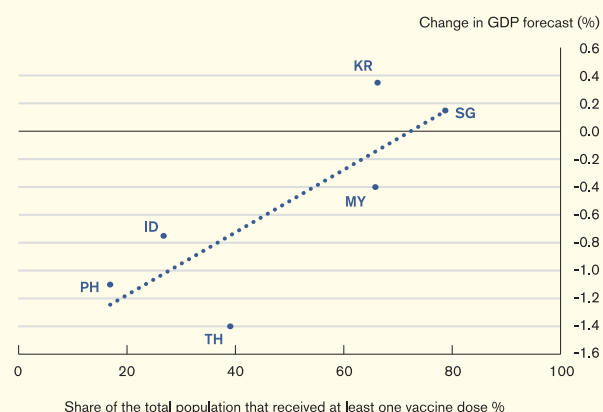
In East Asia, the pace of economic recovery was highly uneven in the first half of 2021, largely reflecting differences in both the economic structure and pace of vaccination across regional economies. For instance, South Korea, which is the world's key electronics manufacturer and exporter, has rebounded notably along with strong global demand for tech products. In contrast, tourism-dependent economies such as Thailand continue to struggle with the global tourism standstill (Chart 2.8).

Chart 2.8
East Asia: GDP growth in the first half of 2021



The recovery of some Southeast Asian economies was also dragged by their slow pace of vaccination (Chart 2.9). While Asian economies with higher vaccination rates, such as South Korea and Singapore, have contained the new waves of COVID-19 outbreaks better since the second quarter of 2021, economies with less vaccinated populations, such as Indonesia and the Philippines, have seen a surge in infections and high death rates.

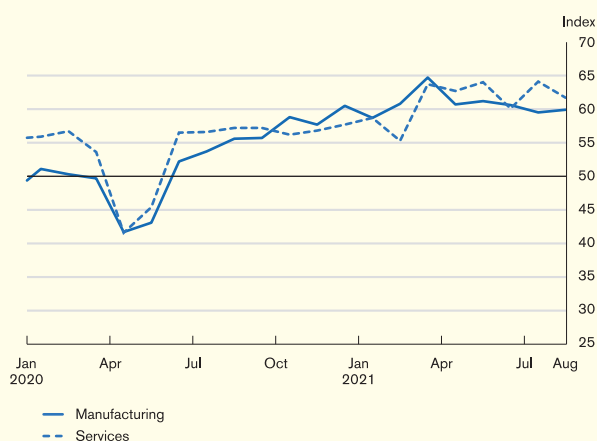
Chart 2.9
East Asia: Change in GDP forecast and vaccination rate



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Apart from the uncertainties arising from the vaccination progress, Asia is also facing multiple headwinds. First, while the region's recovery has been underpinned so far by strong demand for goods exports, such as tech and medical products, there are signs that such demand may decelerate going forward. In particular, the better readings of the service PMI of the US compared with its manufacturing PMI (Chart 2.10) suggest that the growth momentum of the world's largest economy would gradually shift to less trade-intensive service sectors alongside the reopening, which may lead to lower demand for goods from Asia.

Chart 2.10
PMIs of the US

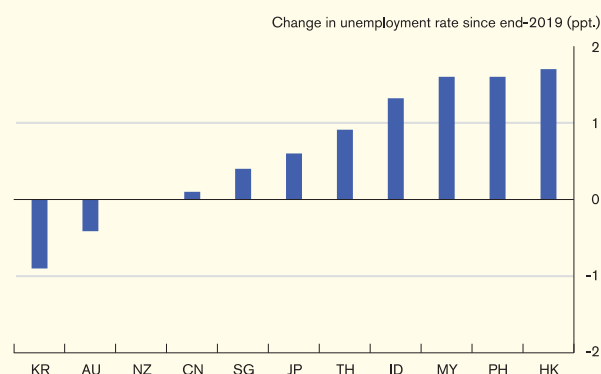


Source: Institute for Supply Management.

Second, the rising US inflationary pressures may carry a risk of a sudden spike in long-term US interest rates and trigger premature financial tightening in some regional economies. In particular, any rise in the US interest rate could induce capital outflows from Asia, with the possibility of triggering an asset market correction, currency depreciation and increased borrowing costs. While some regional economies such as South Korea might be more prepared for tightening as their real GDPs and unemployment rates have already or nearly returned to pre-pandemic levels (Chart 2.11), many other Asian economies are still struggling, and any premature tightening could derail their nascent

economic recovery. A rise in the US interest rate will also be a threat to those economies that are facing significant increases in US dollar debt and strong inflation in housing prices.

Chart 2.11
Asia-Pacific: Latest unemployment rate vs. rate in end-2019



Note: The latest observation is February figure for ID. Q2 for MY, NZ, SG and TH. July for AU, HK, JP, and PH. August for CN and KR.

Sources: CEIC and HKMA staff estimates.

Box 1

An assessment on the vulnerabilities of open-ended funds to leveraged loans

Introduction⁴

Leveraged loans (LLs), which are illiquid and carry significant default risks, have grown rapidly alongside their securitised products (i.e. Collateralised Loan Obligations, CLOs) in recent years⁵. The rapid growth of these assets could have significant financial stability implications.

In particular, investment funds are the second largest holder of LLs and CLOs after banks, according to the Financial Stability Board (FSB)⁶. The lower credit quality and thin liquidity of LLs may subject open-ended funds with exposure to these assets to high liquidity risk, as the funds are committed to meeting investors' redemptions promptly, such as on a daily basis, but selling their LLs or CLOs to honour the redemptions would take a much longer time due to the lack of liquidity in these assets.

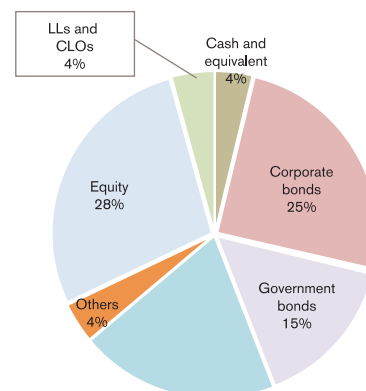
More importantly, the high liquidity risk of these open-ended funds could force a fire-sale of their LL or CLO holdings in times of stress, triggering a downward spiral in their prices and sharp fund outflows. This may cause financial stability concerns as the risk could spill over to the global banking sector (which holds the lion's share of these assets) through common holdings of the assets.

Against this backdrop, this box assesses open-ended funds' exposure to LLs and CLOs and their liquidity risk. We also identify factors that may amplify the liquidity risk. Based on the assessment, we draw potential policy implications for financial stability.

How far are open-ended funds exposed to LLs and CLOs?⁷

Using detailed fund portfolio data from 6,148 open-ended funds around the world that invest in LLs or CLOs, we find that the aggregate exposure to LLs and CLOs remained limited at 4% of their total assets at the end of 2019 (Chart B1.1).

Chart B1.1
Open-ended funds' investments in LLs and CLOs



Notes:

(1) The pie chart depicts the aggregate portfolio compositions of open-ended funds that invest in LLs or CLOs.

(2) Positions at the end of 2019.

Sources: Morningstar⁸ and HKMA staff estimates.

⁴ Wu, Wong and Fong (2021), "An Assessment on the Vulnerabilities of Open-Ended Funds to Leveraged Loans", HKMA Research Memorandum, 2021/07.

⁵ LLs refer broadly to bank loans that are issued to corporate borrowers with high leverage or lower credit quality. Given the high default risk of such loans, banks may reduce their exposure by selling some of their LLs to other banks and financial institutions, which may further securitise the loans in the form of CLOs and sell them to investors.

⁶ FSB (2019), "Vulnerabilities associated with leveraged loans and collateralised loan obligations".

⁷ Unless otherwise specified, the figures reported in this section refer to positions at the end of 2019.

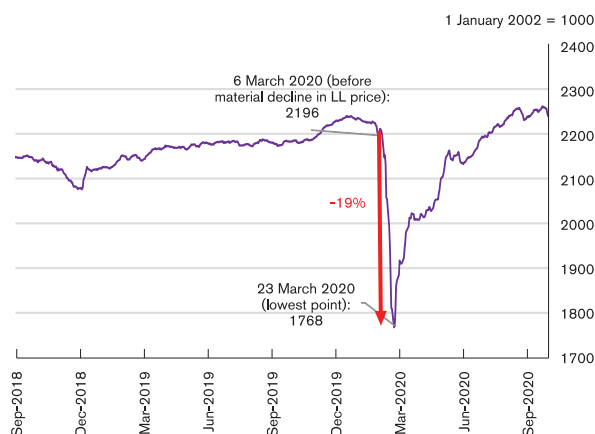
⁸ Morningstar's data providers do not guarantee the accuracy, completeness or timeliness of any information provided by them and shall have no liability for their use.

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However, the exposure to LLs is highly concentrated in a few open-ended funds. Just 2%, or 107, of the 6,148 funds invested more than half of their portfolios in LLs, and are referred to as “LL funds”. Despite their small number, the LL funds held more than half of investments in LLs by open-ended funds.

Importantly, these LL funds are highly susceptible to large outflows, which could affect the resilience of the LL market. In fact, during the March 2020 episode⁹, these funds sold US\$14 billion of LLs, accounting for 11% of transactions in the secondary LL market and contributing to the sharp drop of 19% in LL prices during the episode (Chart B1.2). The price fall could pose challenges to the wider financial sector. For example, banks may suffer a significant mark-to-market loss due to their exposure to LLs.

Chart B1.2
Decline in LL prices during the March 2020 episode



Note: The price of LLs is represented by the S&P Global Leveraged Loan Index.
Source: Bloomberg.

By comparison, the exposure of open-ended funds to CLOs may not pose material risks to financial stability, for two reasons. First, while a few open-ended funds were found to invest heavily in CLOs (i.e. more than 50% of their assets), their total investments in CLOs were small at US\$0.5 billion¹⁰, suggesting that a CLO sell-off by these funds may not have a material systemic impact. Second, around 80% of CLO tranches held by open-ended funds were rated A or better, indicating that the chances of losses due to defaults in the underlying LLs may be very small¹¹.

These findings, taken together, show that although the aggregate exposures of open-ended funds to LLs and CLOs remained limited, fire sales by a small number of LL funds could affect the resilience of the LL market and cause financial stability concerns. In view of this, the remaining part of this box will focus on LL funds to better understand their risks.

How significant is the liquidity risk of LL funds?

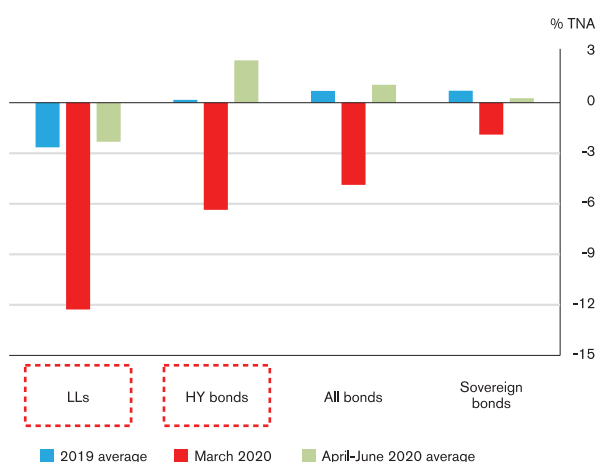
We find considerable liquidity risk in LL funds. During the March 2020 episode, these funds experienced notably larger outflows of 12.6% (of total net assets) as the price of LLs fell sharply (Chart B1.3). The outflows from LL funds were larger than those holding other risky assets, such as high-yield (HY) bond funds (6.5%).

⁹ The March 2020 episode refers to the incident where global financial market faced severe liquidity issues, brought about by the COVID-19 pandemic. See FSB (2020) “Holistic Review of the March Market Turmoil” for a comprehensive review of the incident.

¹⁰ As a comparison, the outstanding size of CLOs in the US and Europe at the end of 2019 was US\$762 billion.

¹¹ The rating of a CLO tranche refers to the order in which the holders receive income generated by and incur losses from the underlying LLs. Tranches with a rating of A or above are the safest among all the tranche classes, as they are the first to receive income from LLs and the last to bear losses. It should be noted that the rating of a CLO tranche does not imply what credit ratings the underlying LLs have.

Chart B1.3
Outflows from open-ended funds during the March 2020 episode



Notes:

- (1) Flows of open-ended funds are measured by the monthly percentage change in total net assets, net of returns.
- (2) The groups of open-ended funds presented are based on classification by source.
- (3) Positive (negative) value denotes net fund inflows (outflows).

Source: EPFR.

Our empirical analysis shows further that, even after controlling for fund performance, the liquidity risk of LL funds is high compared with HY bond funds. During times of stress, defined as periods where the VIX index is higher than the 90th percentile of the sample, a one percentage point (ppt) drop in the funds' returns would lead to an outflow of 1.5 ppts from LL funds, much higher than the estimate of 0.7 ppts for HY bond funds.

The large outflows from LL funds in times of stress may reflect investors' concerns about potential dilution of the funds' values due to the high liquidation cost of illiquid LLs. In anticipation of this risk, investors of LL funds may take first-mover advantage and redeem their investments ahead of others to avoid material losses. Thus, the large outflows, together with the illiquidity of LLs, could result in significant liquidity risk in LL funds.

What factors may amplify the liquidity risk of LL funds?

We find two factors that amplify the liquidity risk of LL funds. First, the funds' holding of LLs is highly pro-cyclical, meaning that a decline in LL prices would accelerate the funds' selling of their LLs in times of fund outflows¹². The sell-off could weigh on the already declining LL prices, pushing down these prices further and resulting in a downward spiral of LL prices.

Second, the LL funds in our study are found to be highly interconnected, because there is a significant overlapping of their holdings of LLs. Through these common holdings, LL funds display a strong co-movement in fund returns in times of stress, resulting in large outflows overall¹³. This implies that a shock to LLs could quickly spread through LL funds and expose a wider group of such funds to liquidity risk.

We also assess whether the leverage of LL funds is a significant factor which amplifies their liquidity risk, and find that most of the funds employed little leverage, making it unlikely as a significant factor in amplifying the risk.

Conclusion and implications

The March 2020 episode demonstrates that fire-sales of LLs by a small number of LL funds could generate a downward spiral in LL prices and sharp fund outflows, causing financial stability concerns about the liquidity risk of LL funds and the spillover risk to other financial institutions, particularly banks, through common holdings of LLs.

¹² Our empirical estimation shows that, in times of LL fund outflows, a fall of one ppt in LL returns would lead to a significant reduction of five ppts in their LL holdings.

¹³ Empirically, for any one particular LL fund, outflows of one ppt from its highly correlated peers (in terms of fund returns) would be associated with outflows of 0.8 ppts from this LL fund.

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Our empirical analysis shows that the fire-sales may stem mainly from the liquidity risk of LL funds, which is estimated to be higher than that of HY bond funds. We further find that LL funds' holding of LLs is highly pro-cyclical and there is a significant amount of common holdings of LLs, which could amplify their liquidity risk.

Looking ahead, given the rising issuance of LLs and investors' continued search for yield amid abundant global liquidity, open-ended funds' exposure to LLs could increase further. These developments call for close monitoring and policies to address the risks identified by this study. In this regard, our findings have two policy implications:

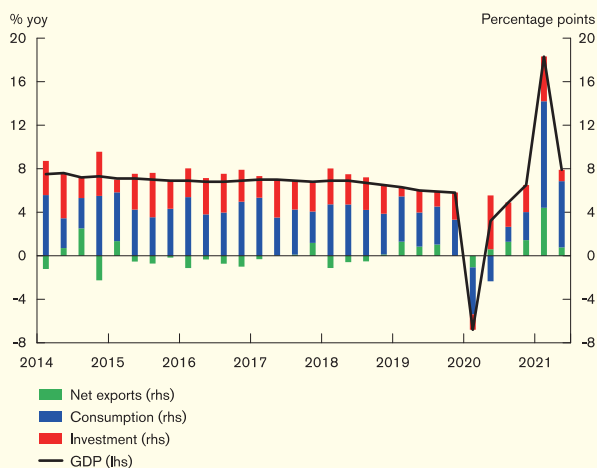
1. It is important to bridge the data gaps to monitor the common LL holdings of banks and non-bank financial institutions, as the identification of common exposures plays a key role in assessing potential spillover risks.
2. Given the large liquidity risk facing LL funds and potential spillovers to the financial system, policies to strengthen LL funds' liquidity management, such as by lowering the dealing frequency and requiring a higher buffer of liquid assets, may help address the root cause of the vulnerabilities, while additional limits on leverage may be less effective.

2.2 Mainland China

Real sector

The economy continued to recover, with the year-on-year growth of real GDP picking up sharply in the first quarter of 2021, in part due to the base effect, before moderating in the second quarter as the base effect faded. Altogether, the economy grew by 12.7% year on year in the first half of 2021, underpinned by a strong rebound in consumption and resilient external demand (Chart 2.12).

Chart 2.12
Mainland China: Contribution to GDP growth by demand component



Sources: CEIC, National Bureau of Statistics and HKMA staff estimates.

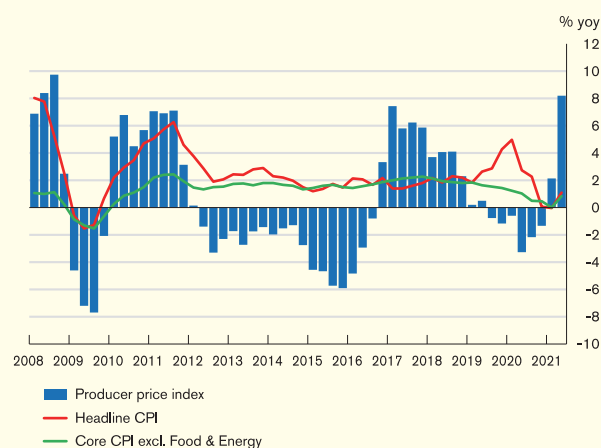
Looking forward, the economic outlook will hinge on the pace of vaccination and the effectiveness of vaccines against mutant strains. Domestically, the pace of economic recovery remained uneven, with some in-person and small businesses still being affected by the anti-virus measures in place. In particular, scattered outbreaks of the Delta variant in some southern provinces have disrupted local economic activities. Externally, global demand may face uncertainties arising from the renewed outbreaks.

In view of the uncertainties surrounding the economic outlook, the People's Bank of China (PBoC) on 9 July announced the lowering of the required reserve ratio (RRR) by 50 basis points to

help lessen the financing costs of the real economy, especially small businesses, amid rising upstream prices. Meanwhile, the government strove to deepen structural reforms and to keep systemic risks in check, including by containing the exposure of the financial system to vulnerable borrowers such as highly leveraged property developers. The latest consensus forecasts expect the Mainland economy to expand by 8.4% in 2021.

Inflationary pressure increased during the review period, in part driven by the ongoing recovery but also due to supply chain disruptions amid new waves of COVID-19 outbreaks. In particular, producer price inflation picked up to 8.8% year on year in June 2021 from 4.4% in March. Headline consumer price inflation and core inflation also rose in tandem but remained low at around 1% at the end of the second quarter (Chart 2.13). Going forward, upward pressure on upstream prices is likely to stay if the recovery continues and the impact of the pandemic on the supply chain lingers. That said, as services become increasingly important in the consumption bundle of households, with service inflation remaining subdued, the pass-through of high producer price inflation to consumer price inflation, especially core inflation, would be limited.

Chart 2.13
Mainland China: Consumer price and producer price inflation



Sources: CEIC and HKMA staff estimates.

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Asset and credit markets

The onshore corporate bond default rate increased slightly to 0.74% in the first half of 2021 from 0.71% in 2020, mainly reflecting the deteriorated repayment ability of bond issuers (Chart 2.14). A breakdown of the defaulted bonds shows that property developers contributed nearly one-third of the total amount of defaults in the first half of 2021, as the repayment ability of these defaulted property developers weakened after rapid expansion and over-borrowing during the decade-long property market boom (see Chart 2.15).

Chart 2.14
Mainland China: Corporate bond default size and proportion in the onshore market

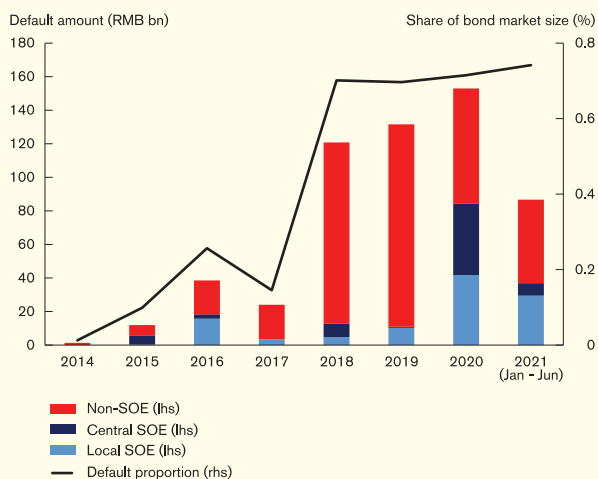
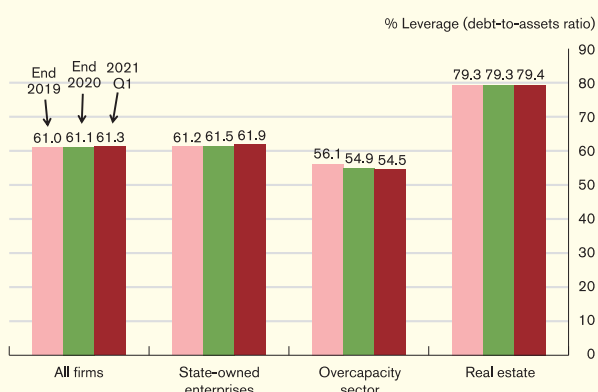
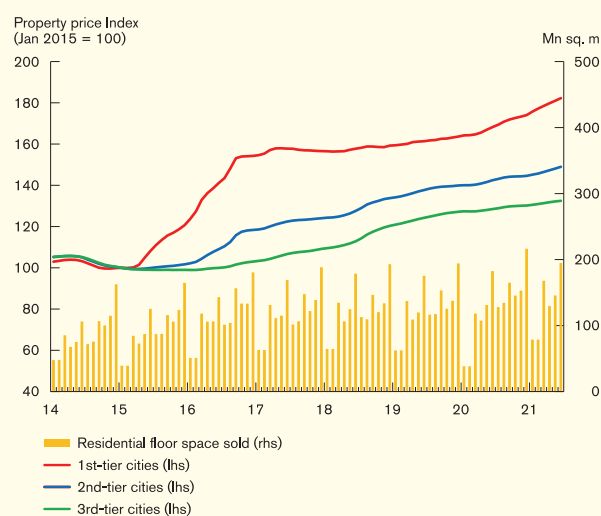


Chart 2.15
Mainland China: Corporate leverage of state-owned enterprises, firms in overcapacity sectors and real estate companies



Going forward, the debt sustainability of property developers hinges greatly on property market performance¹⁴. Property market conditions remained buoyant in the first half of 2021, with housing prices further increasing by 4.7% and 2.4% respectively in first-tier and second-tier cities (Chart 2.16). Housing oversupply, which plagued third-tier cities a few years ago, also remained largely in check in the first half, partly due to robust sales amid bullish market sentiment¹⁵. Box 2 introduces a property market sentiment index based on a textual analysis of Mainland news reports. The analysis shows that both sentiment and economic fundamentals improved after the containment of COVID-19, contributing to the increase in housing prices in the first half (see more details in Box 2).

Chart 2.16
Mainland China: Residential prices by tier of city and floor space sold



¹⁴ One reason is that the most important funding source for developers, that is, proceeds from “presales” of properties, is sensitive to buyers’ sentiment. In fact, amid the property boom in the past decade, the share of presales in the total funding sources of an average Mainland property developer increased to 35% in 2020 from 26% in 2010, while the share of bank and non-bank loans declined to 14% from 17% during the same period.

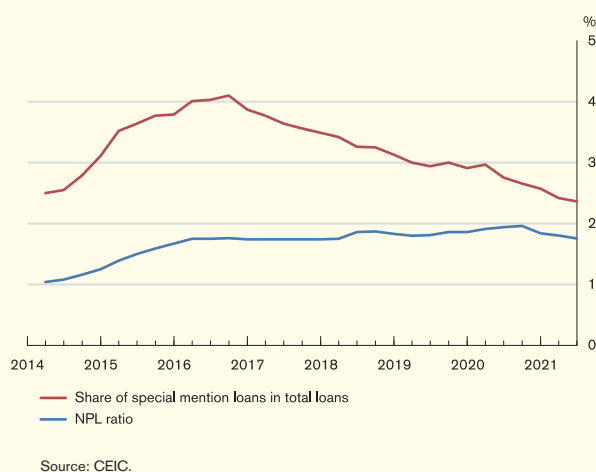
¹⁵ As of June 2021, the inventory-to-sales ratio in third-tier cities stood at around 14 months, much lower than the peak of 31 months in early 2015.

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To promote healthy and stable development of the property market, the authorities reiterated that “houses are for living in, not for speculation” at the Politburo meeting in April 2021. The meeting also called for increasing the supply of affordable rental housing and joint-ownership housing as well as preventing speculation on residences within school districts. In view of the important role of the property market in financial stability, tightening measures such as the “three red lines” of property developers and the limits of bank’s exposure to real estate-related lending remained in place during the review period¹⁶.

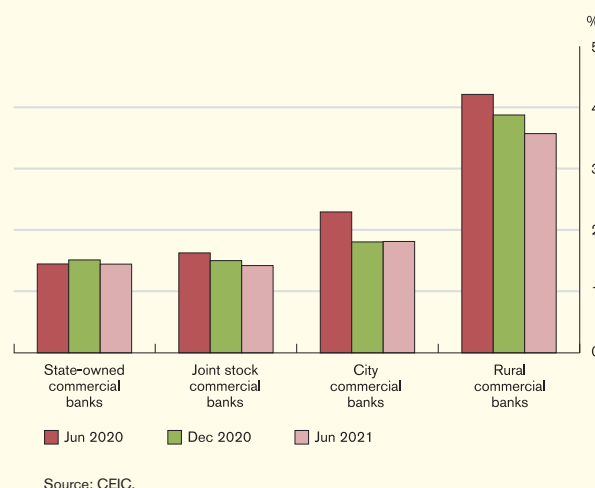
Overall risk in the banking sector remained moderate. With prudent lending practices, the banking system registered a decline in the non-performing loan (NPL) ratio to 1.8% in the second quarter of 2021 from the 10-year high of 2% in the third quarter of 2020. In tandem with the drop, the share of special mention loans in total bank loans also decreased slightly to 2.4% from 2.7% over the same period (Chart 2.17)¹⁷.

Chart 2.17
Mainland China: NPL ratio and special mention loan ratio



Among banks, the NPL ratio of systemically important banks such as state-owned commercial banks declined slightly to 1.45% in the second quarter of 2021 from above 1.5% in the second half of 2020. The NPL ratio of smaller banks such as rural commercial banks remained at a relative high level of 3.6% (Chart 2.18), in part reflecting the deterioration of the repayment ability of smaller corporate borrowers amid recent economic headwinds. Sizeable NPL disposals to some extent helped relieve asset-quality pressure facing smaller banks¹⁸, but at the cost of lowered capital adequacy ratios. To replenish capital, smaller banks further accelerated their issuances of perpetual and tier-2 capital bonds in the first half of 2021.

Chart 2.18
Mainland China: NPL ratio by bank type



During the review period, informal lending remained subdued amid government efforts to contain financial risks. Banks’ claims on non-bank financial institutions (FIs) as a share of total banking-sector assets continued to decline in the first half of 2021 to 7.4% from 8.3% a year ago. Banks also issued fewer wealth management products (WMPs) (Chart 2.19).

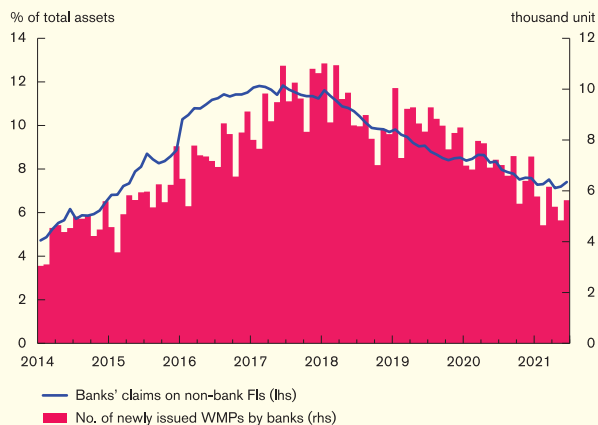
¹⁶ The “three red lines” refer to the regulations of the financing and debt levels of property developers, including (1) liability-to-asset ratio (excluding advance receipts) of less than 70%, (2) net debt-to-equity ratio of less than 100% and (3) cash-to-short-term debt ratio of more than 100%.

¹⁷ In addition, the provision coverage ratio increased slightly to 190% in the second quarter of 2021, well above the regulatory requirement and helping protect banks against future losses.

¹⁸ According to the China Banking and Insurance Regulatory Commission, Mainland commercial banks’ disposal of NPLs amounting to RMB482.7 billion in the first quarter of 2021, higher than in the same period in 2020.

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Chart 2.19
Mainland China: Share of banks' claims on non-bank FIs in total bank assets and No. of newly issued WMPs

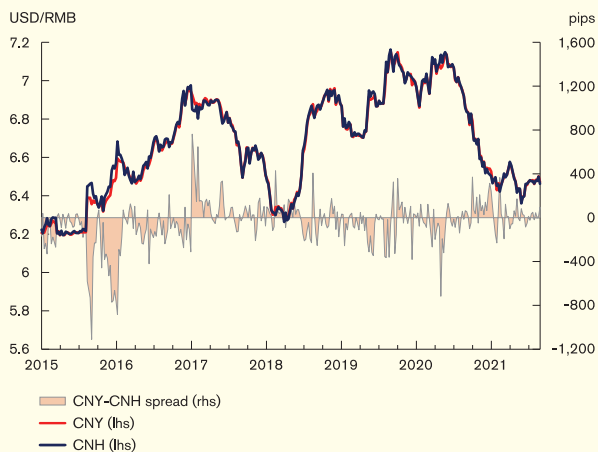


Source: Wind.

Exchange rate and cross-border capital flows

The onshore renminbi (CNY) exhibited two-way movements in the first half of 2021 (Chart 2.20). The renminbi appreciated in the first five months of 2021 amid strong inflows of funds. In response, the PBoC announced the raising of the foreign exchange RRR from 5% to 7% on 31 May 2021. Since June, the renminbi has depreciated as the US dollar strengthened amid uncertainties surrounding the Fed's monetary policy outlook. The offshore renminbi (CNH) tracked closely the CNY in the review period.

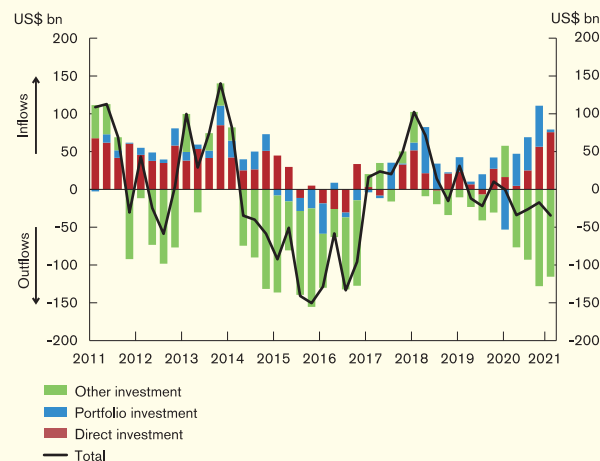
Chart 2.20
Mainland China: CNY and CNH exchange rates against the US dollar



Sources: Bloomberg and HKMA staff estimates.

During the review period, capital flow pressures remained largely subdued, with foreign exchange reserves on the whole staying stable above US\$3 trillion. The latest balance of payments statistics pointed to mild net cross-border capital outflows. In particular, net direct investment inflows were strong in the review period, underpinned by effective virus controls and a fast economic recovery. Net portfolio investment inflows shrank in the first quarter of 2021 amid the narrowing of China-US government bond yield differentials. In comparison, other investment continued to register strong net outflows, mainly reflecting increased holdings of foreign deposits by residents as well as more lending to non-residents (Chart 2.21).

Chart 2.21
Mainland China: Net cross-border capital flows by type of flow



Sources: CEIC, State Administration of Foreign Exchange and HKMA staff estimates.

Looking ahead, cross-border capital flows are likely to stay volatile. On one hand, uncertainties surrounding the development of the pandemic and the China-US tensions remain in the near term, which may affect market sentiment. On the other hand, the ongoing economic recovery and further opening up of the Mainland financial markets may continue to attract more foreign investment.

Global setting and outlook

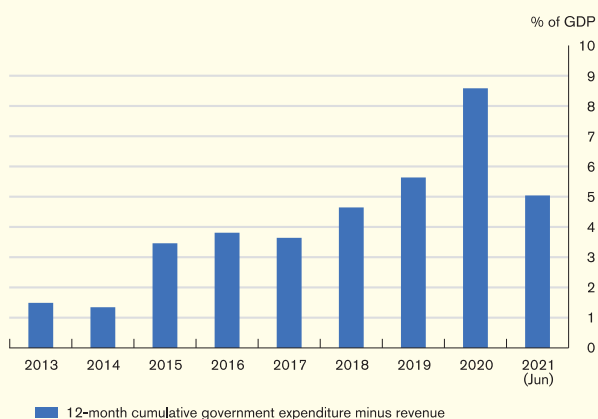
Monetary and fiscal policy

On the monetary policy front, the PBoC announced the cutting of the RRR by 50 basis points effective from 15 July, freeing up long-term liquidity by around RMB1 trillion to support the real economy, especially small firms, in the face of rising commodity prices. The PBoC reiterated that it would maintain the prudent policy stance and continue to focus on policy effectiveness and support for small and micro firms.

On the fiscal front, while the policy stance remained supportive, more attention was given to the quality, effectiveness and sustainability of policy. As COVID-19 was brought under control effectively and the economy gradually recovered, the government's fiscal position improved with increases in tax revenue. In particular, tax revenue in the first half of 2021 expanded by 22.5% year on year, compared with a contraction of 2.3% in 2020. As a result, the 12-month cumulative gap between expenditure and revenue in the government's general public budget and government-managed funds decreased significantly to 5.0% of GDP in June 2021 from 8.6% at end-2020 (Chart 2.22).

Amid reduced needs for economic stimulus, the amount of newly issued local government general bonds and special bonds also decreased to about RMB1.5 trillion in the first half of 2021 from about RMB2.8 trillion in the same period in 2020. Accordingly, outstanding local government debt rose at a slower pace, of 14% year on year to RMB27.6 trillion at the end of June 2021, compared with a 20% increase in 2020. As the local government debt-to-GDP ratio was staying at a relatively low level of around 27%, the overall risk of local government debt remained manageable. That said, some local governments with relatively weaker economic fundamentals may face refinancing pressures.

Chart 2.22
Mainland China: Difference between public expenditure and public revenue



Sources: Wind, Ministry of Finance and HKMA staff estimates.

Box 2

A news-based property market sentiment index for Mainland China

Introduction

Mainland's housing prices have grown notably in the past decade. While the bullish residential market has been partly underpinned by strong economic fundamentals and continued urbanisation, international experience suggests that sentiment, or “animal spirits” as John Maynard Keynes put it, could also have been a key driver of the boom¹⁹. However, sentiment is not observable in practice and therefore little is known about how it interacts with housing prices in Mainland China. In this study, we compile a property market sentiment index based on a textual analysis of Mainland news reports and assess the influence of sentiment on Mainland housing prices by estimating a vector autoregression (VAR) model.

Constructing the sentiment index

The property market sentiment index is constructed using a lexicon-based approach similar to Wong et al. (2021)²⁰. We first define a list of keywords capturing positive or negative sentiment (Table B2.1), then count the number of these words appearing in all Mainland's newspapers that are collected by the Wisers Information Portal.

Table B2.1
A list of keywords used in the textual analysis

Category	Keywords
Housing market news	樓市 房地產 新房 一手房 二手房 售樓處
Positive	轉暖 緊俏 升溫 回暖 上揚 偏熱 水漲船高 推熱 備受青睞 火熱 回溫上行 復蘇 回升 陽春 恢復 火爆 利好 追捧 表現不俗 熱火朝天 旺盛 預定一空 活躍 熱銷 樂觀 強勁 爭購 排起長隊 追捧 熱烈
Negative	頹勢 鬆動 下調 連跌 史上最嚴 下滑 跳水 大跌 低迷 萎縮 見頂 滯銷 停工 下行 不景氣 驟減 寒冬 乏力 低谷 停滯 冷清 慘淡 欠佳 黯淡 擔憂 乏人間津

¹⁹ For example, see Shiller (2009) and Kindleberger (2011).

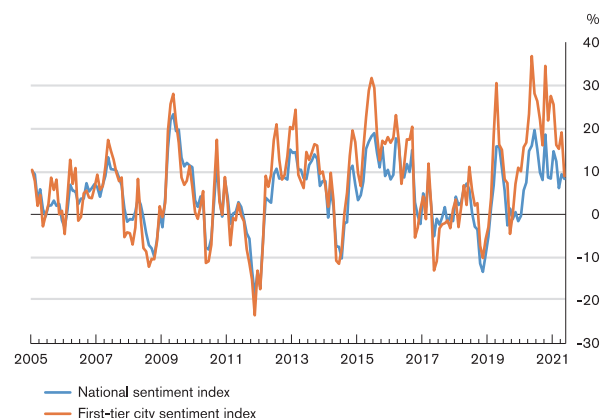
²⁰ See also Soo (2018) and Gao and Zhao (2018).

The sentiment index for month t can then be constructed as

$$S_t = \frac{\text{No. of positive words}_t - \text{No. of negative words}_t}{\text{No. of total words related to housing market news}_t}$$

where a positive (negative) S_t indicates overall positive (negative) sentiment. Using this methodology, we construct two indices, one for the whole country and the other for first-tier cities where housing prices increased the most²¹ (Chart B2.1). While the two resulting indices track each other closely, the property market sentiment index for first-tier cities is found to lead the national sentiment index, according to the Granger causality test²².

Chart B2.1
Property market sentiment indices



Sources: Wisers and HKMA staff estimates.

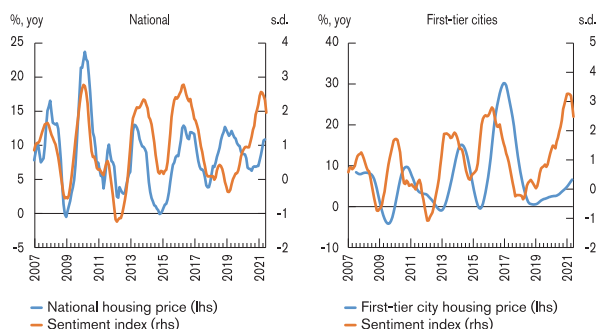
Both sentiment indices exhibit similar cyclical patterns and move closely with housing prices (Chart B2.2). The Granger causality test suggests that both indices lead changes in housing prices, especially in the first-tier cities.

²¹ First-tier cities include Beijing, Shanghai, Guangzhou and Shenzhen.

²² The Granger causality test is conducted for the period from January 2005 to May 2021, with a lag of three months. The results suggest that sentiment in first-tier cities helps predict national property market sentiment on a 5% significance level.

Global setting and outlook

Chart B2.2
Sentiment indices and housing prices, national and first-tier cities



Note: The sentiment index and housing price series are smoothed by taking a 12-month moving average to facilitate a better comparison. The sentiment index is also standardised.

Sources: CEIC, Wisers and HKMA staff estimates.

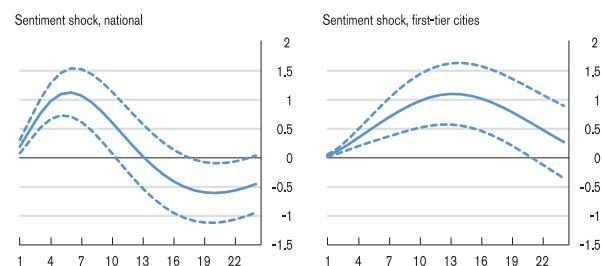
Assessing the influence of market sentiment on housing prices using a VAR model

To better understand the relationship between sentiment and housing prices in Mainland China, we estimate a VAR model which includes the growth of housing prices, the property market sentiment index and three other variables that are deemed to affect housing market performance, such as population growth, per capita GDP growth and aggregate financing growth. Our sample period stretches from October 2007 to May 2021²³.

The VAR is recursively identified in the order of population growth, per capita GDP growth, aggregate financing growth, sentiment, and the growth of housing prices, with population growth being set as the most exogenous variable while housing price growth would respond to all shocks instantaneously.

Chart B2.3 shows the impulse response function (IRF) of housing price growth to a positive sentiment shock. As expected, a positive sentiment shock would raise housing prices, though the impact would set in more slowly but is more persistent in first-tier cities than on the national level. Variance decomposition shows that while sentiment in general accounts for about 40% of the variance in national housing prices at an 18-month horizon, the influence of sentiment is more important in the medium term than in the short term for first-tier cities, echoing the greater persistence of sentiment shocks observed in the IRF.

Chart B2.3
IRF of housing price growth to sentiment shocks



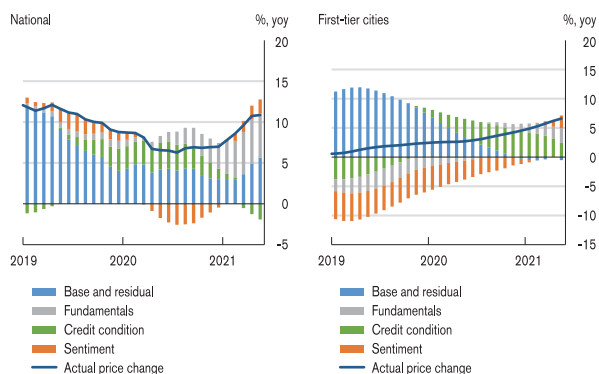
Note: Dashed lines represent the ± 2 standard error confidence bands.

Chart B2.4 shows housing price movements from January 2019 to May 2021, as well as the key underlying shocks that contributed to the price changes over the period. At the national level, sentiment affected the growth of housing prices in 2019 positively but soon became a drag in 2020 amid the COVID-19 outbreak. The impact of sentiment became positive again at the start of 2021 after the virus was largely brought under control. In the first-tier cities, the impact of sentiment on the growth of housing prices turned positive in 2021, after being negative in 2019 and 2020 amid the rollout of tightening measures for the property markets in these cities.

²³ All variables are expressed in the year-on-year form except for the property market sentiment indices, which are expressed in levels. Since the unit root test shows that aggregate financing growth is non-stationary, we apply the HP filter to extract its cyclical component. For macroeconomic fundamental variables at the first-tier city level, we apply a dynamic factor model to extract the common factors of all four first-tier cities. The lag length is set at 2 for the national model and 4 for the first-tier city model, according to the Schwarz information criterion.

Global setting and outlook

Chart B2.4
Historical decomposition of housing prices,
national and first-tier cities



Note: Per capita GDP and population are collectively referred to as fundamentals. "Base and residual" refers to the model projection of housing price growth in the absence of the three types of shocks specified in the charts.

As for other factors, fundamentals exerted increasingly positive impacts in 2021 at both the national and first-tier city levels amid the continued economic recovery. In comparison, liquidity conditions contributed positively to the growth of housing prices, especially in 2020 amid monetary easing in response to COVID-19. Such impact however weakened in first-tier cities in 2021 while turning negative at the national level as interest rates gradually normalised.

Concluding remarks

This box introduces property market sentiment indices at the national and first-tier city levels respectively for Mainland China based on a textual analysis of its news reports. The sentiment indices contain useful information for predicting housing price movements, and the leading effect is especially notable for first-tier cities. Our analysis also shows that sentiment is an important driver of volatilities in housing prices. In this sense, policies aiming at anchoring expectations and managing sentiment may help rein in runaway housing prices.

References

Gao, Qing, and Tianxiao Zhao. "The Influence of Home Buyer Sentiment on Chinese Housing Prices — Based on Media Text Mining." *International Journal of Economics and Finance* 10.9 (2018).

Kindleberger, Charles P., and Robert Z. Aliber. *Manias, panics and crashes: a history of financial crises*. Palgrave Macmillan, 2011.

Wong, Ken, et al. "A Robust Textual Analysis of the Dynamics of Hong Kong Property Market." *HKIMR Working Paper No.08/2021*.

Shiller, Robert J. *Animal Spirits*. Princeton University Press, 2009.

Soo, Cindy K. "Quantifying sentiment with news media across local housing markets." *The Review of Financial Studies* 31.10 (2018): 3689-3719.