

## 2. Global setting and outlook

Global inflationary pressures continued to build and increasingly broadened beyond food and energy prices, compelling global central banks to press ahead with monetary tightening to keep inflation expectations anchored even as growth decelerates. With global interest rates rising in the midst of a slowdown in growth, downside risks to global financial stability have intensified during the review period.

In emerging Asia, the pace of monetary policy normalisation in the region is expected to be slower than that in the US, with the narrowing interest rate differentials vis-à-vis the US risking further bond fund outflows and interest rate snapbacks, which may hurt indebted firms. Meanwhile, the slowdown in the Mainland economy would likely risk dragging the region through the trade and supply chain channel if the Mainland economy were to experience renewed lockdowns.

In Mainland China, real gross domestic product (GDP) growth decelerated notably in the second quarter of 2022 amid Omicron outbreaks, a downturn in the property markets and increased global uncertainties. While the economy is expected to recover in the second half of 2022 on the back of various policy supportive measures, including a push on infrastructure investment, headwinds facing the economy remained strong especially given the persistent weakness in the property markets.

### 2.1 External environment

During the review period, global price pressures continued to build and increasingly broadened to a wide range of goods and services. On top of the higher food and energy prices following the Russia-Ukraine conflict, persistent global supply chain bottlenecks have kept manufacturing input costs elevated, while strong wage growth amid tight labour markets and rising housing rentals (such as in the US) fuelled services inflation. Against this background, inflation rates in the US, the Euro Area and some Asian economies rose to their highest levels in decades (Chart 2.1).

**Chart 2.1**  
Headline consumer price index (CPI) inflation rates in selected economies

	Latest (%yoy)	Rank in history (percentile; 1=highest)	History (2001 - Latest)
US	8.26	0.98	
Euro Area	9.10	1.00	
New Zealand	7.30	1.00	
Singapore	7.05	0.99	
Australia	6.10	0.99	
South Korea	5.71	0.99	
Japan	2.61	0.97	
Hong Kong	1.90	0.46	
Thailand	7.86	0.99	
Philippines	6.31	0.89	
Indonesia	4.69	0.44	
Malaysia	4.41	0.95	
Mainland China	2.50	0.63	

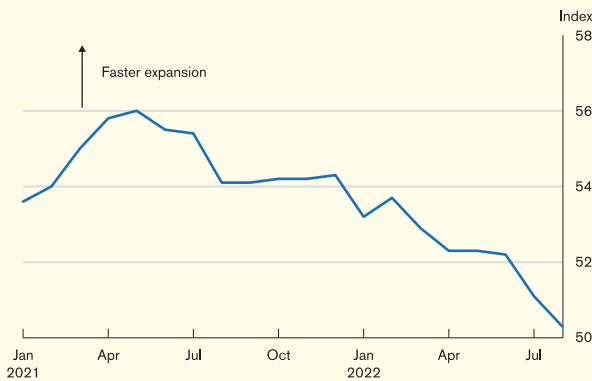
Note: Latest observation is Q2 2022 for Australia and New Zealand; July 2022 for Hong Kong, Japan, Malaysia and Singapore; August 2022 for others. Rank percentile > 0.75 is highlighted in red.

Source: CEIC.

**Global setting and outlook**

Major central banks responded by tightening monetary policy further to keep inflation expectations anchored. In particular, the Fed hiked its policy rate by a total of 300 basis points (bps) since March, a pace notably faster than the previous rate hike cycle, while the European Central Bank (ECB) increased its policy rates by 125 bps in the third quarter, kickstarting the first rate hike cycle in more than a decade. The resulting tightening in global financial conditions, coupled with the negative impact of inflation on private consumption and the ripple effect of Mainland China’s recent COVID-19 containment measures on global supply chains, weighed on global manufacturing production (Chart 2.2). In view of the front-loaded global monetary tightening and the likely persistence of supply chain headwinds, the International Monetary Fund in July downgraded its global growth forecast for 2022 by 0.4 percentage points to 3.2%, representing a notable growth deceleration from 6.1% in 2021.

**Chart 2.2**  
**S&P’s Global Manufacturing Purchasing Managers’ Index (PMI)**

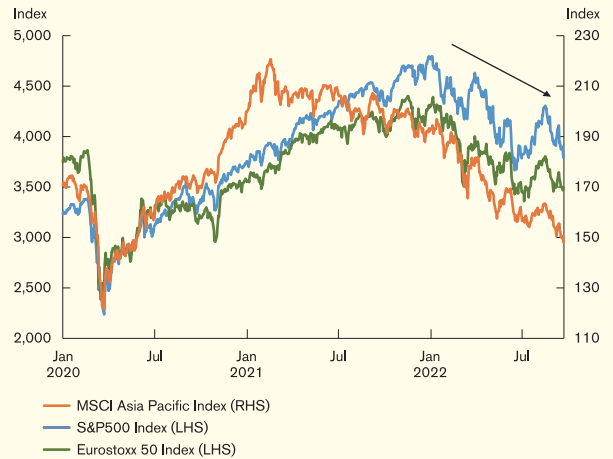


Source: CEIC.

As global growth momentum slowed while inflation continued to climb, financial markets experienced notable corrections amid stagflation concerns, with major stock indices erasing much of their gains since the pandemic recovery (Chart 2.3). Meanwhile, the sovereign yield curves in many economies have flattened considerably or even inverted since late 2021,

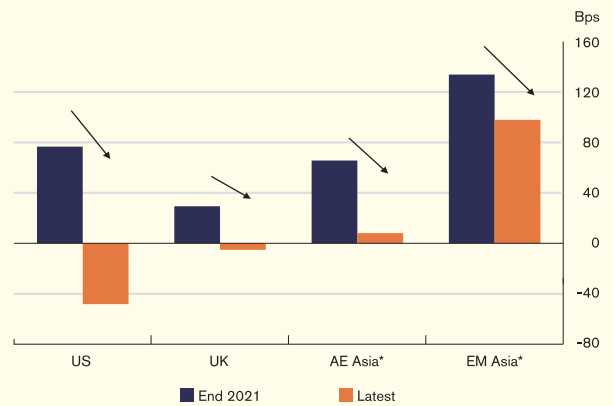
partly reflecting pessimism over the near-term growth outlook (Chart 2.4).

**Chart 2.3**  
**Selected major stock indices**



Source: Bloomberg.

**Chart 2.4**  
**Spread between 10-year and 2-year sovereign yields in selected economies**



Note: (\*) Simple average of spreads in constituent economies. "AE Asia" includes Australia, Hong Kong, Japan, New Zealand, Singapore and South Korea. "EM Asia" includes Mainland China, Indonesia, Malaysia, the Philippines and Thailand. 3-year benchmark yields are used for Indonesia and Malaysia as 2-year yields are not available. Latest data as of 21 September 2022.

Source: Datastream.

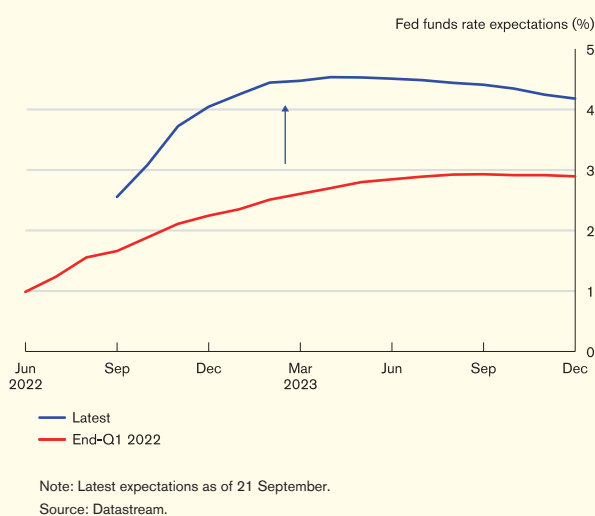
Looking ahead, risks to the global growth outlook remain tilted to the downside as many headwinds confronting the global economy will likely continue to prevail. For one, services inflation tends to display greater inertia while cost pressures due to supply chain bottlenecks are less amenable to monetary tightening. These will increase the risks that major central banks will have to raise interest rates to highly

## Global setting and outlook

restrictive levels in order to keep inflation expectations anchored, albeit at the expense of significantly curtailing growth and employment.

As a case in point, markets are now expecting a front-loaded path of US monetary policy tightening (Chart 2.5), with the effective Fed funds rate reaching 4.5% by the second quarter of 2023, significantly above the Fed's assumed neutral rate of 2.5%<sup>3</sup>. While the strong labour market conditions, a generally low degree of leverage in the domestic banking system, improved private-sector balance sheets since the pandemic and the absence of major macrofinancial imbalances likely suggest that a US recession, if any, should be relatively shallow, global spillovers from a US growth deceleration could still be significant.

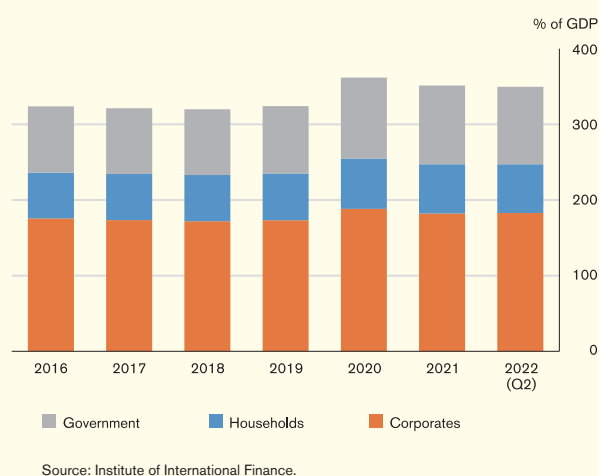
**Chart 2.5**  
Futures-implied Fed funds rate path



The rapid tightening of global financial conditions might also act on vulnerabilities accumulated during the low-interest-rate era, potentially triggering systemic disruptions. In the Euro Area, for instance, sovereign spreads of several heavily-indebted peripheral member countries (e.g. Italy and Greece) have been widening since early 2022 as the ECB shifted towards a more hawkish policy stance,

prompting the central bank to establish an “anti-fragmentation” instrument (Transmission Protection Instrument), subject to conditionality, to contain undue increases in sovereign spreads. Globally, rising borrowing costs could pose a challenge to debtors’ repayment ability, and the anticipated global growth slowdown may risk denting, or even reversing, the recent downtrend in global debt-to-GDP ratios (Chart 2.6).

**Chart 2.6**  
Global debt-to-GDP ratio by sector



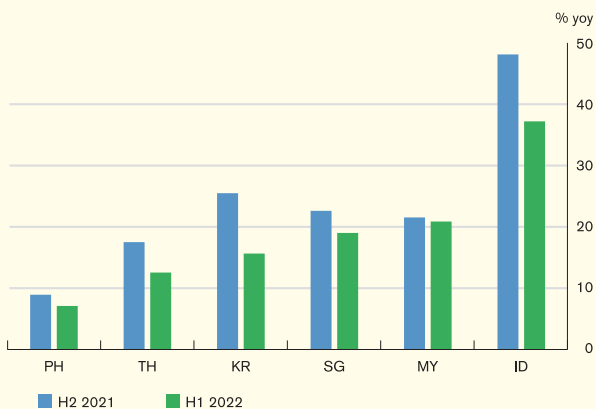
In emerging Asia, economic recovery continued at a moderated pace in the first half of 2022 amid weakened export growth (Chart 2.7).

Meanwhile, inflationary pressures have also intensified in most economies due to the surge in commodity prices and persistent supply bottlenecks. While many central banks in the region have tightened monetary policy to combat the rising inflationary pressures, the rate hike path in the region was relatively more benign than that of the Fed (Chart 2.8), with the narrowing interest rate differentials vis-à-vis that of the US leading to intense bond fund outflows from the region and foreign exchange depreciation (Chart 2.9). Box 1 discusses how US dollar bond funding of emerging Asian corporates would be affected by huge outflows from open-ended funds in times of tighter financial conditions and the implications for the asset quality of banks’ corporate loan portfolios.

<sup>3</sup> Refers to the Fed's median projection of longer-run Fed funds rate as reported in the September 2022 Federal Open Market Committee Projections materials.

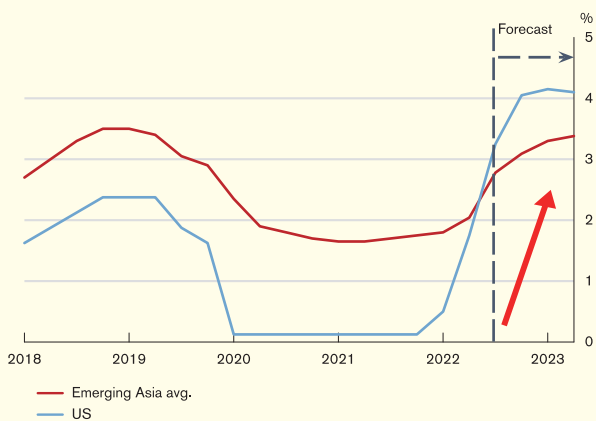
Global setting and outlook

**Chart 2.7**  
Emerging Asia: Export growth



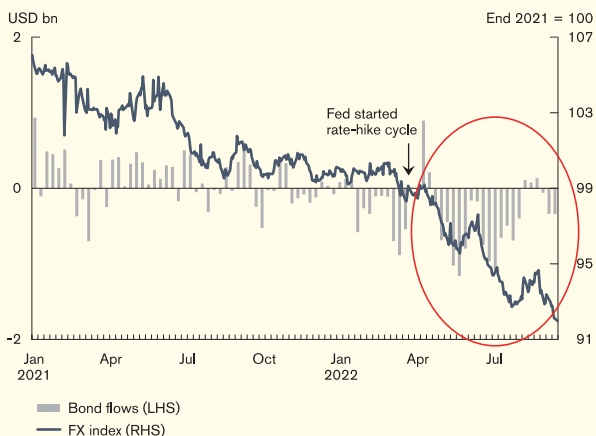
Source: CEIC.

**Chart 2.8**  
Policy rate path of emerging Asia and the US



Note: Data on the actual policy rate is taken from the Bank for International Settlements central banks' policy interest rate dataset. The forecasts are taken from the Bloomberg consensus. The time series for emerging Asia is the simple average of the individual economies.  
Sources: BIS and Bloomberg.

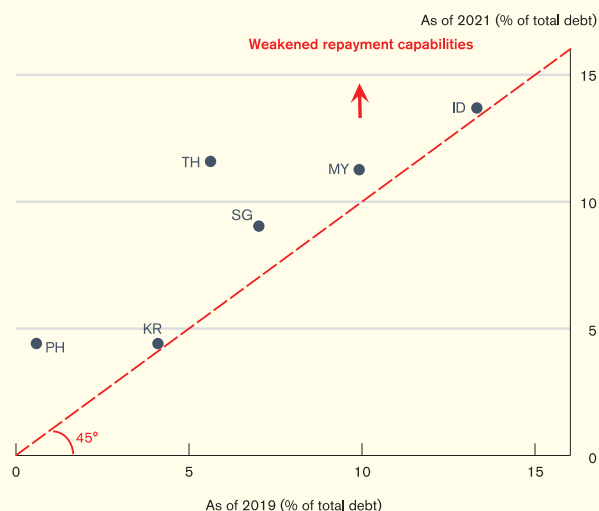
**Chart 2.9**  
Emerging Asia: Bond flows and FX index



Note: The FX index is the simple average of LCY/USD index of the individual economies' currencies. Smaller index value means weaker LCY vis-à-vis USD.  
Sources: Bloomberg, EPFR and HKMA staff calculation.

Apart from risking some corrections in the regional housing markets where property prices have increased markedly since the pandemic outbreak, the financial tightening headwinds together with the squeeze in profit margin due to the rising production cost associated with high inflation may pose challenges to the repayment capabilities of indebted firms in the region. In this regard, it is worthy to note that the share of debts owed by firms with weak interest coverage ratio (i.e. less than 1) has increased since the pandemic (Chart 2.10), and the tightening global financial conditions would pose strong headwinds to these firms down the road.

**Chart 2.10**  
Emerging Asia: Debts owed by non-financial listed firms with interest coverage ratio less than 1



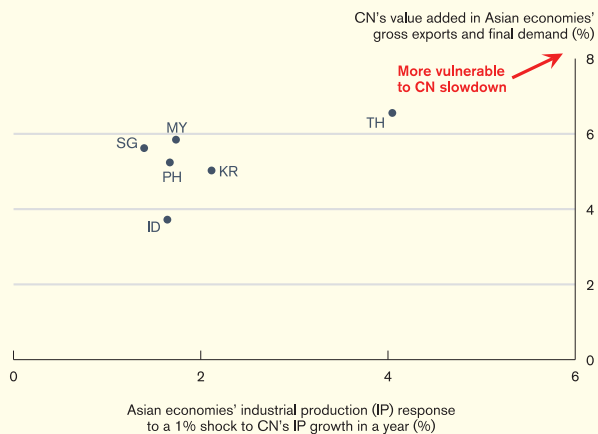
Source: S&P Capital IQ.

The possible slowdown in Mainland China would add further headwinds to the region through multiple channels. First, as a major destination of the region's exports (exports to Mainland China account for about one-fifth of total exports from emerging Asian economies in 2021), weaker demand from Mainland China would weigh on the region's export growth. Second, as Mainland China is a key production hub, any renewed COVID-19 outbreaks and lockdowns would risk intensifying global and regional supply bottlenecks. All these would hit, Asian economies, especially for those where

## Global setting and outlook

(i) industrial production was more sensitive to Mainland's production (x-axis in Chart 2.11); and, (ii) domestic final demand and gross exports were more reliant on Mainland China's value added (y-axis in 2.11).

**Chart 2.11**  
**Exposures to slowdown in Mainland China**



Note: Industrial production response is the accumulated impulse response to a 1% shock to Mainland China's industrial production growth (%byoy) in four quarters. The impulse response of each economy is based on a VAR model with the economy's year-on-year change in industrial production and its lags; and the year-on-year change in industrial production of Mainland China, US, the weighted sum of nine other Asia Pacific economies and the rest of the world, and their corresponding lags. The trade in value added data are as of 2018.

Sources: OECD TiVA database (2021 version) and HKMA staff estimates.

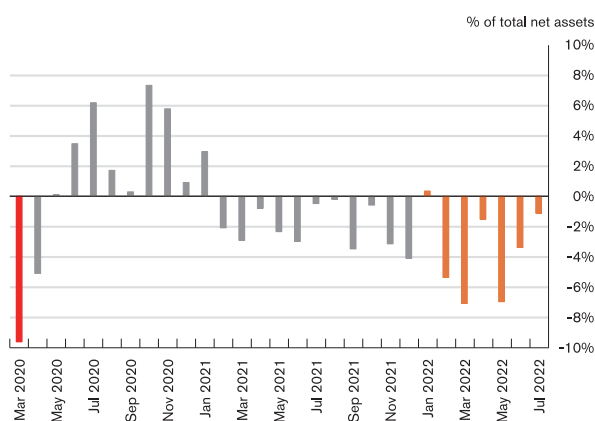
## Box 1

### An assessment of vulnerabilities of emerging Asian dollar corporate bond market: A perspective of open-ended funds

#### Introduction

Alongside tightening monetary policy across major advanced economies and weakening global economic outlook, open-ended funds (OEFs) have witnessed accelerated outflows from emerging Asian economies<sup>4</sup> in the first half of 2022, after moderate outflows for 2021 as a whole (Chart B1.1). These sizable outflows have raised concerns on financial stability risks over these emerging Asian economies and the repercussions across the world.

**Chart B1.1**  
Monthly flows of OEFs from emerging Asian economies since March 2020



Note: A positive (negative) value denotes inflows (outflows)  
Source: EPFR.

Such reversals in capital flows from OEFs could be particularly painful for some emerging Asian corporates if they had built up substantial leverage through dollar bond issuance when there were large inflows to the bond markets from OEFs amid ample global liquidity in the past few years. When large capital flows move out abruptly such as the episode in March 2020, this could push up corporates' dollar funding costs and dampen their ability to refinance. Furthermore, this shock could spill over to the

banking sector if corporates struggle for bond refinancing and have to seek bank credits. That said, significant data gaps in OEFs' dollar bond holdings have obscured a closer examination of such systemic risks (Bank for International Settlements, 2020).

Against this backdrop, this box sheds light on these systemic implications by using our novel dataset. Learning from the March 2020 episode, we assess how emerging Asian corporates and their bank lenders were affected by sizable OEF outflows. Based on the assessment, we draw policy implications for emerging Asian economies to safeguard financial stability in the face of further tightening of global monetary conditions.

#### How exposed are emerging Asian dollar corporate bonds to OEFs' investment?

Using our novel dataset that covers 11,395 dollar-denominated non-equity OEFs and their holdings of dollar bonds issued by 11,123 non-financial listed corporates headquartered in the emerging Asian economies<sup>5</sup>, we find OEFs are a significant holder of emerging Asian dollar corporate bonds. At the end of March 2021, OEFs held about 15% of the total outstanding amount of these dollar bonds.<sup>6</sup>

In addition, we find that dollar bonds issued by corporates with higher debt burdens were more

<sup>5</sup> The OEF sample is retrieved from Morningstar Direct and represents 72% of non-equity open-ended mutual funds and exchange-traded funds in the world. 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.

<sup>6</sup> The share of OEFs' investment in dollar corporate bonds also grew notably in developed Asia, reaching 9% of the total outstanding amount. In other regions, their shares of investment, while remaining at relatively higher levels, have been on a slight downward trend in recent years (e.g. North America: 45% and Europe: 22%).

<sup>4</sup> These include Mainland China, India, Indonesia, Malaysia, the Philippines, Thailand and Vietnam.

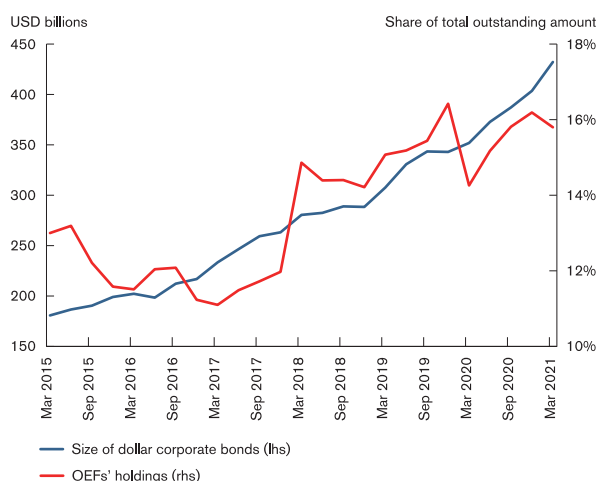
## Global setting and outlook

exposed to OEFs' investment.<sup>7</sup> At the end of March 2021, about 18% of dollar bonds issued by corporates with higher debt burdens were held by OEFs. This was higher than the 11% of their counterparts with smaller debt burdens. This implies that the financing conditions of corporates with higher debt burdens could be hit harder in times of reversals in OEFs' investment.

### *Did corporates amass leverage amid inflows to dollar bond markets from OEFs?*

As OEFs increasingly invested in dollar bonds in the past few years, emerging Asian corporates could benefit from greater bond demands and lower cost of funding. This in turn increased their incentives in new bond issuance, thus adding to its leverage over time. Our dataset shows supporting evidence that emerging Asian dollar corporate bonds increased more than twofold from the first quarter of 2015 to the first quarter of 2021 (blue line, Chart B1.2), as OEFs took up an increasing share of bonds (red line, Chart B1.2).

**Chart B1.2**  
Size of emerging Asian dollar corporate bonds and their exposure to OEFs' investment



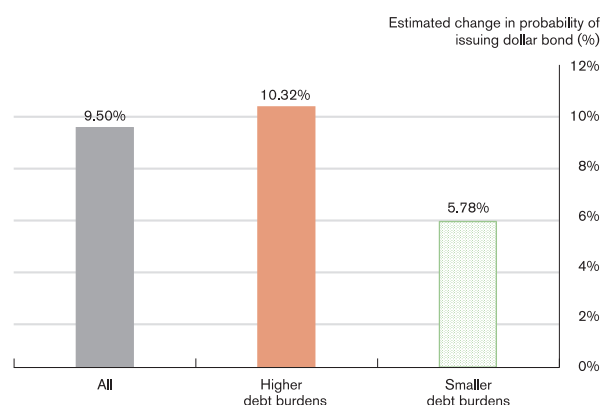
Note: This line chart depicts the outstanding amount of emerging Asian dollar corporate bonds (blue) and their exposure to OEFs as a percentage of their total outstanding amount (red).

Sources: Morningstar Direct, Bloomberg, Refinitiv, Dealogic and HKMA staff estimates.

<sup>7</sup> We classify a corporate as "with higher debt burdens" if its liability-to-asset ratio exceeds the sample median; otherwise as "with smaller debt burdens". Results remain robust if other indicators, such as interest coverage ratio and whether any dollar liabilities are due in 12 months, are used for classification.

Furthermore, our empirical analysis shows increases in OEFs' investment in these outstanding dollar bonds could raise the probability of new bond issuance among emerging Asian corporates, especially for those with higher debt burdens. For illustration, take the average quarterly increase of 8.27% in OEFs' investment in 2019. Given such an increase, corporates are estimated to be 9.50% more likely to issue new dollar bonds in the next quarter (grey bar, Chart B1.3). For those with higher debt burdens, the likelihood to issue new bonds will rise even more notably by 10.32% (orange bar, Chart B1.3).

**Chart B1.3**  
Estimated change in corporates' probability in issuing new dollar bonds in response to an average quarterly increase in OEFs' investment in 2019



Notes:

- (1) This bar chart depicts the effects of an average quarterly increase in OEFs' investment in 2019 on the probability of issuing new dollar bonds by all corporates (grey), corporates with higher debt burdens (orange) and corporates with smaller debt burdens (green); and
- (2) The solid bars denote 10% level of statistical significance.

Source: HKMA staff estimates.

### *Did OEFs' liquidation add to dollar funding stress in emerging Asian corporates?*

Having provided emerging Asian corporates with more funding opportunities in normal periods, OEFs' investment could reverse abruptly in times of stress, thereby exposing these corporates to a significant funding stress. In the first quarter of 2020, OEFs liquidated about 14% of their holdings of emerging Asian dollar corporate bonds. By using this scale of liquidation, we could gauge the impacts of fund reversals on the

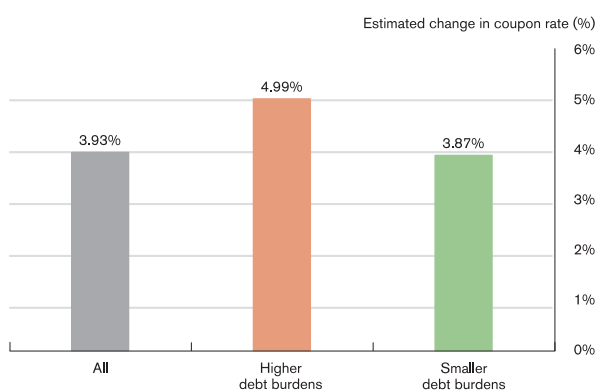


## Global setting and outlook

funding costs and the probability of these corporates issuing new bonds in the March 2020 episode.

First, OEFs' liquidation could lead to a surge in emerging Asian corporates' dollar funding costs. Specifically, our results show that the liquidation realised in the first quarter of 2020 pushed up the coupon rate for dollar corporate bond issuance contemporaneously by 3.93 ppts (grey bar, Chart B1.4), equivalent to a rise of 58% from the average level seen in the fourth quarter of 2019. The surge was even more notable for corporates with higher debt burdens, which saw a jump of 4.99 ppts in their coupon rates during this stress period (orange bar, Chart B1.4).

**Chart B1.4**  
Estimated change in coupon rates in response to OEFs' liquidation in the first quarter of 2020



## Notes:

- (1) This bar chart depicts the effects of OEFs' liquidation on the coupon rates of dollar bonds issued by all corporates (grey), corporates with higher debt burdens (orange) and corporates with smaller debt burdens (green) in the first quarter of 2020; and
- (2) The solid bars denote 10% level of statistical significance.

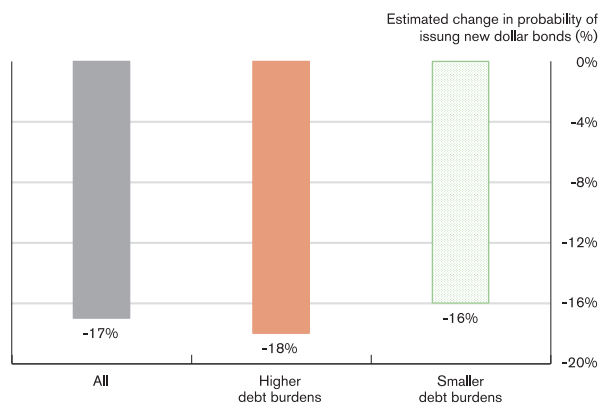
Source: HKMA staff estimates.

Second, OEFs' liquidation could also lead to contraction in new issuance activities. Our results show OEFs' liquidation in the first quarter of 2020 reduced the likelihood for all corporates to issue new dollar bonds in the second quarter of 2020 by 17% (grey bar, Chart B1.5).<sup>8</sup> Likewise, the effect is slightly stronger for corporates with higher debt burdens, with their probability to issue new bonds being reduced by 18% (orange bar, Chart B1.5).

<sup>8</sup> This is in line with a year-on-year decrease of 25% in their new dollar bonds issued in the second quarter of 2020.

Taken together, OEFs' liquidation could pose a bigger challenge in refinancing for corporates with higher debt burdens, considering (i) their higher exposure to OEFs' investment before the market stress and (ii) the larger estimated impacts of OEFs' liquidation on their funding costs and ability to issue new bonds. In response to the short-fall in dollar bond issuance activities, these corporates might have to seek alternative funding sources, possibly creating adverse spillover to the broader financial system, such as the bank lenders.

**Chart B1.5**  
Estimated change in corporates' probability of issuing new dollar bonds in response to OEFs' liquidation in the first quarter of 2020



## Notes:

- (1) This bar chart depicts the estimated effects of OEFs' liquidation in the first quarter of 2020 on the probability of issuing new dollar bonds by all corporates (grey), corporates with higher debt burdens (orange) and corporates with smaller debt burdens (green) in the second quarter of 2020; and
- (2) The solid bars denote 10% level of statistical significance.

Source: HKMA staff estimates.

### Did OEFs' liquidation pose negative spillover to the banking sector?

For emerging Asian corporates, bank loans are another key source of dollar funding comparable to bond issuance in scale.<sup>9</sup> If the corporates decided to make up the short-fall in bond issuance with bank credits, the banking sector could also be indirectly affected by OEFs' liquidation. In particular, the shift could expose their bank lenders to higher credit risks, considering those corporates with higher debt

<sup>9</sup> Our dataset shows that 54% of emerging Asian corporates' dollar borrowing was from bank loans as of the fourth quarter of 2019, while the rest was from bond issuance.

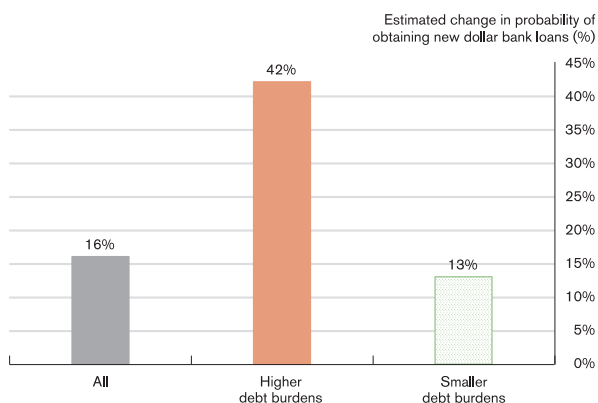


## Global setting and outlook

burdens may have more pressing needs to seek bank credit given their higher difficulty in securing bond refinancing.

Specifically, our empirical results show that the corporates would be 16% more likely to seek dollar bank loans in the second quarter of 2020 after OEFs' liquidation in the first quarter of 2020 (grey bar, Chart B1.6).<sup>10</sup> Furthermore, this impact is more notable for corporates with higher debt burdens, which were 42% more likely to seek dollar bank loans under the same circumstances (orange bar, Chart B1.6).

**Chart B1.6**  
Estimated change in corporates' probability of obtaining new dollar bank loans in response to OEFs' liquidation in the first quarter of 2020



## Notes:

- (1) This bar chart depicts the estimated effects of OEFs' liquidation in the first quarter of 2020 on the probability of obtaining new dollar bank loans by all corporates (grey), corporates with higher debt burdens (orange) and corporates with smaller debt burdens (green) in the second quarter of 2020; and
- (2) The solid bars denote 10% level of statistical significance.

Source: HKMA staff estimates.

In addition, the impact on the banking sector may also be transmitted across borders. Our novel data suggest six-tenths of emerging Asian corporates' dollar bank loans came from banks headquartered in developed markets.<sup>11</sup> This suggests that the adverse impact may also spill over to developed markets.

<sup>10</sup> This is in line with a year-on-year increase of 32% in their new dollar bank loans obtained in the second quarter of 2020.

<sup>11</sup> While these bank lenders can be foreign bank branches operating in emerging Asian economies, the dollar funding of these branches is usually internally obtained from their parents or US branches (Bank for International Settlements, 2020).

### Conclusion and implications

Our findings show that OEFs are a significant holder of emerging Asian dollar corporate bonds. While the increasing share of OEFs' investment enabled these corporates to issue more dollar bonds in the past few years, the build-up of leverage risk could subject them to significant vulnerabilities once OEFs' investment reverses.

Our empirical analysis shows that, in the March 2020 episode, OEFs' liquidation contributed to a surge in the corporates' dollar funding costs and dampened their ability to refinance via dollar bond markets, particularly for corporates with higher debt burdens. We further find these corporates became more likely to borrow from banks given the difficulty in bond refinancing, thus exposing banks' corporate loans to higher credit risks.

Looking ahead, the ongoing monetary policy normalisation in advanced economies will further tighten global financial conditions. This, coupled with the darkening world economic outlook, might amplify swings in OEF flows and add to the vulnerabilities of the financial system. This calls for close monitoring and policies to address potential systemic risks. In this regard, our findings have two policy implications:

- (i) Policies to strengthen OEFs' liquidity management may help mitigate their liquidation of dollar corporate bonds and the subsequent impacts on emerging Asian corporates in times of stress; and
- (ii) While banks may lend to corporate borrowers to help alleviate their financial pressures arising from drastic OEF fund outflows, a closer monitoring of the asset quality of corporate loan portfolios of banks is warranted.

### References

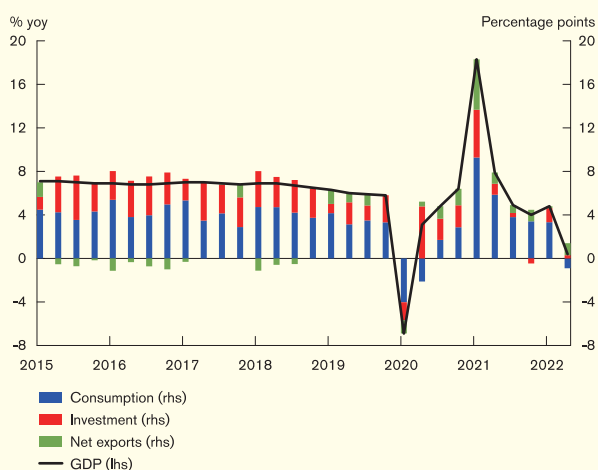
BIS (2020). "US dollar funding: an international perspective", *BIS CGFS Papers*, No. 65.

## 2.2 Mainland China

### Real sector

Mainland China's GDP growth slowed down from 4.8% year on year in the first quarter to 0.4% year on year in the second quarter amid the Omicron outbreaks, the property market downturn and external uncertainties such as the Russia-Ukraine conflicts and the US policy normalisation. Overall, the Mainland economy grew by 2.5% year on year in the first half of 2022, falling short of the official growth target of about 5.5% for 2022 (Chart 2.12).

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



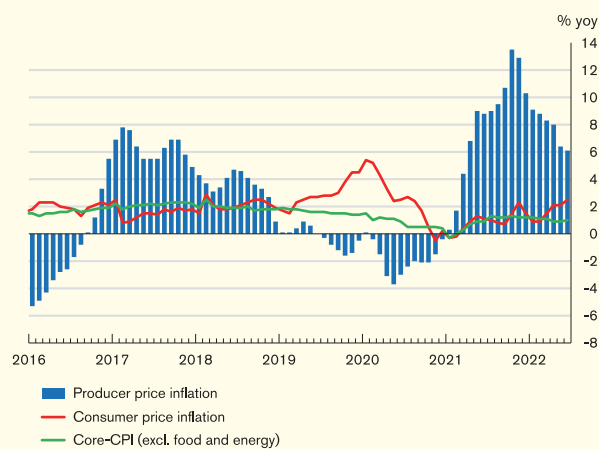
Sources: CEIC, NBS and HKMA staff estimates

Looking forward, the Mainland economy is likely to continue to recover in the second half following the containment of virus outbreaks and the introduction of various rounds of policy support. According to the latest consensus forecasts, the Mainland economy is expected to grow by 3.7% in 2022. However, there are several challenges to the economic outlook. Domestically, the ongoing downturn in property market activities is likely to persist in the near term as homebuyers' confidence remained weak amid the mortgage boycotts in response to delays in property project delivery. Consumption, particularly those related to in-person services, will likely continue to be affected by

uncertainties surrounding the future development of the pandemic and the associated social distancing measures in place. Externally, weakened global demand amid worldwide energy shortages, front-loaded US policy normalisation amid surging inflation, as well as prolonged Russia-Ukraine conflicts could jeopardise export performance. To facilitate the monitoring of Mainland's economic performance, Box 2 introduces a GDP nowcasting model using both quarterly and monthly macroeconomic indicators.

Amid the elevated global inflation, the producer price inflation in Mainland China stayed at relatively high levels in the first half of 2022 (Chart 2.13). That said, the pass-through of the producer price inflation to the consumer price inflation was limited, with the headline consumer price inflation remaining moderate at 2.5% year on year in June 2022, in part reflecting subdued food prices (e.g. pork prices) and weak domestic demand amid property market downturns and repeated COVID-19 outbreaks. The latest consensus forecasts expect Mainland's consumer prices to rise mildly by 2.4% for 2022 as a whole.

**Chart 2.13**  
Mainland China: Consumer price and producer price inflation



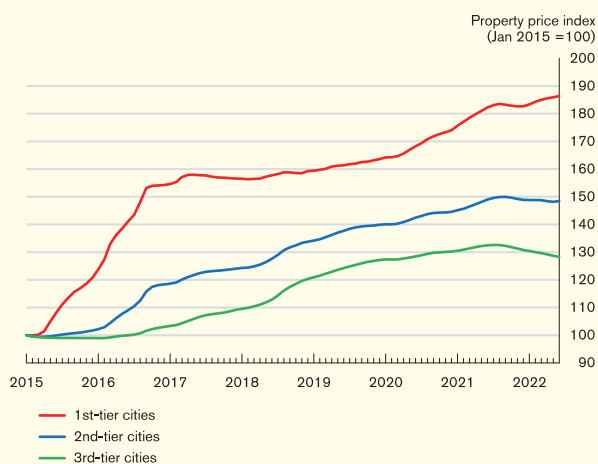
Sources: CEIC, NBS and HKMA staff estimates

## Global setting and outlook

*Asset and credit markets*

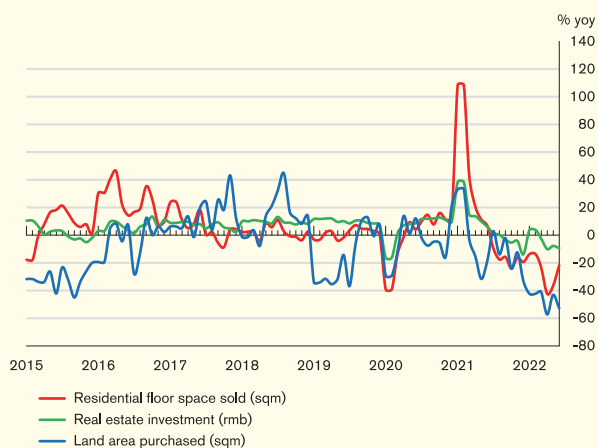
In the first half of 2022, Mainland property market continued to falter amid the financing difficulties of developers and the resurgence of COVID-19 outbreaks. Housing prices softened in most cities except for the first-tier ones (Chart 2.14), while residential floor space sold declined markedly year on year (Chart 2.15). Accordingly, the inventory-to-sales ratio picked up across all city tiers, with that in the third-tier cities surging to a historical high of 53 months in June 2022 (Chart 2.16).

**Chart 2.14**  
Mainland China: Residential prices by tier of cities



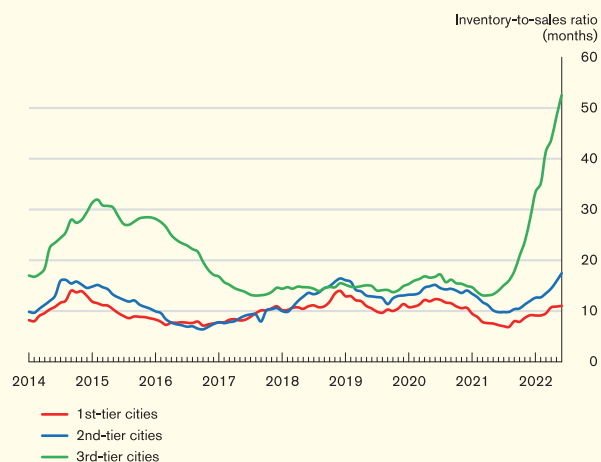
Sources: CEIC and HKMA staff estimates

**Chart 2.15**  
Mainland China: Residential floor space sold, real estate investment and land purchase



Sources: CEIC and HKMA staff estimates

**Chart 2.16**  
Mainland China: Inventory-to-sales ratios by tier of cities



Sources: Wind and HKMA staff estimates

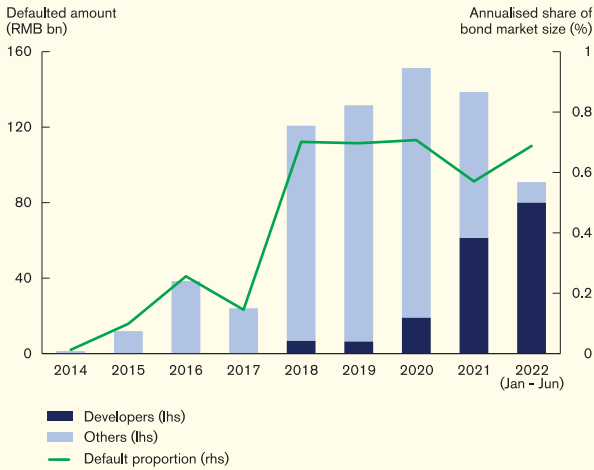
To stabilise the property market, the Mainland authorities stepped up supportive measures. On the demand side, the authorities cut both the mortgage reference rate (i.e. five-year Loan Prime Rate (LPR)) and the mortgage rate floor on first-home mortgages, while easing home purchase restrictions and the down payment ratio in different cities. On the supply side, in a bid to mitigate the financing difficulties facing property developers, the authorities encouraged banks to differentiate project-level risk from company-level risk to avoid blind withdrawal of loans from developers. To shore up homebuyers' confidence following the mortgage payment boycott in response to delays in project delivery, the authorities also pledged to promote home delivery and set up a fund amounting to RMB 200 billion, while emphasising local governments' responsibility to ensure the delivery of properties. Although the market showed some tentative signs of stabilisation in June along with pent-up demand, it remains unclear whether such a trend will continue amid weakened homebuyers' confidence.

With intensified liquidity stress amid the property market downturn, Mainland property developer defaults reached about RMB 80 billion in the onshore market in the first half of 2022.

Global setting and outlook

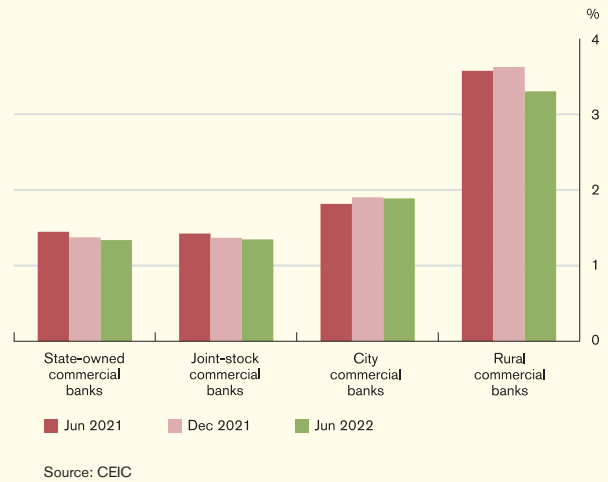
Nevertheless, the annualised overall default rate in the onshore bond market remained low at around 0.7% in the first half of 2022, with property developers contributing about 88% of the total defaults (Chart 2.17).

**Chart 2.17**  
Mainland China: Bond default size and rate in the onshore market



The overall risk in the banking sector remained manageable. The non-performing loan (NPL) ratios of state-owned banks remained low and further declined to 1.34% in June 2022 from 1.37% at the end of 2021 (Chart 2.18). In addition, the provision coverage ratio of large Mainland banks improved to 245% in June 2022 from 239% at the end of 2021, well above the regulatory requirement. That said, asset quality pressures facing some smaller banks should not be ignored amid the ongoing economic and property market downturns. For instance, the NPL ratio of rural commercial banks stayed at a relatively high level of 3.3% in June 2022 despite the decline in the first half of this year.

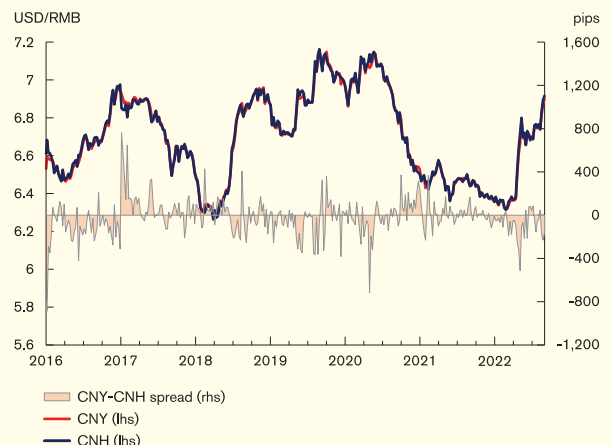
**Chart 2.18**  
Mainland China: NPL ratios by bank type



*Exchange rate and cross-border capital flows*

Following the interest rate hikes in the US since late March, the onshore renminbi (CNY) reversed its trend of strengthening against the US dollar, weakening notably during the following months. The CNH exchange rate traded weaker than its onshore counterpart, with the CNY-CNH spread widening notably to over 500 pips for a short period of time in May (Chart 2.19). To stabilise the renminbi exchange rate, the People’s Bank of China (PBoC) announced on 25 April a 100 bps cut to the foreign exchange reserve requirement ratio (RRR) from 9% to 8% and another 200 bps cut to lower the ratio to 6% on 5 September in order to provide more foreign exchange liquidity to the market.

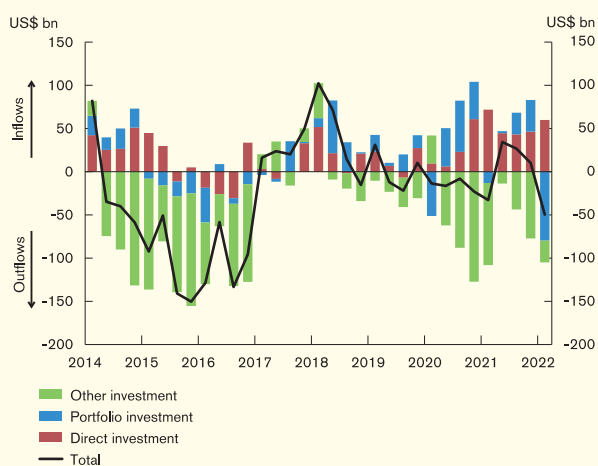
**Chart 2.19**  
Mainland China: Onshore and offshore renminbi exchange rates against the US dollar



## Global setting and outlook

Amid widened Mainland China-US interest rate differentials, the latest statistics on the Balance of Payments pointed to some net capital outflows in the first quarter of 2022, mainly driven by increased holding of foreign bonds and equities by domestic residents and a sell-off in onshore debt securities by foreign investors (Chart 2.20). Meanwhile, net direct investment inflows remained strong and further picked up as inward direct investment by foreigners outweighed outward direct investment by residents.

**Chart 2.20**  
Mainland China: Net cross-border capital flows by type of flows



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

Looking ahead, while Mainland China will continue to attract foreign investors in the long run because of its resilient economic fundamentals and further opening up of financial markets, the volatility of short-term cross-border capital flows is likely to increase amid widened Mainland China-US interest rate differentials, uncertainties over Mainland China's growth outlook, and intensified geopolitical tensions.

## Monetary and fiscal policy

In light of the downward pressure on the economy, the authorities stepped up policy support to stabilise growth, including a comprehensive stimulus package unveiled in late May, which contained 33 measures in six fields (e.g. boosting infrastructure investment, stabilising supply chains, and supporting small and medium-sized enterprises (SMEs)), as well as a follow-up package containing 19 policies announced in late August to provide additional funding and aid.

On the monetary front, the PBoC: (i) cut the RRR by 25 basis points on 25 April 2022; (ii) lowered the five-year LPR by 15 basis points, on 20 May 2022 and 22 August 2022, respectively, and trimmed the one-year LPR by 5 basis points on 22 August to boost demand for investment; and, (iii) reduced both the one-year medium-term lending facility (MLF) rate and the seven-day reverse repo rate by 10 basis points on 15 August 2022. In addition, the PBoC announced that it would expand the use of structural monetary tools including targeted RRR cuts to support bank lending to small businesses. In the wake of a series of easing measures, the weighted average corporate loan interest rate declined to 4.2% in the second quarter of 2022 from 4.6% in 2021, reflecting the lowered funding costs for the real economy.

On the fiscal side, authorities increased its policy supports in both scope and scale. The latest major easing measures include further tax cuts for the retail and service sectors by RMB 142 billion, for car purchase by RMB 60 billion, and starting from September a deferral of tax payments totaling RMB 440 billion for manufacturing SMEs by another 4 months. In addition, policy banks have increased their credit lines for infrastructure lending by RMB 800 billion and issued financial bonds amounting to RMB 300 billion to fund infrastructure projects, while planning to issue another RMB 300 billion of bonds for the same purpose. The government also emphasised the importance of improving the effectiveness of

### Global setting and outlook

fiscal policy, in particular, by fully and better utilising the fund raised through local government special bond (LGSB) issuance to boost domestic demand. It subsequently announced in August an additional RMB 500 billion of LGSB issuance.

Despite a more proactive fiscal policy stance, the overall risk of local government debt remained manageable, with Mainland local government debt-to-GDP ratio standing low at 30% at the end of June 2022, a mild increase since the end of last year. However, the sluggish property market may affect the fiscal position of some local governments in areas with relatively greater reliance on land sales (e.g. Hainan, Heilongjiang and Ningxia). To better support local government fiscal spending, the PBoC announced a handover of over RMB 1 trillion in profits to the central government by the end of the year, which will be used for transfer payments to local governments especially those facing fiscal difficulties.



## Box 2 Nowcasting GDP growth in Mainland China

### Introduction

The Mainland economy faced strong headwinds in recent quarters amid a resurgence in COVID-19 infections and a downturn in the real estate sector. In light of the importance of Mainland China to the global economy, it is useful to have an accurate grasp of the current state of the Mainland economy. Given that Mainland GDP is available only at a quarterly frequency with some publication lags, this box presents a method to nowcast Mainland GDP growth by combining information at both quarterly and monthly frequencies using the unrestricted mixed data sampling (U-MIDAS) model, which is adopted by many central banks to nowcast GDP growth<sup>12</sup>.

### Methodology and Data

More specifically, our U-MIDAS regressions take the following form and include one particular monthly indicator each time:

$$y_t^{(Q)} = \alpha + \sum_{i=1}^p \beta_i y_{t-i}^{(Q)} + \psi(L)x_{j,t}^{(M)} + u_t$$

where  $y_t^{(Q)}$  is the quarterly GDP growth rate, and  $x_{j,t}^{(M)}$  denotes the  $j$ -th monthly economic series in quarter  $t$ .  $\psi(L) = \sum_{k=0}^q \psi_k L^k = \psi_0 + \psi_1 L + \dots + \psi_q L^q$  and  $L^k$  is the lag operator such that  $L^k x_t^{(M)} = x_{t-k/3}^{(M)}$ .  $p$  and  $q$  are the numbers of lags and may vary across each indicator<sup>13</sup>.

Six categories of Mainland economic activity indicators are included in the model, covering: (i) surveys, (ii) manufacturing activities, (iii) real estate sector performance, (iv) international trade, (v) retail sales, and (vi) other activities<sup>14</sup>. These indicators are listed in Table B2.1.

**Table B2.1**  
Monthly indicators used in U-MIDAS model

Indicator	Typical release date
<b>Surveys</b>	
1. Manufacturing PMI	End of current month
2. Manufacturing PMI: Production	End of current month
3. Non-manufacturing PMI	End of current month
4. Non-manufacturing PMI: Construction	End of current month
5. Caixin manufacturing PMI	1st of next month
6. Caixin services PMI	1st of next month
<b>Manufacturing</b>	
7. Electricity production	15th next month
8. Crude steel production	15th next month
9. Steel production	15th next month
10. Cement production	15th next month
11. Industrial production	15th next month
<b>Real estate</b>	
12. Building construction: new area started	15th next month
13. Floor space sold	15th next month
<b>International trade</b>	
14. Exports	7th next month
15. Imports	7th next month
16. Trade surplus	7th next month
17. Container throughput in major ports	15th next month
<b>Retail sales</b>	
18. Retail sales	15th next month
19. Retail sales: consumer goods	15th next month
<b>Others</b>	
20. Freight traffic of highways	15th next month
21. Core CPI	10th next month

Sources: Wind, the Ministry of Transport of the People's Republic of China and HKMA staff estimates

<sup>12</sup> The U-MIDAS was proposed by Foroni *et al.* (2015). It is a powerful tool for nowcasting GDP and is adopted by many central banks (see e.g. Anesti *et al.* (2017) and Chikamatsu *et al.* (2018)).

<sup>13</sup> The optimal lag length is decided based on the Bayesian information criterion.

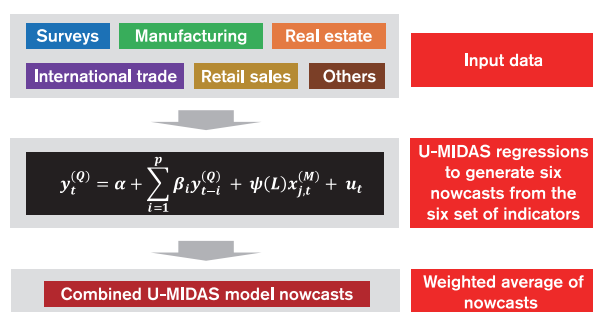
<sup>14</sup> Financial variables are not included in the model following Bok *et al.* (2018) and Chikamatsu *et al.* (2018).



## Global setting and outlook

To obtain robust and accurate results, our GDP growth nowcasts are set as the weighted average of the nowcast results of the six sets of indicators, with the weights of each regression being determined by their nowcasting accuracy<sup>15</sup>. The whole procedure of our GDP growth nowcasting is summarised in Chart B2.1.

**Chart B2.1**  
Nowcasting procedure of Mainland GDP growth

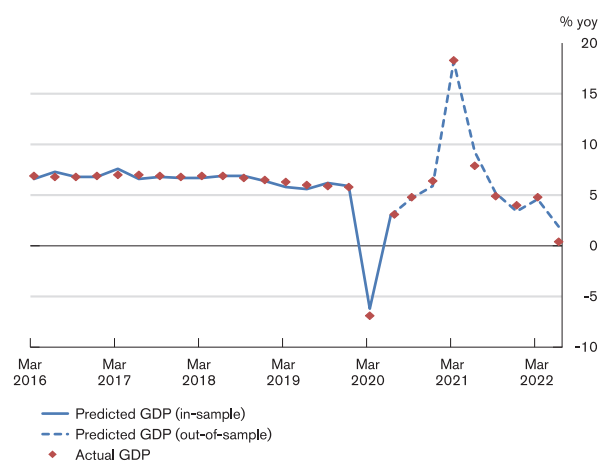


The full sample of data is split into two sub-periods. The combined U-MIDAS model is estimated by using the first subsample from January 2015 through to June 2020 to include the first COVID-19 outbreak. The sample is then extended to the second subsample period (July 2020-June 2022) on a rolling basis for out-of-sample assessment.

### Nowcasting results

Chart B2.2 compares our nowcasts with actual GDP growth starting from 2016<sup>16</sup>. The chart shows that our nowcasts, both in-sample and out-of-sample, track GDP growth closely. In particular, our nowcasts capture the slump in the first quarter of 2020 due to the emergence of COVID-19 as well as the economic recovery in the following year.

**Chart B2.2**  
In-sample and out-of-sample Mainland GDP growth nowcasts



Note: The dotted line indicates that the results are estimated in the out-of-sample period while the solid line refers to the outcomes from in-sample estimation.

Sources: Wind, the Ministry of Transport of the People's Republic of China and HKMA staff estimates.

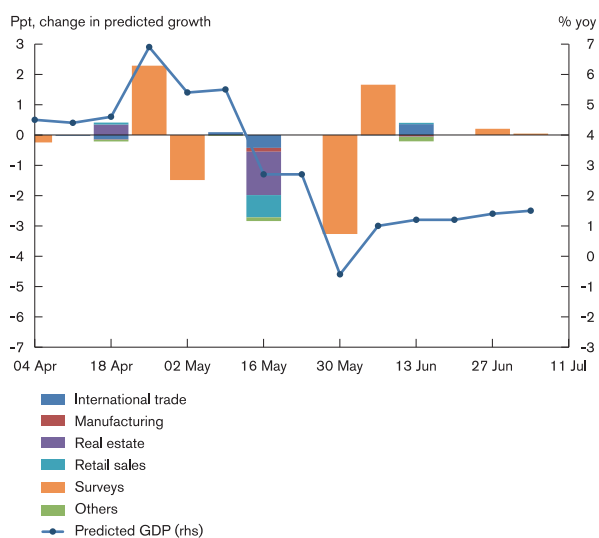
Another merit of the combined nowcasting method is that it enables us to explore which underlying factors drive the changes in our nowcasts over time. For instance, our GDP growth nowcast for the second quarter of 2022 edged down in April and May mainly due to the significant deterioration in survey readings, real estate sector performance, retail sales and international trade following Omicron outbreaks and city lockdowns. The GDP growth nowcast was then supported by the rebounds in survey and foreign trade data amid the relaxation of COVID restrictions (Chart B2.3). For the third quarter, our nowcasts suggested that growth will improve but remain soft amid economic headwinds.

<sup>15</sup> The inverse mean square error is adopted (i.e. the weights depend on models' mean square forecast error (MSFE)). Specifically, the weight assigned to indicator  $i$  at time  $t$  is calculated as follows,  $W_{i,t} = \frac{1/MSFE_{i,t}}{\sum_{j=1}^N 1/MSFE_{j,t}}$  where  $N$  is the total number of indicators.

<sup>16</sup> Since most of the optimal lags are 12 months, our nowcasting starts from the first quarter of 2016.

## Global setting and outlook

**Chart B2.3**  
**Evolution of Mainland GDP growth nowcasts and contributing components for 2022Q2**



## Notes:

- The blue dots refer to the weekly nowcasts based on the information available up to that point in time. The contribution to the change in the nowcast is represented by the stacked coloured bars, with each colour indicating one of the six set of indicators.
- Nowcast starts in current quarter and consists of four months until the official GDP is released.

Sources: Wind, the Ministry of Transport of the People's Republic of China and HKMA staff estimates

Chart B2.3 shows that the accuracy of our nowcasts tends to improve when more information is incorporated in the run-up to the announcement of new official GDP figures. As suggested by our out-of-sample results, our nowcasts would normally converge to the actual GDP growth figures as early as one month ahead of the official release.

### Conclusion

This box introduces a GDP growth nowcasting model based on 21 monthly indicators to track Mainland China's economic performance. Our nowcasting model exhibits a good track record during the sample period, and also appears to be able to reflect the key factors affecting the economic performance in Mainland China, including the slowdown in the real estate sector, deterioration in retail sales and weakened sentiment.

### References

- Anesti, N., Hayes S., Moreira A., and Tasker J. (2017). "Peering into the present: the Bank's approach to GDP nowcasting.", *Bank of England Quarterly Bulletin*, vol. 57(2), 122-133.
- Bok, B., Caratelli, D., Giannone, D., Sbordone, A. M., & Tambalotti, A. (2018). "Macroeconomic nowcasting and forecasting with big data", *Annual Review of Economics*, vol. 10(1), 615-643.
- Chikamatsu K., Hirakata N., Kido Y., and Otaka K. (2018). "Nowcasting Japanese GDPs.", *Bank of Japan Working Paper Series*, No. 18-E-18.
- Froni, C., Marcellino, M. G., and Schumacher, C. (2015). "Unrestricted Mixed Data Sampling (MIDAS): MIDAS regressions with unrestricted lag polynomials." *Journal of the Royal Statistical Society Series A*, vol. 178(1), 57-82.