
2. Global setting and outlook

The synchronised global economic upswing underway since late 2016 continued unabated. Global equity markets staged a rally in 2017 and early 2018 on improving growth prospects, but a reappraisal of US inflation risks triggered a sell-off and a spike in market volatility in February, marking an end to the financial market tranquillity that prevailed over the past two years. Looking ahead, the global outlook will be clouded by risks of tighter monetary conditions, as well as a number of policy and event risks. US tax cuts amid a tight labour market might hasten the cyclical rebound in inflation and result in a faster pace of tightening by the Federal Reserve, while increased issuance of US Treasuries to finance the tax cuts could amplify upward pressures on longer-term yields amid the Fed's balance sheet normalisation. The spectre of a rise in trade barriers, as well as any unexpected escalation in geopolitical tensions, could also threaten the nascent recovery in global trade.

In East Asia, real economic growth continued to pick up in the second half of 2017 on the back of a strong export performance and steady domestic demand. Nevertheless, the positive economic prospects are vulnerable to multiple downside risks, including a sharper-than-expected tightening of global monetary conditions, more inward looking US trade policies and geopolitical tensions. These downside risks, if materialised, could also increase the risk of sharper capital flow reversal. Policy makers are therefore facing the challenge of guarding against risks to growth while limiting the impact of the prolonged easy financial conditions on inflation and balance sheet vulnerabilities.

In Mainland China, the economy fared well in the second half of 2017. During the review period, some progress has been made on both structural reforms and containment of systemic risks. The near-term growth prospects remain positive but uncertainties remain, in part depending on to what extent the rapid growth of the “new economy” can help offset the short-term pressure of further structural reforms on growth. Reflecting stabilised economic conditions and subsided risks, capital outflow pressures stayed subdued during much of 2017.

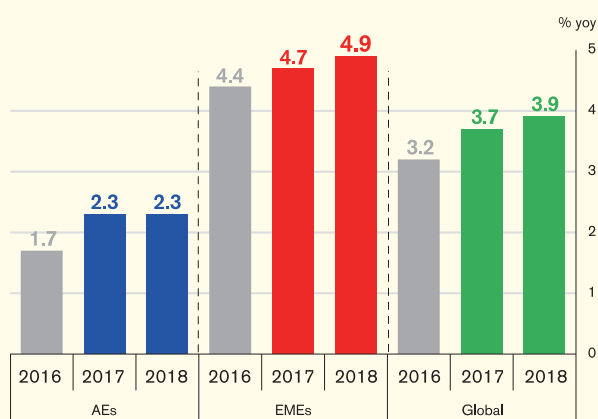
2.1 External environment

With the cyclical economic upturn gaining further traction, major advanced economies (AEs) and emerging market economies (EMEs) experienced synchronised growth acceleration in 2017. Among major AEs, the US saw a robust

pick-up in investment and exports supported by buoyant private sector sentiment and a marked depreciation of the US dollar, while the euro area and Japan also enjoyed broad-based cyclical recovery. EME exports benefited from stabilising global commodity prices and increased import demand from major AEs. In the near term, the

approval of the tax reform bill in the US is expected to provide an additional boost to investment and consumption through their responses to corporate and individual income tax cuts. In view of the strength of the current cyclical upswing and the expansionary effect of the US tax overhaul, the International Monetary Fund (IMF) in January projected global growth to accelerate from an estimated 3.7% in 2017 to 3.9% in 2018 (Chart 2.1).

Chart 2.1
Real Gross Domestic Product (GDP) growth projections



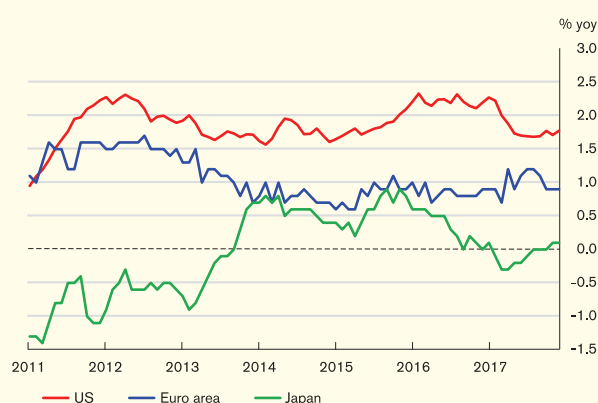
Source: IMF.

As growth momentum in the euro area and Japan strengthened, expectations of global monetary policy divergence diminished. This, coupled with the brighter global growth outlook that encouraged risk-on sentiment and capital flows into EMEs, weighed on the US dollar. Despite three interest rate hikes and the commencement of balance sheet normalisation by the Fed during the year, the US dollar index fell close to 10% in 2017.

At the same time, core inflation remained subdued across major AEs in spite of the broad-based growth acceleration, and stayed below their central banks' target, which, until recently, fostered market expectations that global interest rates would remain low (Chart 2.2). Against this background, global equity markets rallied in 2017 and early 2018. In particular, the S&P 500

index repeatedly reached new highs, driving the cyclically adjusted price-earnings (P/E) ratio to 33.8 in January 2018, the highest since the "dot-com" bubble in the early 2000s.

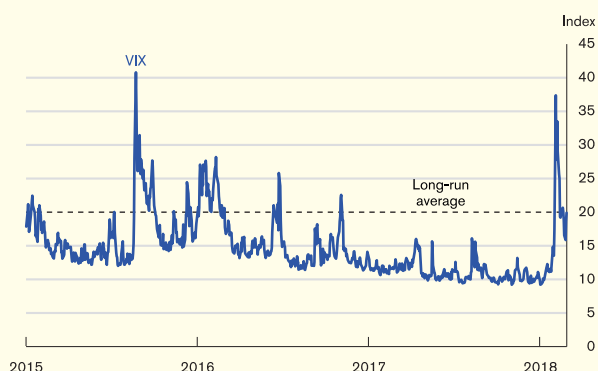
Chart 2.2
Core inflation in major AEs



Note: Data shown for Japan is the "core-core" inflation and has been adjusted for the one-off effects of the sales tax hike in 2014.
Sources: CEIC and HKMA staff estimates.

Nonetheless, with longer-term US Treasury yields on the rise since the latter half of 2017 amid concerns of tax cuts resulting in higher fiscal deficits and inflation, the increasingly rich asset market valuations have been called into question. Global equity markets underwent a correction in early February 2018, triggered by market reappraisal of US inflation risks on the release of stronger-than-expected growth in average hourly earnings in January 2018. The S&P 500 index at one point tumbled by more than 10% from its peak on 26 January, wiping out the sharp gains at the start of the year, and faced renewed downward pressures when the US administration announced new trade protectionist measures in early March. The benchmark 10-year US Treasury yield also rose to a four-year high in mid-February. Market volatility increased sharply, with the Chicago Board Options Exchange Market Volatility Index (VIX) at one point surging to a two-year high of 37.3, marking an end to the low-volatility environment that prevailed over the past two years (Chart 2.3).

Chart 2.3
VIX



Source: Bloomberg.

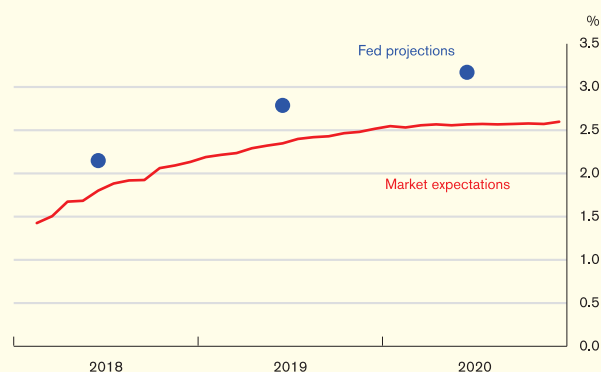
Looking beyond the short-term equity market volatility, the risk of tighter global monetary conditions stemming from the US inflation risks, the upside risks to longer-term US yields and the possible tightening by other major central banks will likely continue to cloud the global economic outlook.

First, on US inflation risks, the recently passed tax reform plan includes a number of provisions expected to provide a short-term cyclical boost to private consumption and investment. Key among them include: reductions in corporate and individual income tax rates, a temporary allowance of full expensing of capital investment, and a one-off “deemed repatriation” provision that neutralises incentives for US companies to hoard their overseas earnings abroad. While it is still uncertain how strongly domestic demand and inflation will respond to the tax cuts, with the US economy now operating at full potential, there is a risk they would push US output further above potential, resulting in an overheating economy and a cyclical rebound in inflation.¹ A sharper-than-expected strengthening of inflationary pressures

¹ US output gap has turned positive since the third quarter of 2017 according to estimates by the Congressional Budget Office, and the unemployment rate, at 4.1% in February 2018, is below many estimates of its natural rate. See also New York Fed Governor Dudley’s speech, “The Outlook for the U.S. Economy in 2018 and Beyond”, delivered on 11 January 2018.

could prompt the Fed to tighten monetary policy at a faster pace. With financial markets currently still pricing in a much flatter Fed funds rate path than the Federal Reserve (Fed)’s projections, the risks of an abrupt re-pricing of rate hike expectations cannot be ruled out in case of a surprise rebound in inflation (Chart 2.4).

Chart 2.4
Fed funds rate projections



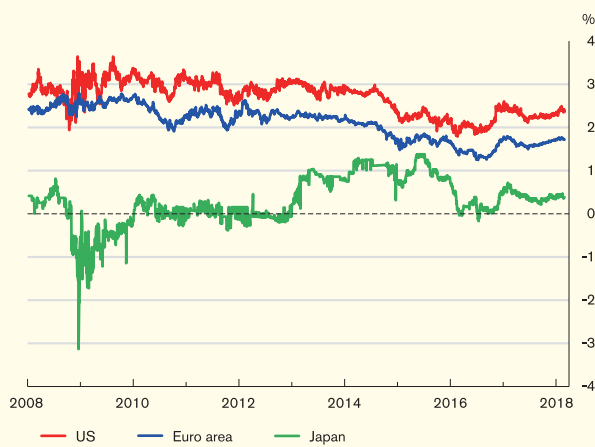
Note: Market expectations are derived from prices of Fed funds futures contracts as at 28 February 2018, while the Fed projections are based on December 2017 Federal Open Market Committee projection materials.

Sources: Datastream and Fed.

Second, given the deficit-generating nature of the tax reform plan, a higher issuance of US Treasuries can be expected.² This could amplify the upward pressure on longer-term yields at a time when the Fed continues with its balance sheet normalisation programme, which is expected to result in an increase in term premia. Inflation expectations in the US has also been rising since the latter part of 2017 amid increasing odds of the passage of the tax reform bill (Chart 2.5). After staying low for most of 2017, the benchmark 10-year US Treasury yield has risen by more than 70 basis points since the third quarter, partly reflecting market concerns over increasing Treasury supply pressures as well as rising inflation expectations.

² The Joint Committee on Taxation estimated the tax plan would result in an increase of more than US\$1 trillion in the fiscal deficit by 2027, even after taking into account the possibility of stronger growth having a boosting effect on tax revenues.

Chart 2.5
5-year, 5-year forward inflation expectations



Separately, a key question is whether the natural rate of interest (R^*), which is a key component of the long-term interest rate, would continue to remain low for a long period as commonly envisaged.³ While estimates of R^* differ, it is generally agreed that it has fallen sharply since the global financial crisis (GFC) (Chart 2.6).⁴ Nevertheless, there are upside risks to R^* in the US in the period ahead, stemming from a lower national savings rate due to the expected increase in fiscal deficits, and a possible increase in the investment rate supported by corporate tax cuts and a more favourable tax treatment for capital expenditures. A higher R^* , together with an expected increase in term premia amid the normalisation of the Fed's balance sheet, could point to higher long-term interest rates going forward, thereby posing a headwind to asset valuations.

Chart 2.6
Laubach-Williams estimate of R^* in the US



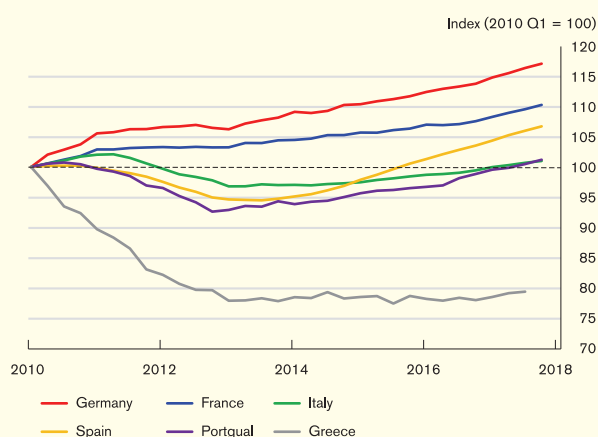
Thirdly, strengthening growth momentum in the euro area and Japan has fostered market expectations that their central banks may reduce monetary accommodation going forward, which, if materialised, could presage a synchronised tightening of global monetary conditions. In the euro area, the cyclical expansion has turned more broad-based across member economies (Chart 2.7), while in Japan the recovery has also gained traction, with real GDP expanding for the eighth straight quarter in the fourth quarter of 2017. While the European Central Bank (ECB) and the Bank of Japan continued to signal an accommodative monetary policy in view of subdued inflationary pressures, the brighter growth outlook (and the sustained tightening of labour market conditions in Japan) has already led some market participants to foresee a further scaling down of their quantitative easing (QE) programmes in the near term.⁵

³ Loosely defined, R^* is the inflation-adjusted (i.e. real) interest rate that would prevail when actual output equals potential output, and as such represents an equilibrium concept that cannot be observed directly. R^* , together with expected inflation and term premia, jointly determine the equilibrium long-run interest rate.

⁴ It is possible that R^* has been driven down by structural factors such as a global savings glut and slower trend productivity growth since GFC. For details, see Williams, J. C. (2016), "Monetary Policy in a Low R-star World", *Economic Letter*, Federal Reserve Board of San Francisco.

⁵ Nonetheless, the ECB's acknowledgement that the recent euro exchange rate volatility is a concern likely suggests a more cautious approach in tapering its QE programme.

Chart 2.7
Real GDP of selected member countries of the euro area



Policy and event risks arising from international politics and geopolitical tensions may also pose a threat to the nascent recovery in global growth and trade flows. The US administration appears to be more inclined to inward-looking trade policies in an attempt to protect domestic industries. Recent examples included the announcements of imposition of import tariffs on solar panels and washing machines in January 2018, and on steel and aluminium in early March, raising fears of retaliatory responses from its trading partners. At the same time, there are uncertainties regarding the post-Brexit trade arrangements between the UK and the rest of the European Union, which are currently under negotiation. If these developments result in an increase in trade frictions, they could hamper global trade flows and reduce global production efficiency. In addition, any unexpected escalation in geopolitical tensions (for example, risks of military conflicts on the Korean Peninsula, political instability in the Middle East and lingering risks of terrorist attacks) could heighten global financial market volatility.

In East Asia⁶, growth gained further momentum in the second half of 2017, ending the year on a strong note. Real growth accelerated to 4.3% in 2017, marking the fastest expansion since 2012. The external sector remained the primary driver for growth, while domestic demand provided steady support (Chart 2.8). The accelerated recovery in advanced economies, stronger-than-expected growth in Mainland China and the upturn in global demand for tech products boosted exports in the region.

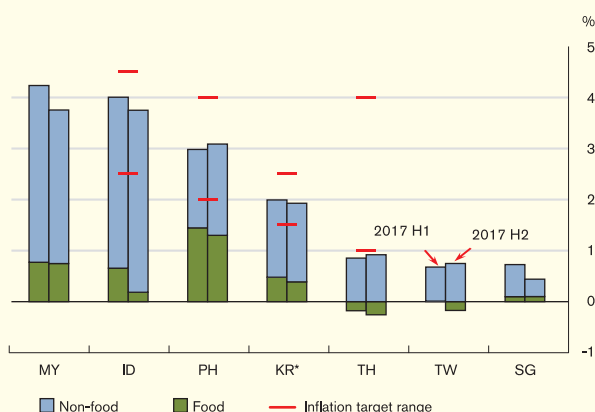
Chart 2.8
East Asia: Domestic demand and exports



Inflationary pressures have so far been contained. Headline inflation in East Asia has softened somewhat in the second half of 2017, influenced by lower food price inflation and stabilised energy prices (Chart 2.9). Core consumer price index inflation (excluding food and energy) remained subdued, amid sluggish wage growth in multiple economies.

⁶ East Asian economies refer to Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand.

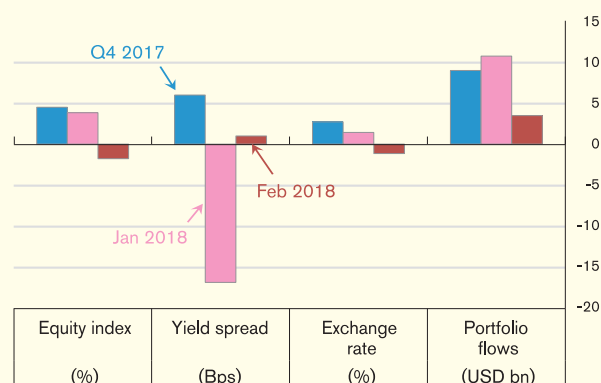
Chart 2.9
East Asia: Headline CPI inflation



* Note: MY – Malaysia, ID – Indonesia, PH – the Philippines, KR – South Korea, TH – Thailand, TW – Taiwan, SG – Singapore. South Korea set 2% as its inflation target point since 2016, with +/- 0.5% as accountability range.

Sources: CEIC and central banks.

Chart 2.10
East Asia: Financial market performance



Note: The chart shows the average changes in (1) benchmark equity indices, (2) 10-year local sovereign bond yield spread over the US Treasury bond yield, (3) regional currencies' exchange rate against USD; and (4) total EPFR portfolio flows, including bond and equity funds, in seven East Asian economies. The economies are Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand.

Sources: Bloomberg, CEIC and EPFR.

Favourable economic conditions were accompanied by sizable capital inflows and a remarkable rally in financial assets in 2017 and early 2018 (blue and pink bars, Chart 2.10). In 2017, capital inflows rebounded strongly throughout the year, with total annual portfolio flows reaching their highest level since 2010. After the strong financial market rallies, valuations have risen across asset classes in the region. Compensation for credit risks further narrowed in the second half of 2017, while benchmark equity indices rose across the region. Regional currencies generally appreciated against the US dollar.

The strong rally in financial assets halted in early February, however, led by the global equity sell-off and a sudden reversal of market sentiment (see the red bars in Chart 2.10). Asian equities suffered sharp and broad losses in February. Bond yield spreads widened across countries and sectors, portfolio inflows slowed and regional currencies weakened slightly.

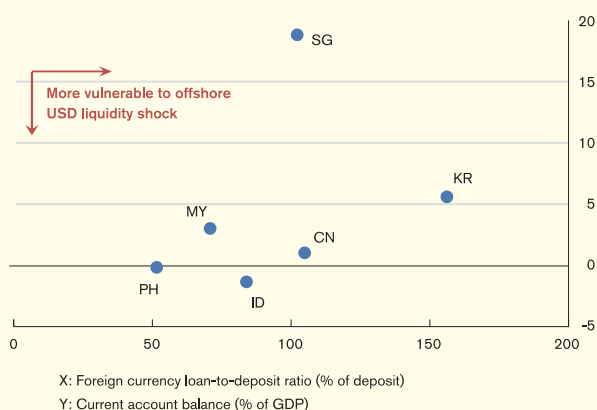
Barring any shocks, the near-term outlook for East Asia is expected to remain favourable, along with the cyclical upswing and broadly accommodative monetary conditions. Nevertheless, positive economic prospects are vulnerable to a number of downside risks.

- *Sharper-than-expected tightening of global monetary conditions* – In addition to uncertainties in the pace of the Fed's monetary policy normalisation and the possibility of simultaneous tightening by major central banks, the "deemed repatriation" provision under the newly-passed US tax reform could also tighten off-shore US dollar liquidity, though the impact is likely to be manageable based on past experience.⁷ Any sharper-than-expected tightening in global monetary conditions

⁷ The 2004 Homeland Investment Act established a one-time tax holiday for accumulated overseas profits of US corporates. Over 2004-2006, about one-third of accumulated global non-repatriated profits (around US\$362 billion) have been repatriated, and a handful tax haven economies were responsible for a large portion of the repatriation. During that episode, repatriation originated from Asia was at a lower level (around US\$30 billion), likely reflecting Asia's position as a destination for foreign direct investment more than a tax haven. Compared with the 2004 episode, Asia seems to remain a favorable destination for foreign direct investment. In addition, the potential repatriation might be more gradual as the current "deemed repatriation" provision does not have a specified time-frame. For details about the 2004 episode, see Redmiles, M. (2008). "The one-time received dividend deduction", *Statistics of Income Bulletin*, Spring, p.102-114.

could pose risks to growth and asset markets. In particular, economies with fast growth in US dollar debt, higher levels of foreign currency mismatch, and weak external balances are likely to be more vulnerable to a tightening in offshore US dollar liquidity (Chart 2.11).

Chart 2.11
East Asia: Foreign currency loan-to-deposit ratio and current account balance



Sources: CEIC and HKMA staff calculations

- *Inward-looking US trade policies* – The US government shifts towards more inward-looking trade policies could trigger global protectionist sentiment, and put a brake on the region's export recovery. Tougher trade measures against economies in the region would directly reduce cross border trade flows in East Asia. In addition, with the increasing trade and investment ties with other regions, any US policy changes in these regions could also affect East Asia's trade flows.
- *Geopolitical risks* – Geopolitical tensions remain elevated on multiple fronts globally. Despite continuous efforts to resolve these tensions, the unsettled situation continues to pose threats to global stability. Any sharp escalation of conflicts could cause massive disruptions to the global economy and financial markets.

These risk factors, if materialised, would not only dampen growth and cause volatility in the asset markets, they could also increase the risk of sharper capital outflows, particularly given the massive capital inflows into emerging Asian economies over the past several years.

Nevertheless, some existing factors might help mitigate the risks. The relatively strong fundamentals of most regional economies and the buffers provided by the macroprudential measures put in place in recent years might help alleviate pressures from external shocks. The rise in the share of institutional investors' inflows in the region's bond market in recent years may also reduce volatility of portfolio inflows as institutional investors are found to be more sticky when market stress is low.⁸ In addition, as discussed in Box 1 on page 17, although the outflow of EME bond funds is expected during market downturn, its pace is likely to be less drastic than the episodes of inflows in the past.

Looking ahead, with the prospect of strong growth, a moderate yet steady increase in inflation, and asset price pressures, regional central banks are likely to face the challenge of guarding against risks to growth while limiting the prolonged easy financial conditions on inflation and balance sheet vulnerabilities.

⁸ For details, see *HKMA Research Memorandum 08/2016*, "Determinants of Portfolio Flows to Emerging Asian Economies: Are there any Differences between Institutional and Retail Investors?"

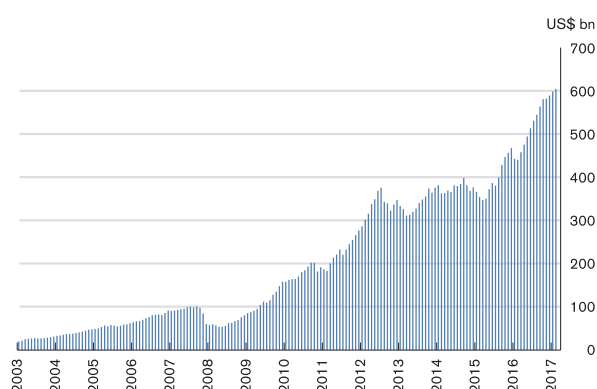
Box 1

Response of fund flow to fund performance for emerging market bonds: is it symmetric?⁹

Introduction

Mutual funds investing in EME bonds have increased almost seven-fold since the GFC (Chart B1.1).¹⁰ From the financial stability perspective, it is important for policy makers to understand how a good fund performance attracts inflow and how a bad fund performance causes outflow. In this box, we examine the relationship between net inflow to these funds and their past performance, in particular whether there is any difference in fund flow response between good and bad performances.¹¹

Chart B1.1
Total net assets of EME bond funds



Source: EPFR Global.

Why flow-performance relationship matters?

It is a well known fact that the relationship between fund flow and fund performance is positive, other things being equal.¹² Good

performance attracts inflow and bad performance encourages outflow. What is important, but often ignored, is whether this positive relationship is asymmetric. There are two possibilities. First, it is *concave*: there is more outflow in response to bad performance than inflow to good performance. Second, it is *convex*: there is less outflow in response to a bad performance than inflow to good performance. This is important because without this knowledge, there is a tendency to underestimate or overestimate the potential capital flow reversal when market conditions change abruptly.¹³

Methodology

We use a fixed effect panel data model, which is defined as:

$$FF_{i,t} = \alpha_0 + \beta_1 RR_{i,t-1} + \beta_2 D(RR_{i,t-1} \leq 0) RR_{i,t-1} + \sum_{k=1}^n \gamma_k Z_{k,i,t} + \varepsilon_{i,t}$$

where $FF_{i,t}$ is the net fund flow to an EME bond fund i at time t and $RR_{i,t-1}$ is the fund's prior-period total return.¹⁴ To enable comparability across funds, $FF_{i,t}$ is specified as the value of the net subscription to the fund in the current period divided by the fund size of the preceding period.

The convexity of the flow-performance relationship is estimated by an interaction term of $RR_{i,t-1}$ and a dummy variable $D(RR_{i,t-1} \leq 0)$ that equals one if the prior-period fund return is less than or equal to zero, and zero if otherwise. Under this specification, a positive (negative) β_2

⁹ The box is based on Leung and Kwong (2018), "The flow-performance relationship in emerging market bond funds", *Hong Kong Institute for Monetary Research Working Paper No.04/2018*.

¹⁰ According to the EPFR Global, the assets under management of EME bond funds totalled US\$604 billion at the end of 2017 compared to US\$88 billion at the end of 2009.

¹¹ There is no difference between net inflow and net outflow other than their sign.

¹² Christoffersen et al. (2014), "Investor flows to asset managers: causes and consequences", *Annual Review of Financial Economics*, 6(1), 289–310.

¹³ For example, based on the amount of inflow in a bull market, one will underestimate (overestimate) the potential size of the outflow in a bear market if the relationship is concave (convex).

¹⁴ For robustness check, we also use benchmarked return as an alternative measure of fund performance and the results are very similar. Benchmark return is defined as a fund's total return subtracting the return of the market benchmark index, with both rates of returns in US dollar terms.

would indicate that fund flow is more (less) sensitive to a negative return. In addition to fund performance, other explanatory variables ($Z_{k,i,t}$) are included in the model to control for various factors that can affect fund flow, including the age of a fund, level of market risk aversion, lagged fund flow, fund size and volatility of its past return.

Data

Our sample consists of 1,784 EME bond funds domiciled around the world.¹⁵ For each fund, data about its net fund flow, net asset value, fund return and other fund-specific details are retrieved from the Morningstar database at monthly frequency. The data of market-level explanatory variables are obtained from Bloomberg. Subject to data availability, the sample period runs from January 2000 to December 2016.

Empirical results

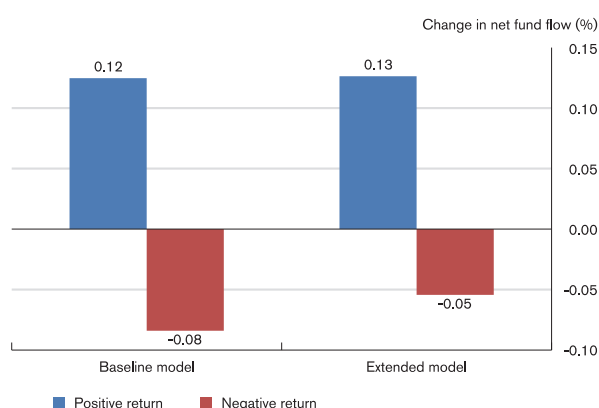
Our findings suggest a *convex* flow-performance relationship for EME bond funds. As shown in Table B1.A, in the baseline model, fund flow reacts positively to past return as β_1 is found to be positive at 0.12 and significant. The coefficient of the interaction term (β_2) is found to be negative at -0.04 and significant, implying a convex relationship. This relationship remains unchanged in the extended model where other control variables are added. Fund flow sensitivities towards positive and negative performance are shown in Chart B1.2.

Table B1.A
Summary of fund level regression result

	Dependent variable: $FF_{i,t}$ Emerging market bond fund flow	
	Baseline model	Extended model
<i>Constant</i>	-0.07	3.87
$RR_{i,t-1}$	0.12	0.13
$RR_{i,t-1} \times D(RR_{i,t-1} \leq 0)$	-0.04	-0.07
$LN(TNA_{i,t})$		-0.13
VIX_t		-0.03
$LN(\text{Fund Age}_{i,t})$		-0.81
No. of observations	79,288	79,288
Adjusted R-squared	0.255	0.259

Note: All coefficients in the table are significant at 99% level.

Chart B1.2
Sensitivities of net fund flow towards positive and negative returns



Note: The bars represent the corresponding changes in net fund flow when fund return increases (decreases) by one percentage point.

Reasons for a convex flow-performance relationship

Broadly speaking, there are three possible explanations for the shape of the asymmetric flow-performance relationship in EME bond funds.

- (1) The first explanation lies in the practices taken by asset management companies to pre-empt a fire sale risk. The risk is notable for funds holding illiquid assets as fund managers have to accept a large discount in selling these assets to meet investors' redemption. Since these extra costs are borne by the remaining investors, the first batch of redeeming investors have a first mover advantage over others. Such an advantage will motivate investors to redeem

¹⁵ The funds are chosen on the basis that they are under the Morningstar category "Emerging Markets Fixed Income".

their funds once market conditions deteriorate, potentially leading to a large outflow. There is evidence that such incentive results in a concave flow-performance relationship for funds investing in illiquid assets.¹⁶

As the assets held by EME bond funds are generally low in liquidity, managers of these funds have adopted practices to pre-empt fire sales. One practice is the precautionary holding of cash that could help avoid selling its underlying illiquid assets at deep discounts when there are large redemptions. As cash holding is typically reported in the fund factsheets that are publicly available, a higher level of cash holding is expected to alleviate investors' concern about fire sales. The higher cash holding ratio of EME bond funds seems to support this conjecture (Table B1.B).¹⁷

Table B1.B
Cash holding positions of US and EME bond funds

Cash holding position (2016)	EME bond funds	US bond funds
Mean (%)	13.86	9.52
Median (%)	6.88	5.46
SD (%)	10.89	7.91
No. of funds	1,251	1,360

Source: Morningstar.

Notes:

1. Cash holding position is the proportion of fund assets held in cash in per cent. Cash encompasses both actual cash and cash equivalents (fixed-income securities with a maturity of one year or less) held by the portfolio plus receivables minus payables.
2. EME bond funds cover funds categorised as "Emerging Markets Fixed Income" according to Morningstar Global Category Classifications (MGCC). US bond funds cover funds under MGCC "US Fixed Income".

Another practice to mitigate the fire sale risk is the swing pricing mechanism, which is the adjustment of a fund's net asset value to pass on the dilution costs of trading to investors associated with purchasing or redeeming the fund. It is found that the mechanism can internalise the transaction costs and liquidation costs incurred by investors who redeem their shares, and neutralise their first-mover advantage from redeeming earlier than others.¹⁸ Note that the EME bond funds in our sample are mostly domiciled in jurisdictions that allow swing pricing (e.g., Luxemburg, Ireland, UK, and Cayman Islands).¹⁹ This may explain why a convex flow-performance relationship is identified.

- (2) The second explanation is related to the bias of media coverage, notably mutual fund advertisements, towards outperforming funds.²⁰ As these advertisements serve as powerful drivers for inflow into the advertised funds, the attention of fund investors is driven towards the top-performing funds whereas the worst-performing funds are often overlooked, leading to a convex relationship.²¹ Investors from EMEs are probably more influenced by media as they are, on average, less sophisticated.²² Meanwhile, investors from developed countries are typically less familiar with EME markets and more likely to be influenced by advertisements and media reporting.

¹⁶ For example, US corporate bonds are relatively illiquid. For the flow-performance relationship of US corporate bond funds, see Goldstein et al. (2017), "Investor flows and fragility in corporate bond funds", *Journal of Financial Economics*, 126(3), 592–613.

¹⁷ To further verify the effect of cash holding on fund flow sensitivity, a sub-sample analysis between EME bond funds with high cash holding and low cash holding is performed. The result suggests that the fund flow sensitivity of high cash holding funds is 16% lower than that of low cash holding funds at negative return on average.

¹⁸ For empirical evidence about the effect of swing pricing, see Lewrick and Schanz (2017), "Is the price right? Swing pricing and investor redemptions", *BIS Working Papers*, No. 664.

¹⁹ Mutual funds domiciled in the US are allowed to adopt swing pricing only starting from 2018, which is beyond our sample period. For details, refer to: <https://www.sec.gov/rules/final/2016/33-10234.pdf>

²⁰ For details, see Sirri and Tufano (1998), "Costly search and mutual fund flows", *Journal of Finance*, 53(5), 1589–1622.

²¹ For the powerful influence of mutual fund advertisements on fund flow, see Jain and Wu (2000), "Truth in mutual fund advertising: evidence on future performance and fund flows", *Journal of Finance*, 55(2), 937–958.

²² According to the *OECD/INFE International Survey of Adult Financial Literacy Competencies 2016*, EME based investors generally have a lower level of financial knowledge.

- (3) The third explanation concerns the higher participation costs of EME bond funds.²³ A rational investor will invest in a fund only if its expected return exceeds participation costs. As the expected return of a fund is often based on its past performance, mutual funds with higher participation costs can attract inflow only when they have a track record of outperforming returns.²⁴ On the other hand, higher participation costs reduce the incentive of existing investors to unwind their positions in reaction to bad performance. While it is difficult to exactly measure participation costs due to the unobservable nature of certain components, we may still estimate their relative magnitudes by looking at the summary statistics of bond fund net expense ratios in Table B1.C. Together with the higher average transaction costs in emerging markets, it seems reasonable to conclude that investors in EME bond funds face higher participation costs when making fund investments.²⁵

Table B1.C
Net expense ratios of EME and US bond funds

Net expense ratios	EME bond funds	US bond funds
Eightieth Percentile	0.88	0.40
Sixtieth Percentile	1.05	0.58
Fortieth Percentile	1.25	0.78
Twentieth Percentile	1.56	0.97
No. of funds	410	939
Median	1.17	0.66

Source: Morningstar.

Note: The expense ratio is the percentage of fund assets paid for operating expenses and management fees in 2016. It is used as a proxy for transaction fees involved in investing in mutual funds.

Concluding Remarks

We find that EME bond funds display a *convex* flow-performance relationship. On the one hand, the potential concavity of these funds is mitigated by practices taken by fund management companies to dampen fund investors' incentives to redeem in reaction to bad performance. On the other hand, the bias of media coverage towards outperforming funds and the relatively high participation costs of EME bond funds increase the convexity of the relationship.

While our findings might to some extent relieve concerns about the fragility of EME bond funds, it is crucial to note that such a convexity critically depends on government regulations, investor base, policies of fund management companies and other factors. Any changes in these factors should be closely watched to ensure a correct assessment of fund flow sensitivity.

²³ Participation costs consist of (1) information cost of collecting and analysing information about a mutual fund before investing and (2) transaction cost of subscribing or redeeming fund units. For details, see Huang and Yan (2007), "Participation costs and the sensitivity of fund flows to past performance", *Journal of Finance*, 62(3), 1273–1311.

²⁴ For empirical evidence about how the expected return of a fund is related to its past performance, see Goetzmann and Peles (1997), "Cognitive dissonance and mutual fund investors", *Journal of Financial Research*, 20(2), 145–158.

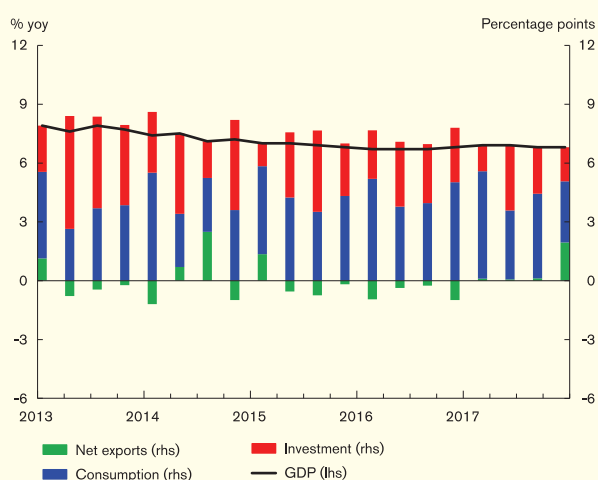
²⁵ For details about average transaction costs in emerging markets, see Ferreira et al. (2012), "The flow-performance relationship around the world", *Journal of Banking & Finance*, 36(6), 1759–1780.

2.2 Mainland China

Real sector

Notwithstanding short-term pressures on growth from the ongoing structural reforms and tightening measures in place to contain potential systemic risks, the Mainland economy fared well in the second half of 2017, underpinned by solid consumption as well as robust infrastructure and a rebound in industry spending. In the second half of 2017, real GDP expanded by 6.8% year on year, after growing by 6.9% in the first half (Chart 2.12). For 2017 as a whole, the Mainland economy registered 6.9% GDP growth, higher than the market expectation of 6.8% and the government's growth target of around 6.5%.

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

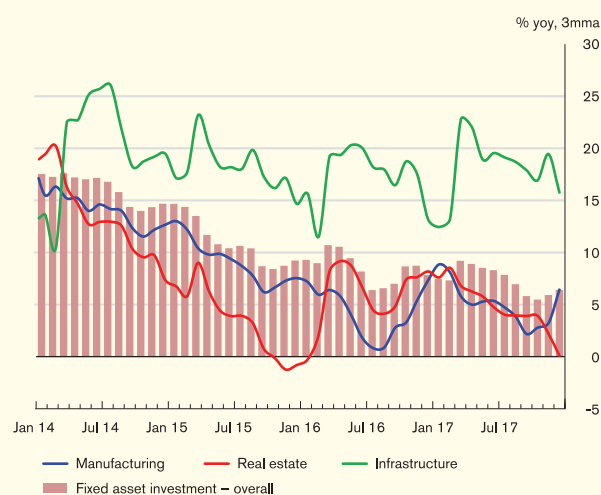


Sources: CEIC, NBS and HKMA staff estimates.

On the expenditure front, consumption remained robust in the second half of 2017 and continued to be the most important driver for economic growth, albeit showing some signs of moderation in the last quarter. On gross capital formation, overall business spending slowed amid the cooling of the real estate market. In contrast, manufacturing investment rebounded

in late 2017, while infrastructure expenditure remained strong (Chart 2.13). Externally, as import growth decelerated at a faster pace than export growth towards the end of the year, the contribution of net exports to overall growth increased in the second half.

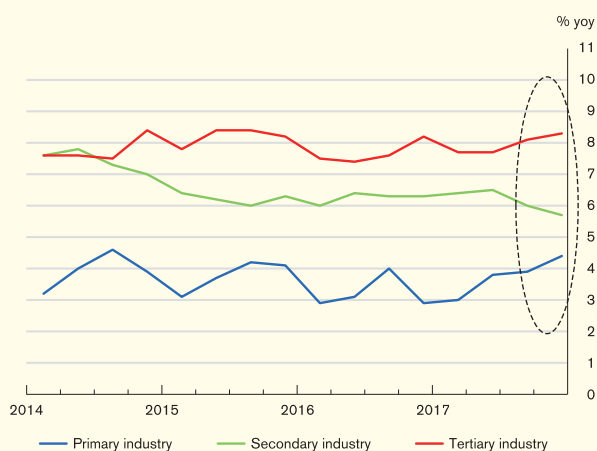
Chart 2.13
Mainland China: Fixed asset investment by industry



Sources: CEIC and HKMA staff estimates.

In value added terms, tertiary industry growth edged higher in the second half of 2017 despite a slowdown in the real estate sector (Chart 2.14). Strong business expansion in the service sector was underpinned by fast growth in subsectors, such as financial and information technology industries as well as the rapid development of the internet-related economy. In comparison, growth in the secondary industry slowed, in part reflecting slower construction activities amid the cooling of the property market, and further de-capacity and deleveraging in lower value-added and less efficient sectors, such as commodity-related mining and processing. Some higher value-added sectors such as electronic equipment and pharmaceuticals, continued to record strong growth.

Chart 2.14
Mainland China: GDP growth by industry



Sources: CEIC, NBS and HKMA staff estimates.

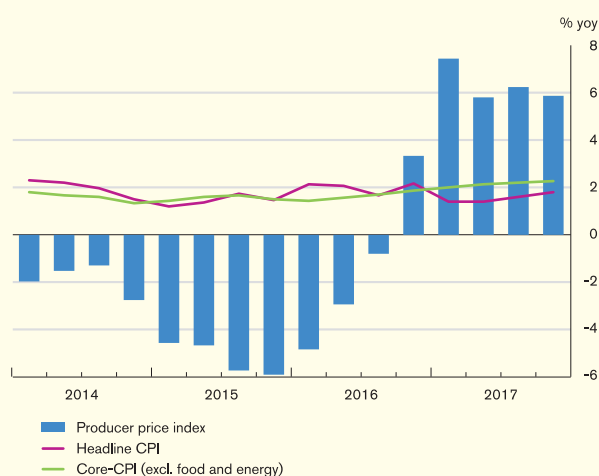
Looking ahead, the near-term growth prospects remain positive. In 2018, the authorities will continue to adopt a proactive fiscal policy stance, which may help cushion adverse economic developments, if necessary. In addition, there are increasing signs of the emergence of the “new economy” in past quarters, with strong business expansion in sectors such as high value-added manufacturing and services. However, it remains to be seen to what extent such positive business expansion could help offset the downward pressures exerted by the cooling of the property market and continued deleveraging and de-capacity of inefficient manufacturers if Mainland authorities push ahead further with structural reforms and contain potential systemic risks through tightening measures.

Despite better-than-expected economic performance in 2017, policymakers continued to set the economic growth target for 2018 at around 6.5%. This may reflect a higher tolerance of Mainland authorities for slower growth and a shift in policy focus to growth quality from speed. To achieve this, the government announced that containing financial risks, reducing poverty and tackling environmental pollution would be the key priorities for economic policy in the coming three years, along with the policy agenda to further push ahead

with the supply-side reforms. Latest consensus forecasts by market analysts expect real GDP to grow by 6.5% in 2018.

In the second half of 2017, consumer price inflation remained benign amid stable economic conditions, though increasing slightly from the first half. Headline consumer price inflation increased from 1.4% year on year in the first six months of 2017 to 1.7% in the second half, as declines in food prices narrowed from -2.2% year on year to -0.8% during the same period (Chart 2.15). Core inflation, after excluding food and energy prices, edged higher from 2.1% in the first half to 2.3% in the second half. At the wholesale level, producer price inflation hovered at a range of around 5–7% year on year in the second half amid elevated commodity prices.

Chart 2.15
Mainland China: Consumer price and producer price inflation



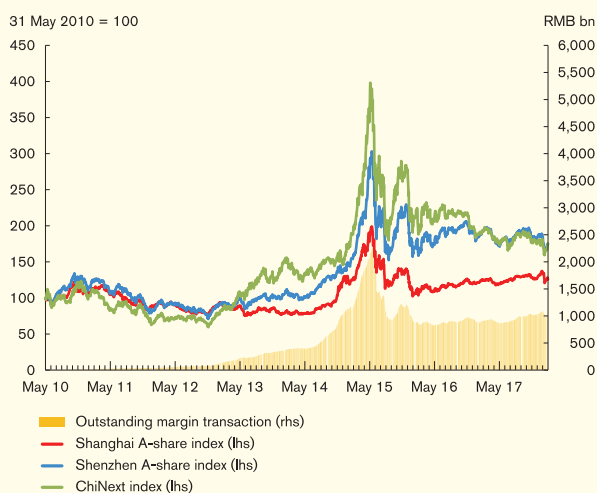
Sources: CEIC, NBS and HKMA staff estimates.

In the near term, elevated upstream price inflation may continue to pass through to consumer prices, while the low-base effect of food prices could also add upward pressures on headline inflation. However, offsetting factors such as the structural reforms and tightening policies in place aimed at containing systemic risk may further weigh on domestic demand and thereby help alleviate inflationary pressures.

Asset Markets

During the review period, the tightening measures introduced by the authorities to contain systemic risks continued to affect asset market performance in Mainland China. For instance, the equity market remained largely benign amid tightened liquidity conditions, with margin transactions staying at low levels (Chart 2.16).

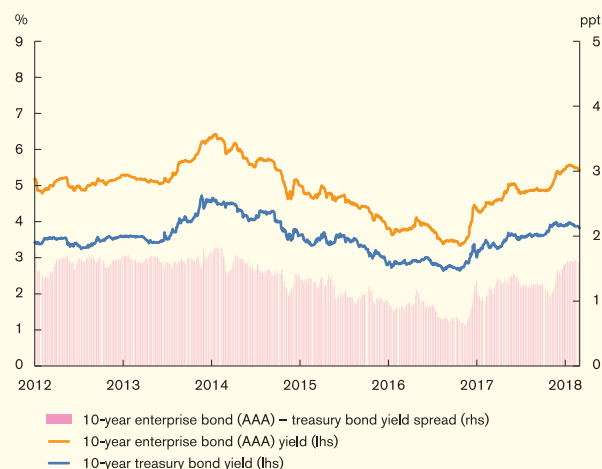
Chart 2.16
Mainland China: Major stock market indices



Sources: CEIC and HKMA staff estimates.

In the bond market, tightened interbank liquidity conditions continued to drive up issuance costs, with both 10-year government and enterprise bond yields picking up to a new high since 2015 (Chart 2.17). The yield spread between corporate bonds and government bonds also increased, despite improved corporate financial positions amid better-than-expected economic activities. Increased corporate bond yield spread might have in part reflected stronger financing needs of Mainland firms during the recent tightening in bank lending, as well as further reduced risk appetite of investors amid continued financial deleveraging.

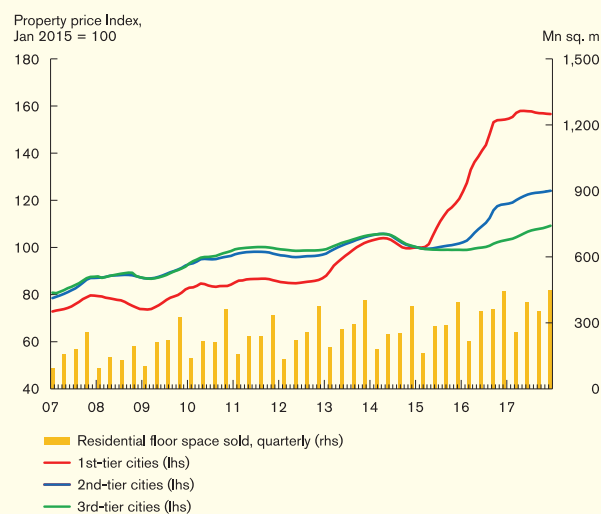
Chart 2.17
Mainland China: 10-year enterprise and government bond yields



Sources: Wind and HKMA staff estimates.

With the tightening measures in place, including increased down-payment requirements and home purchase and sale restrictions, Mainland property markets showed signs of cooling down during the review period, especially in first-tier cities. Housing prices in these cities have stabilised since mid-2017 (Chart 2.18), while property transactions were less active.

Chart 2.18
Mainland China: Residential prices by tier of cities and floor space sold



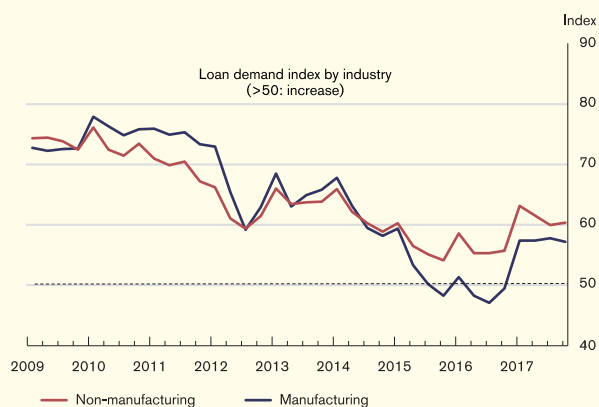
Sources: CEIC and HKMA staff estimates.

In lower-tier cities, property prices inched up further, but at a slower pace. Despite weaker market sentiment, housing oversupply issues, which plagued third-tier cities in previous years, remained largely in check. By the end of 2017, the inventory-to-sales ratio in third-tier cities declined to 14 months from the peak of 25 months in early 2015. There has been some cooling in the property market, but whether housing prices can be sustained at the current level, given stretched affordability, remains a key risk for Mainland financial stability. To contain the risk and promote a stable and healthy development of the property market, the authorities accelerated the construction of indemnificatory housing, while planning to speed up the development of the rental market along with a more flexible system to increase land supply, as proposed at the Central Economic Work Conference in December 2017.

Credit and asset quality

Amid robust economic performance, loan demand from Mainland companies remained strong in the second half of 2017. According to a quarterly survey by the People's Bank of China (PBoC), strong loan demand appeared to be across the board, coming from both manufacturers and service providers (Chart 2.19).

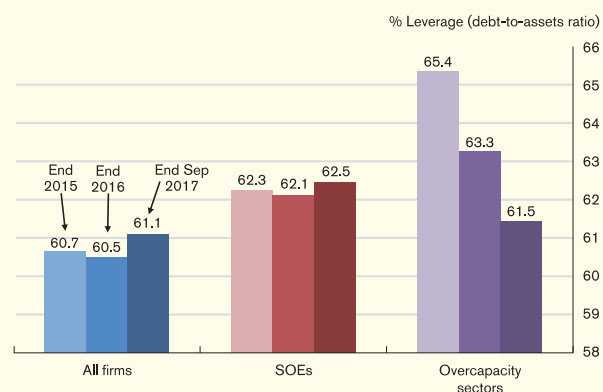
Chart 2.19
Mainland China: Loan demand index by industry



Sources: PBoC and HKMA staff estimates.

Despite the elevated loan demand, year-on-year growth in renminbi loans remained largely stable during the review period at around 13% amid the tightening measures aimed at corporate deleveraging. In particular, banks continued to strengthen their loan underwriting standards on vulnerable borrowers, which helped to keep in check the exposure of banks to firms in overcapacity sectors. As a result, the leverage ratio of firms in overcapacity sectors further declined with stronger growth in corporate earnings amid the recent economic recovery (Chart 2.20).

Chart 2.20
Mainland China: Corporate leverage of SOEs and overcapacity sectors

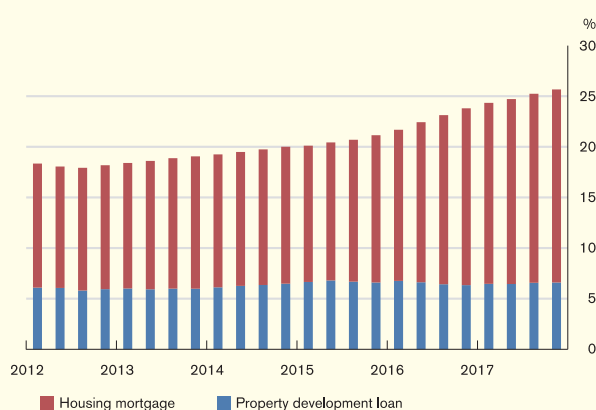


Sources: Bloomberg and HKMA staff estimates.

In comparison, the overall leverage ratio of SOEs picked up slightly in the first three quarters of 2017 amid strong infrastructure spending. Although this may suggest that Mainland banks' exposure to SOEs increased, there is also reason to believe that credit allocation efficiency among SOEs actually improved, probably as more bank loans were granted to SOEs with better repayment ability. Specifically, Box 2 shows that the borrowing constraint of SOEs with weaker repayment ability appeared to have hardened in recent years against those with better repayment ability. Although, in general, SOEs still enjoyed more favourable borrowing conditions than private firms. The tighter borrowing constraints were likely due to a drop in support, for example through implicit guarantees from local governments amid recent SOE reforms.

In view of the risks associated with recent developments in the property market, banks also further strengthened credit underwriting requirements to smaller and more vulnerable developers. As a result, the direct exposure of banks to property developers remained largely stable in 2017 at around 7% of total bank loans (Chart 2.21).

Chart 2.21
Mainland China: Share of mortgages and developer loans in total bank loans



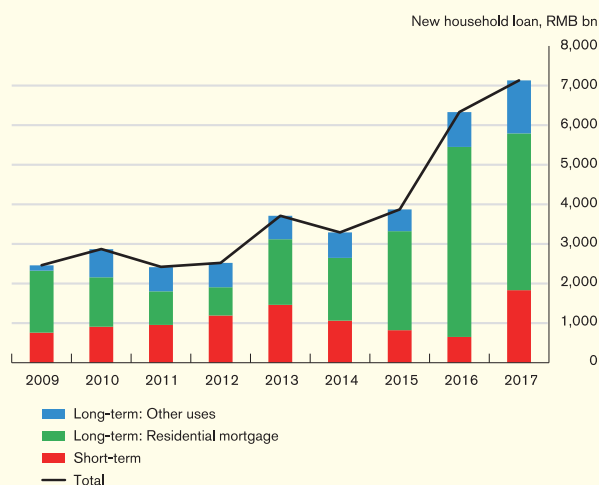
Sources: CEIC and Wind.

In contrast, Mainland banks' exposure to mortgages continued to pick up despite tightening measures in place, such as increased down payment requirements. That said, the size of the exposure remained not large at around 19% of total outstanding bank loans. In addition, the pace of expansion in such exposure slowed in tandem with a deceleration in mortgage loan growth amid a cooling property market in recent quarters.

However, while growth in mortgage loans slowed, some market analysts suggested that tightened loan-to-value ratios might have led home purchasers to use short-term loans to finance their mortgage down payment in recent quarters. Latest data shows that newly increased short-term household loans picked up notably from RMB650 billion in 2016 to RMB1,830 billion in 2017 (Chart 2.22). While the overall household leverage, measured by the total household loans over total household

deposits, remained low at around 49% in 2017, the fast expansion of household borrowing should still warrant close monitoring if the trend continues.²⁶

Chart 2.22
Mainland China: Short- and long-term newly increased household loans

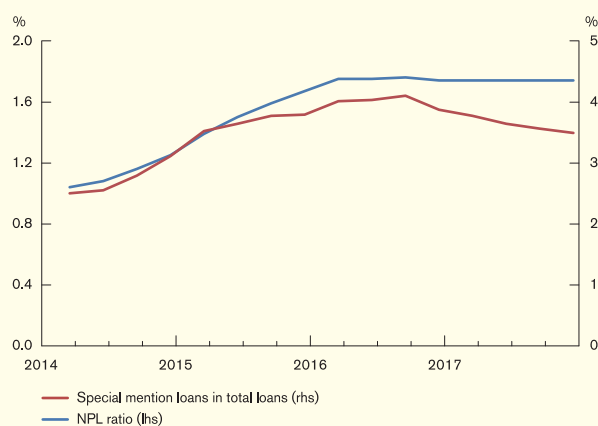


Sources: CEIC and HKMA staff estimates.

The asset quality of banks showed signs of improvement during the review period, thanks to subsided financial risks amid tightening measures and stable economic conditions. In particular, while the overall non-performing loan (NPL) ratio of Mainland banks stayed largely unchanged in the second half of 2017, the share of special mention loans in total bank loans continued to decline (Chart 2.23). Meanwhile, the bad debt coverage ratio of banks also improved slightly to 181% in the fourth quarter of 2017 from 176% at the end of 2016.

²⁶ Total household loans used in calculating Mainland household leverage include only consumption loans but not operating loans.

Chart 2.23
Mainland China: NPL ratio and the share of special mention loans in total bank loans

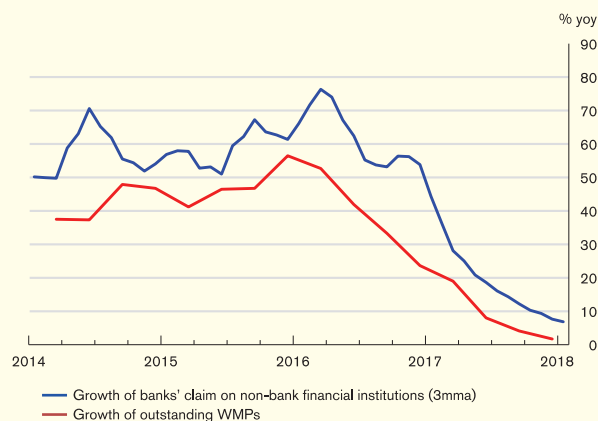


Sources: CBRC and HKMA staff estimates.

Despite the improvement in overall banking soundness, some weak links remained especially the asset quality of a number of smaller banks. For instance, the NPL ratios of rural commercial banks slightly increased to 3.2% at the end of 2017 from 2.8% in June.

During the review period, authorities stepped up oversight in the banking sector to reduce financial risks associated with shadow banking activities. In particular, authorities continued to push ahead with financial deleveraging to limit the involvement of banks in shadow banking activities. As a result, the expansion in banks' claim on non-bank financial institutions further slowed to a single-digit pace amid tighter liquidity conditions and higher interbank funding costs towards early 2018 (Chart 2.24), with the share of banks' claim on non-bank financial institutions in the total bank assets stabilising at around 12%.

Chart 2.24
Mainland China: Growth of bank's claim on non-bank financial institutions and outstanding wealth management products (WMPs)



Sources: CEIC, Wind and HKMA staff estimates.

In Mainland China, shadow banking activities are also financed by WMPs in addition to interbank funding. One reason for the rapid expansion of WMPs in the past few years is that Mainland investors tend to believe they will be bailed out no matter what happens, especially when the WMPs are issued by large banks. By the end of 2017, the outstanding size of bank issued WMPs totalled some RMB30 trillion, or 12% of total banking liabilities. In view of this, containing the potential systemic risk associated with the involvement of banks in WMP issuance and promoting a sustainable development of the wealth management business have become the key focus of authorities in Mainland China.

To this end, the authorities announced last November a plan to end the implicit guarantee underpinning asset management business including WMPs. This, together with other tightening measures in place, further weighed on the expansion of WMPs (Chart 2.24). Following the stabilisation in banks' exposure to non-bank financial institutions as well as WMP issuance, the expansion of shadow banking activities, such as trust lending and entrusted funds management by securities companies, also moderated notably in 2017 (Chart 2.25).

Chart 2.25
Mainland China: Growth of trust loans and entrusted funds managed by securities companies



Sources: CEIC and Securities Association of China.

Chart 2.26
Mainland China: The CFETS RMB index and the renminbi exchange rate against the US dollar



* Index before December 2015 is estimated according to the weight of the CFETS RMB basket.

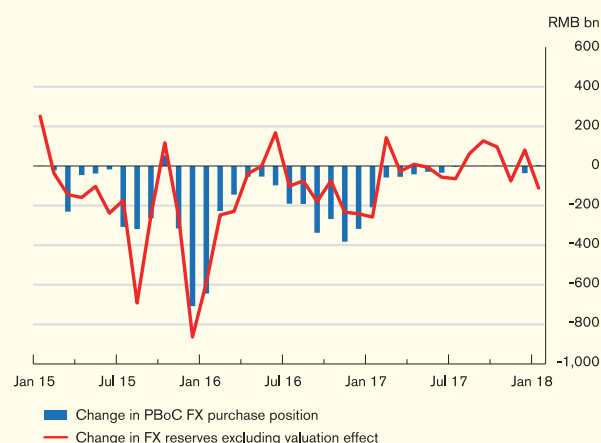
Sources: CEIC and HKMA staff estimates.

Exchange rate and cross-border capital flows

After having appreciated in the first three quarters of 2017 along with the weakening of the US dollar, the renminbi was traded in a narrow range between 6.5–6.7 against the US dollar for the rest of the year before rising further by 2.8% in the first two months of 2018 (Chart 2.26). The renminbi exchange rate strengthened against a basket of currencies, with the China Foreign Exchange Trade System (CFETS) RMB index rising by 2.9% during the review period. In early 2018, the PBoC announced that market makers contributing to the onshore renminbi (CNY) fixing formation could decide on their own whether to consider the counter-cyclical factor when submitting the CNY fixing quotation.

Amid the stable economic conditions and subdued financial risks, capital outflow pressures eased notably during the review period. Specifically, headline foreign reserves in Mainland China had increased for twelve months before retreating slightly to US\$3,134 billion in February 2018. In addition, the two most commonly-used measures for cross-border capital flows – the changes in foreign reserves excluding valuation effects as well as in the PBoC foreign exchange (FX) purchase position – both became notably less volatile in the second half of 2017 compared with the first half (Chart 2.27).

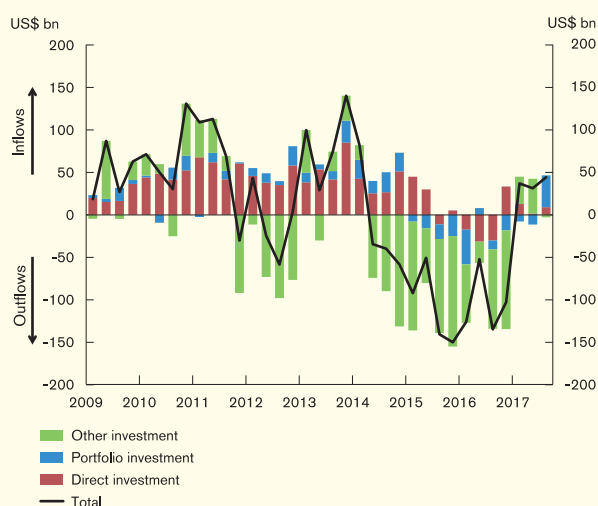
Chart 2.27
Mainland China: Changes in PBoC FX purchase position and foreign reserves



Sources: CEIC, SAFE and HKMA staff estimates.

The latest statistics on the balance of payments also pointed to reduced capital outflow pressures, with the net cross-border capital flows staying positive in the first three quarters of the year (Chart 2.28). In particular, while net cross-border flows through direct investment remained benign in the first three quarters of 2017, the notable net inflows through other investment in the first half were replaced by strong net inflows through portfolio investment in the third quarter.

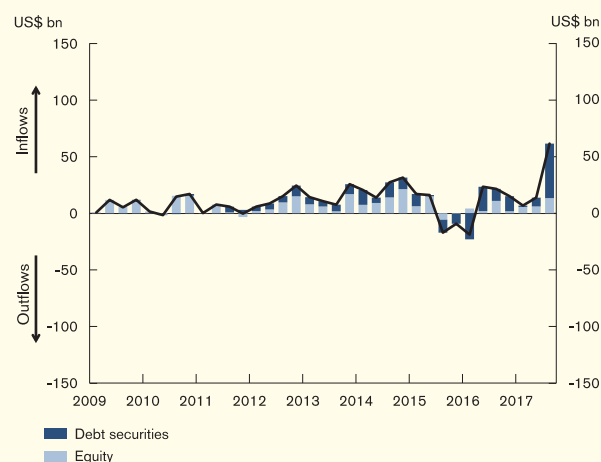
Chart 2.28
Mainland China: Net cross-border capital flows by type of flows



Sources: CEIC, SAFE and HKMA staff estimates.

A further breakdown of portfolio investment suggests the strong net inflows in the third quarter were likely driven by elevated offshore bond issuance by Mainland firms amid tightened onshore liquidity conditions, and increased foreign investment in onshore debt securities following the launch of the Bond Connect in July last year (Chart 2.29).

Chart 2.29
Mainland China: Cross-border capital flows through portfolio investment: liability side



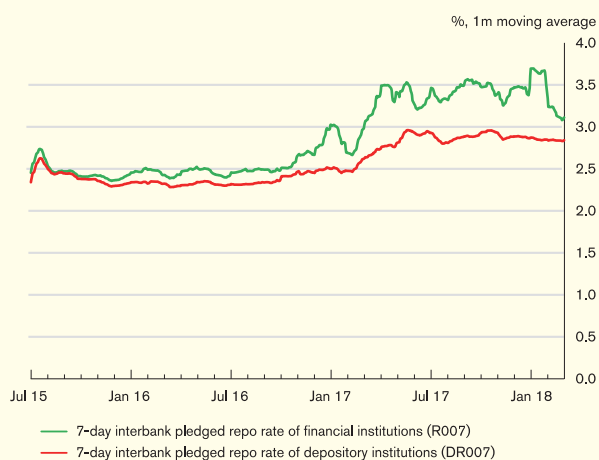
Sources: CEIC, SAFE and HKMA staff estimates.

Looking ahead, while capital outflow pressures may continue to stay subdued over the short term amid improved market sentiment, the uncertainties in monetary conditions among major advanced economies, future movements in the US dollar exchange rates as well as the potential impact of US tax reforms on fund repatriation would also affect the future outlook for cross-border fund flows in Mainland China.

Fiscal and monetary policy

On the monetary policy front, the PBoC continued to maintain a prudent and neutral policy stance during the review period. Reflecting authorities' determination to contain potential systemic risks through financial deleveraging, the interbank borrowing costs stayed elevated during the review period for both banks and non-bank financial institutions (Chart 2.30).

Chart 2.30
Mainland China: Interbank repo rates

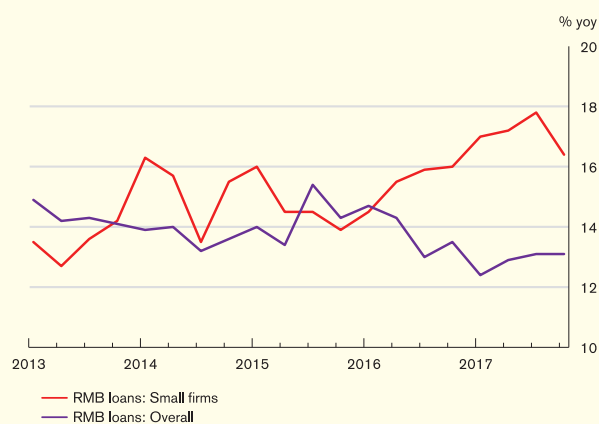


Sources: Wind and HKMA staff estimates.

Tight interbank liquidity conditions continued to push up the financing cost of end users during the review period, with the weighted average interest rate of loans offered to non-financial enterprises and other sectors further rising to around 5.7% in the fourth quarter of 2017 from 5.5% nine months earlier. With the increased interest rate, M2 growth as well as expansion in outstanding aggregate financing further slipped to 8.8% and 11.2% year on year respectively at the end of February 2018 from 9.5% and 12.8% at the end of June.

To offset the adverse effect of tightened liquidity conditions on the overall economy, the central bank continued to utilise targeted measures to support bank lending to the private sector, especially small- and medium-sized enterprises (SMEs). Since the second half of 2017, the outstanding size of the Medium-term Lending Facility (MLF) further expanded by 13.1% to RMB4,780 billion at the end of February 2018. The central bank also implemented a targeted cut in the required reserve ratio in January for banks providing sufficient support to inclusive financing, such as loans to small firms. As a result, bank loans extended to small firms expanded at a much faster pace than the overall bank lending growth in 2017 (Chart 2.31).

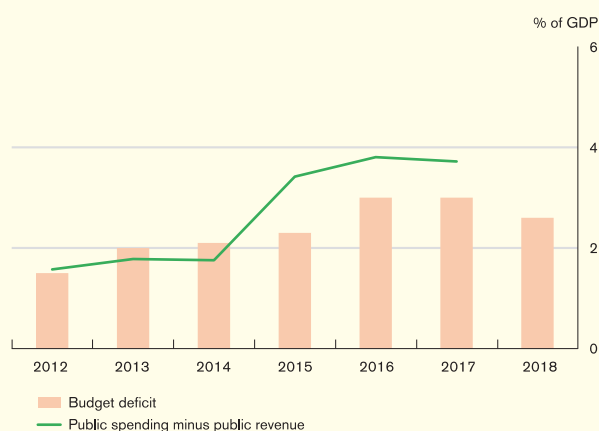
Chart 2.31
Mainland China: Growth of bank loans to small firms and total bank loans



Source: Wind.

Along with targeted easing by the central bank, authorities continued to adopt a proactive fiscal policy stance to stabilise the economy in view of the downward pressures exerted by the ongoing structural reforms in the short run. Apart from the 3.0% budget deficit, the authorities continued to draw down government extra-budgetary funds to finance increased public spending during the review period. Excluding the support from these funds, the gap between public spending and public revenue in 2017 was estimated to be around 3.7% of GDP, 0.7% higher than the budget deficit (Chart 2.32).

Chart 2.32
Mainland China: Budget deficit and difference between public spending and public revenue



Sources: Government Work Report, Wind and HKMA staff estimates.

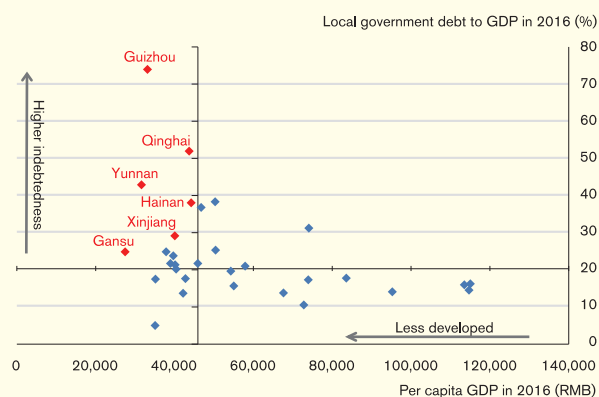
In 2018, fiscal policy will remain proactive. The Mainland government announced to maintain the budget deficit at RMB2.38 trillion, the same as in 2017, but the budget deficit to GDP ratio declined from 3% in 2017 to 2.6% in 2018 as GDP expands further.

In particular, to shore up private investment and consumption, the authorities will further cut business and household taxes by some RMB800 billion, and reduce business fees and costs by RMB300 billion this year. On the expenditure side, the authorities pledged to further invest in infrastructure projects in 2018. For instance, the government planned to funnel RMB732 billion in railway construction and RMB1.8 trillion in highway and waterway projects.

Reflecting the proactive fiscal policy, the liability of the Mainland government further increased. In 2017, Mainland local government debt expanded by 7.5% to RMB16.5 trillion, compared with an increase of 3.8% a year earlier. Thanks to the stronger nominal growth of GDP, the debt to GDP ratio for local governments actually declined slightly from 21% in 2016 to 20% in 2017.

Despite the decline in debt to GDP ratio, the risk associated with local government debt should not be ignored, especially for provinces with weaker fiscal positions. Our analyses suggest provinces such as Guizhou, Qinghai, and Yunnan, are likely to face greater repayment pressures given their relatively higher debt to GDP ratio and weaker economic fundamentals (Chart 2.33). Their repayment ability could be further worsened if land sales revenue declines in 2018 amid a further cooling in the property market.

Chart 2.33
Local government debt to GDP ratio and per capita GDP in 2016 by province



Sources: Wind and HKMA staff estimates.

To better contain the risk associated with local government debt, the authorities strengthened supervision of the irregular financing activities of local governments. In particular, in November 2017 the Ministry of Finance required local authorities to audit the existing public-private partnership projects which may help disguise local government borrowing activities. Meanwhile, the China Insurance Regulatory Commission also jointly issued a guideline with the Ministry of Finance in January 2018 to forbid local governments from conducting irregular financing activities through the insurance channels.

Box 2

Are SOE reforms in China going anywhere? Evidence from corporate borrowing constraints

Introduction

The misallocation of credit between SOEs and private firms has been a key distortion in the Mainland economy. While the private sector in total contributed around 60% of GDP, it only occupied around 40% of the outstanding bank loans in recent years²⁷.

This misallocation is mainly due to the fact that Mainland SOEs, compared with private firms, have generally been less productive but, with support from governments, usually enjoy better access to the credit market, especially bank loans. Therefore, hardening the borrowing constraint of inefficient SOEs by removing the implicit guarantee from governments has become a major focus of the ongoing structural reforms in Mainland China. These reforms are the key to successfully containing financial risks and promoting sustainable economic growth.

Despite the importance of addressing this credit misallocation, little information is available for policy makers to assess the progress being made, likely due to the fact that the borrowing constraint of SOEs, or indeed for any firm, cannot be directly observed. One way to measure the borrowing constraint of firms is to estimate how sensitive their investment is to the cash flow the firm generates. In general, a firm is deemed to be more financially constrained if it has to rely more on internal cash flows rather than borrowing to invest.

By estimating the investment-cash flow sensitivity of Mainland firms, this study examines the evolution of the borrowing constraints faced by Mainland SOEs and private

firms during recent economic transition. In addition, the study explores whether the changes in the borrowing constraints of SOEs, if any, could be due to reduced support from governments. This may shed some light on the recent progress of the SOE reforms in Mainland China.

An empirical framework to measure the borrowing constraint of firms

To estimate the borrowing constraint of Mainland firms, we follow the methodology first introduced by Fazzari, Hubbard and Petersen (1988) to measure the investment sensitivity of firms to the availability of the internally generated cash flows²⁸. The idea is that firms with tighter borrowing constraints usually have to rely more on internally generated cash flows to invest, and therefore tend to have higher investment-cash flow sensitivity. Our baseline regression specification is detailed as follows,

$$Inv_i = \beta_0 + \beta_1 CF_i + \beta_2 SOE_i + \beta_3 SOE_i * CF_i + \beta_4 X_i + u_i,$$

where Inv_i is newly increased investment, proxied by the change in tangible assets for firm i , and CF_i is firm i 's internally generated cash flow, measured by earnings before interest, tax, depreciation and amortisation. Both Inv_i and CF_i are normalised by the book value of firms' tangible assets.

²⁷ Loan figures were reported by the PBoC. Contribution of the private sector to GDP was cited from the State Council Circular on Private Investment, Circular no. 2016–12.

²⁸ Similar methodology for estimating borrowing constraints has been adopted in the literature to analyse Mainland firms. For example, Xu, Xu and Yuan (2013) used this to study the role of political connections in the investment behaviour of family firms, while Hericourt and Poncet (2009) investigated whether foreign direct investment helps alleviate domestic firms' credit constraints.

To compare the borrowing constraints facing SOEs and private firms, a dummy variable SOE_i and its interaction term with cash flow are added into the specification. X_i is the set of controlling variables in the specification, which captures other factors that could affect the investment of a firm, such as industry, leverage, size of sales, revenue growth, age of the firm and the firm's repayment ability²⁹.

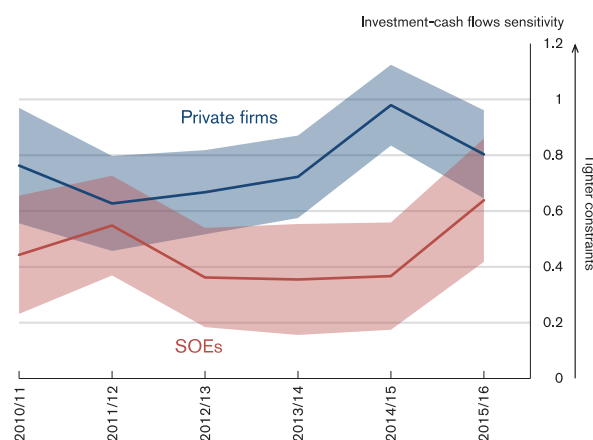
The coefficients of key interest are β_1 and β_3 , which capture firms' investment-cash flow sensitivity. In particular, β_1 measures the investment-cash flow sensitivity of private firms, while the sum of β_1 and β_3 captures the sensitivity of SOEs. A higher value of the coefficient therefore suggests greater sensitivity, and thus a tighter borrowing constraint facing firms.

Data and empirical results

Our dataset consists of around 2,500 non-financial listed firms in Mainland China, covering the period between 2010 and 2016. The investment-cash flow sensitivity of both SOEs and private firms are estimated with a rolling two-year window, which allows us to study the dynamics of the borrowing constraints of Mainland firms over time³⁰.

Our results suggest that SOEs tended to have notably lower investment-cash flow sensitivity compared with private firms for most of the time during the period 2010 – 2016, even after controlling for the differences in firm characteristics such as credit risk (Chart B2.1). Our finding seems to confirm the common belief that SOEs in general have better access to the credit markets than private firms in Mainland China.

Chart B2.1
Estimated investment-cash flow sensitivity of SOEs and private firms



Note: Shaded areas denoted the 95% confidence interval band.

Sources: HKMA staff estimates based on data from Bloomberg and CEIC.

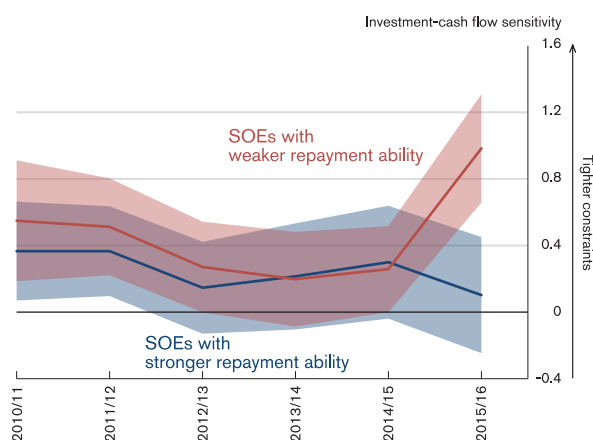
Chart B2.1 points to some signs of hardening in the borrowing constraint of SOEs in 2015 – 16, as the investment-cash flow sensitivity of SOEs picked up and became closer to the level of the sensitivity of private firms. Further analysis suggests that such result is likely driven by a significant hardening in the borrowing constraint of SOEs with weaker repayment ability. Specifically, the investment-cash flow sensitivity of SOEs with an interest coverage ratio below the sample median seemed to have increased notably in 2015 – 16 compared to those with a higher interest coverage ratio³¹ (Chart B2.2).

²⁹ The repayment ability of a firm is proxied by interest coverage ratio.

³⁰ In order to get smooth and less volatile estimates for each year, we use the two-year average for each variable for estimation.

³¹ As a robustness check, we examined other ways of identifying the weak borrowers, such as using an absolute cut-off point of interest coverage ratio or singling out the group of borrowers whose interest coverage ratios were consistently below the sample median during the entire sample period. We find that such alternations do not affect our conclusion.

Chart B2.2
Estimated investment-cash flow sensitivity of SOEs with higher and lower repayment ability



Note: Shaded areas denoted the 95% confidence interval band.

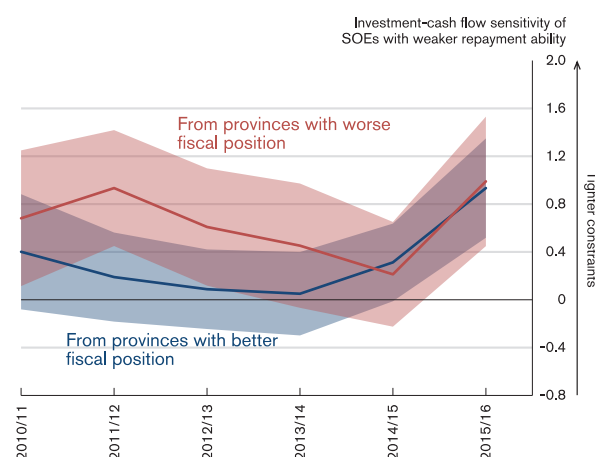
Sources: HKMA staff estimates based on data from Bloomberg and CEIC.

There are two competing explanations behind the hardening in the borrowing constraint of SOEs with weaker repayment ability. The first explanation is that Mainland banks have become increasingly sensitive to credit risk when lending to SOEs because of the structural reforms which have successfully reduced government support to SOEs in the form of implicit guarantees. Alternatively, the hardening in the borrowing constraint of SOEs with weaker repayment ability could simply reflect the situation that these enterprises happened to be located in provinces with worse fiscal positions and thus received less support from their local governments in recent years. Therefore, the hardening of the SOEs' borrowing constraints may not necessarily be related to SOE reforms.

Further examination of the location of Mainland firms provides little evidence that weaker SOEs were more concentrated in provinces with worse fiscal positions in 2015 – 16. In fact, the distribution of weaker SOEs across different provinces remained largely stable in recent years, with around half found to be located in the coastal area where for years local governments have enjoyed better economic performance, a lower debt burden and smaller fiscal deficits.

To explore whether reduced government support explains the hardening in borrowing constraints of SOEs with weaker repayment ability, we take a further look at weaker SOEs only and examine the dynamics of the borrowing constraint facing these SOEs in provinces with different fiscal positions.³² Our results suggest that in the early sample period, fiscal positions of local governments seemed to be an important factor in determining to what extent they could support SOEs to get credit. Therefore, weaker SOEs in provinces with better fiscal positions appeared to have enjoyed a relatively lower borrowing constraint than those located in provinces with worse fiscal positions (Chart B2.3).

Chart B2.3
Estimated investment-cash flow sensitivity of weaker SOEs in provinces with different fiscal positions



Note: Shaded areas denoted the 95% confidence interval band.

Sources: HKMA staff estimates based on data from Bloomberg and CEIC.

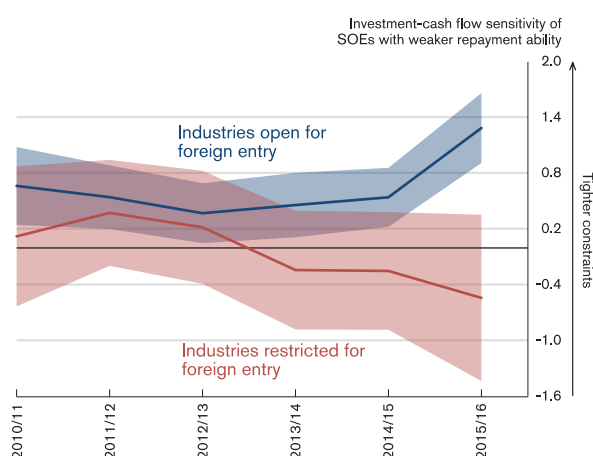
The gap between the borrowing constraints facing weaker SOEs in provinces with different fiscal positions, however, has disappeared in recent years, accompanied by a significant increase in their investment-cash flow sensitivity.

³² In this study, the fiscal position of a province is defined by the indebtedness of this province, proxied by the debt-to-GDP ratio of the provincial government. In particular, Beijing, Shanghai and provinces with debt-to-GDP ratio less than 30% are classified as provinces with better fiscal positions, while the remaining 17 provinces are classified as provinces with worse fiscal positions.

This seems to indicate that Mainland China has made some progress with SOE reforms. Indeed, provincial governments with better fiscal positions appear to have chosen in recent times to lower the implicit guarantee for less efficient SOEs even if these governments were in a better financial position to do so.

Despite reduced support by governments for weaker SOEs at the provincial level, government support seemed to remain strong in industries with restricted foreign entry. For instance, our analyses found that weaker SOEs generally appeared to have faced tighter borrowing constraints in industries open to foreign entry than in restricted industries (Chart B2.4).³³ In addition, such difference is found to have significantly widened in 2015 – 16, mainly due to a further hardening in the borrowing constraint of weaker SOEs in industries open to foreign entry. In comparison, the borrowing constraint of weaker SOEs in restricted industries appeared to have remained largely unchanged.

Chart B2.4
Estimated investment-cash flow sensitivity of weaker SOEs in industries open to/restricted for foreign entry



Note: Shaded areas denoted the 95% confidence interval band.

Sources: HKMA staff estimates based on data from Bloomberg and CEIC.

Little improvement in soft budget constraints facing weaker SOEs in industries with restricted foreign entry may suggest that government support remained strong for these protected industries. Thus, weaker SOEs in these industries could continue to enjoy more favourable borrowing conditions. In view of this, further SOE reforms are still needed to improve credit allocation efficiency in Mainland China.

Conclusion

This study analyses whether credit allocation efficiency has improved recently amid the ongoing SOE reforms in Mainland China by exploring the dynamics of the borrowing constraint facing Mainland SOEs. Non-financial listed Mainland firm data suggests that while SOEs in general still enjoyed better access to credit compared with private firms in recent years, there are some signs of a hardening in the borrowing constraint of SOEs, especially those with weaker repayment ability.

The tightened borrowing constraints was found likely driven by reduced support from local governments, which suggests that Mainland China has made some progress in the reforms aimed at lowering implicit guarantees for inefficient SOEs. However, further reforms are still needed as the soft budget constraint of weaker SOEs in protected industries with restricted foreign entry remains largely unchanged.

³³ Industry with restricted foreign entry is defined by the "Catalogue of Industries for Guiding Foreign Investment" released by the National Development and Reform Commission and the Ministry of Commerce in March 2015, including rare materials, public transportation, telecommunication, media and etc.

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