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## 2. Global setting and outlook

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*Heightened US policy uncertainties have followed in the wake of the surprise election victory of Donald Trump. While markets have focused on the near-term benefits of potential large-scale fiscal and pro-business policies, fiscal stimulus may provide only a small cyclical boost to US growth while adding further upside risks to inflation with the US economy already operating close to potential. More importantly, emerging market economies are facing increased risks from a faster rise in US interest rates and a strengthening US dollar, which could put pressure on capital outflows, while possible US protectionist measures will threaten global trade flows.*

*In East Asia, real economic activities improved somewhat in the second half of 2016, with exports picking up recently. However, financial market volatility is likely to remain and downside risks to growth have intensified in the face of higher US interest rates and stronger US dollar as well as possible protectionist trade policies from the US.*

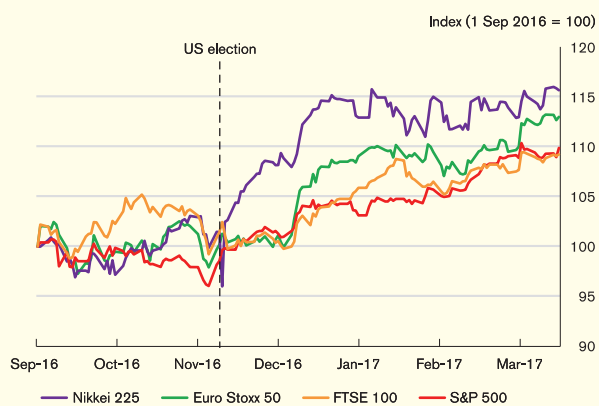
*In Mainland China, economic growth crept up in the second half of 2016 amid robust infrastructure investment and improved private sector business spending. While the economy continued to rebalance with robust expansion in the tertiary industry, the ongoing economic restructuring and the dynamics in the Sino-US trade relations may add uncertainty to the near-term economic outlook. The real estate sector would likely extend less support to growth this year if property markets continue to cool down along with the authorities' determination to rein in the housing price rally. On the external front, capital outflow pressures increased towards the end of 2016 amid the strengthening of the US dollar and an interest rate hike in the US before appearing to have eased somewhat in early 2017, despite the stability of the renminbi against the currencies in the China Foreign Exchange Trade System basket during the review period.*

### **2.1 External environment**

Global financial markets reacted strongly to the surprised election victory of Donald Trump, particularly major equity markets which rallied on the hopes that Donald Trump would engage in tax reform, large-scale infrastructure spending

and deregulation that would drive stronger US growth and higher US inflation (Chart 2.1). As a result, market expectations for US inflation and US interest rates jumped, leading to a sharp rise in US Treasury yields and a strengthening of the US dollar.

**Chart 2.1**  
Equity market indices in selected advanced economies (AEs)



Source: Datastream.

However, the much-anticipated Trump tax cuts may not have such a positive impact on US growth as markets may have expected. Although a policy shift towards fiscal loosening would alleviate the heavy burden placed on monetary easing, its timing remains questionable at this stage in the US business cycle. Despite growth moderating in recent quarters, the US economy is already operating close to full potential, with the output gap narrowing and the unemployment rate matching the Federal Reserve's (Fed) estimated natural rate of 4.7% in February. With the US economy already on an expansionary cycle, the fiscal multiplier would be smaller compared to recession periods (e.g. see Auerbach and Gorodnichenko (2012))<sup>1</sup>. In fact, recent estimates of the US Laffer curve suggest that a cut in taxes on either labour or capital is likely to result in tax revenue losses (e.g. see Trabandt and Uhlig (2012)).<sup>2</sup>

Nevertheless, any further stimulative effect on growth, albeit possibly small, could lead to higher inflation amid dwindling spare capacity. Other factors including surging oil and commodity prices and potential trade protectionist measures, such as the border adjustment tax currently being considered, would also likely exacerbate upside risks to US inflation.

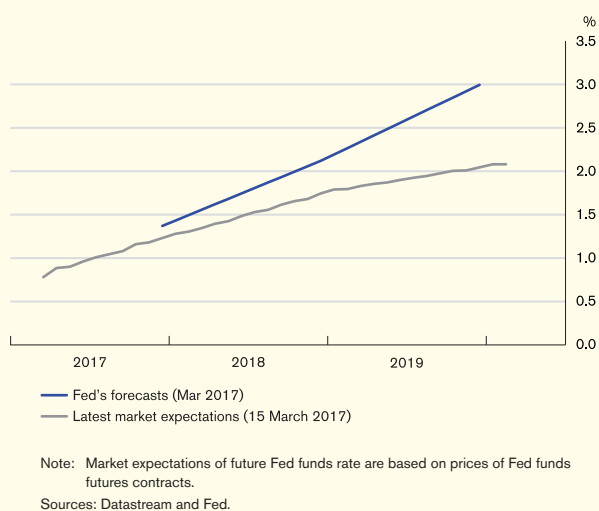
Despite these increasing risks, the Fed has continued to remain cautious on tightening US monetary policy and leans towards keeping its ultra-accommodative monetary stance. Nevertheless, long-term bond yields have already risen, partly reflecting the rising US inflation risk. While market expectations of future Fed funds rate have moved closer to the Fed's median projections over 2017 and early-2018 since the election, they remain considerably below those of the Fed's over the longer term (Chart 2.2). Therefore, a faster rise in US interest rates could pose the risk of inducing significant market volatility.

While financial markets have focused on the near-term benefits of potential expansionary fiscal and pro-business policies driving stronger US growth, longer-term risks such as harmful protectionist trade policies and a possible rise in US public debt remain. Indeed, there are risks that the Trump administration could follow through on its election pledges and adopt trade-protectionist measures. More barriers to trade would create welfare-reducing distortions, hamper global trade flows, weaken global supply chain efficiency and pose downside risks to the global economic outlook.

<sup>1</sup> Auerbach, A. J., & Gorodnichenko, Y. (2012). *Measuring the output responses to fiscal policy*. American Economic Journal: Economic Policy, 4(2), 1-27.

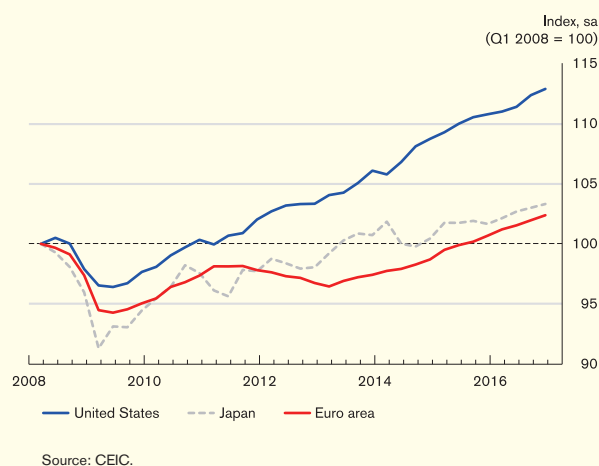
<sup>2</sup> Trabandt, M., & Uhlig, H. (2012). *How do Laffer curves differ across countries?* (No. w17862). National Bureau of Economic Research.

**Chart 2.2**  
**Future Fed funds rate projections: Fed versus the market**



Across the Atlantic, political instability remains a major risk and headwind to the recovery in Europe. While economic conditions have gradually improved with real Gross Domestic Product (GDP) of the euro area economy growing moderately at 1.7% year-on-year in the fourth quarter, only a touch slower than the 1.8% recorded in the third quarter, economic activities are still barely above the levels before the global financial crisis (GFC) (Chart 2.3) as opposed to the stronger recovery in the US. Following the Brexit decision last summer, there remain lingering concerns of an ultimate breakup of the euro area. Although the economic and political situation appears to have stabilised in Italy following the formation of a new government and the banking sector bailout, the upcoming elections in Germany, France and possibly Italy would likely become political flash points amid the Brexit negotiations and the build-up of anti-establishment sentiment. Partly as a result of deepening political uncertainties, sovereign bond yields have been rising across Europe with the corporate bond spread also widening, particularly in peripheral countries. This poses the risk of inducing a negative feedback loop to the real economy and may weigh on real investment in the euro area.

**Chart 2.3**  
**Real GDP of major AEs**



In Japan, the recovery has been stronger than previously expected after real GDP growth was revised upwards for recent quarters with the annual growth rate picking up to 1.6% year-on-year in the fourth quarter of 2016, the fastest pace since the third quarter of 2015. Nevertheless, consumption growth remained sluggish amid subdued wage growth, partly reflecting the structural problem of the dual labour market. The recent sharp depreciation of the yen also means the downward pressure from the earlier yen appreciation on the “new core” goods inflation may soon begin to dissipate. This, together with the stronger-than-expected recovery, suggests the near-term inflation outlook has improved with the recent fall of the “new core” inflation (excluding fresh food and energy) to 0.1% in December likely to bottom out. However, the risks of inflation undershooting the Bank of Japan’s 2% target over the medium term remain as growth is likely to stay moderate amid secular and structural headwinds while inflation expectations also remain subdued at around 0.5% – 0.6%, below levels prior to the launch of Abenomics in early 2014.

For the rest of the world, especially for emerging market economies (EMEs), the benefits of faster US growth may yet be smaller through the trade channel given weakened US import intensity after the GFC and potential protectionist policy

in the US. At the same time, downside risks stemming from tightening financial conditions have intensified, including a faster rise in US interest rates and further strengthening of the US dollar. This could dampen economic growth and heighten the risks of sharp capital outflows.

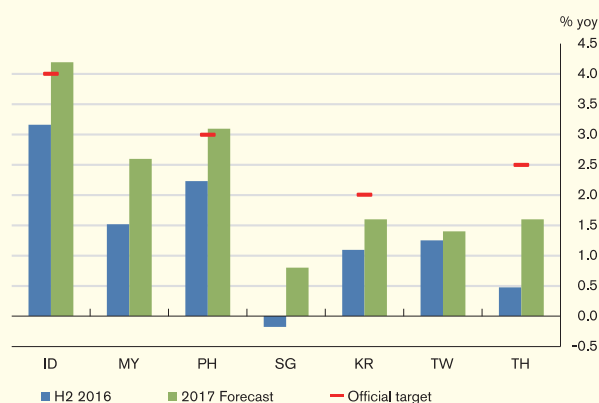
Indeed, the repricing of inflationary risk amid expectations of large-scale fiscal expansion under the Trump administration and concerns over surging energy inflation have led to widespread and notable increases in long-term yields, not only in AEs but in many EMEs as well. Box 1 assesses the potential spillover impact of higher interest rate expectations in the US on the sovereign bond markets in 26 selected economies.

In East Asia<sup>3</sup>, real economic activities gained some momentum recently, with marginal improvement in GDP growth and inflation picking up.

- **Real GDP growth** – Economic growth was generally steady in the second half of 2016, as private consumption held up in a number of regional economies. Exports generally rose moderately from a low base in 2015. The improved performance of developed market economies such as the US and Europe helped, as has the stabilisation of growth in Mainland China. For net exporters of commodities like Malaysia and Indonesia, the rebound in commodity prices has been an additional boost. Other major exporters such as South Korea, Taiwan and Singapore have also regained momentum due to stronger electronic and semiconductor exports.

- **Inflation** – With the reflation in commodity prices, and oil in particular, producer price inflation has generally been on an upward trend. While this will push up costs for industries and potentially for consumers, the reduced risk of prolonged deflation may actually help consumption and investment growth. Faster producer price inflation may pose upward pressure on consumer price inflation, but the actual impact will depend on the extent of pass through from producer prices to consumer prices, which varies across economies. Consensus forecasts of consumer price index (CPI) suggest inflation will move closer to, but still remain below, a number of regional central banks' targets in 2017 (Chart 2.4). Central banks in East Asia have generally kept the monetary policy stance unchanged at an accommodative level of interest rates, except for Indonesia which cut interest rates twice in September and October to support growth.

**Chart 2.4**  
East Asia headline CPI inflation, forecasts and central bank targets



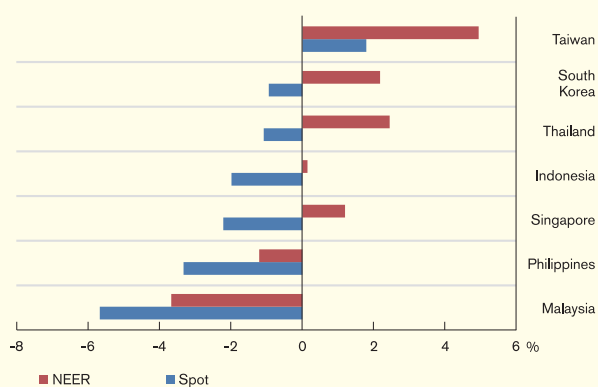
Sources: CEIC, Consensus Forecasts.

Despite improvement in the real economy, the surprise outcome of the US presidential election in November generated greater short-term volatility in financial markets.

<sup>3</sup> East Asian economies refer to Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand.

- **Foreign exchange market** – Most regional currencies depreciated against the US dollar following the US presidential election amid reflationary expectations in the US. Nevertheless, in trade-weighted terms some regional currencies have fallen by less or even appreciated slightly since the election (Chart 2.5).

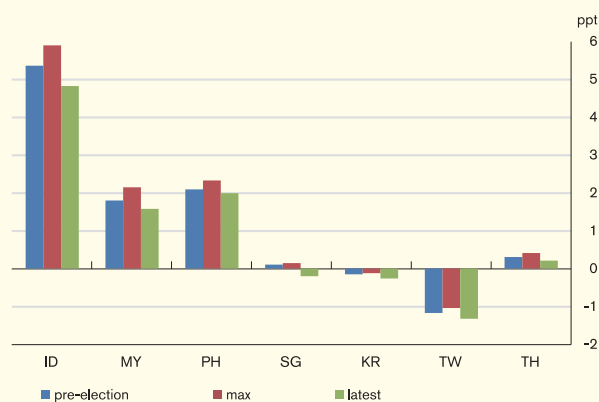
**Chart 2.5**  
Spot foreign exchange depreciation against US dollar vs change in nominal effective exchange rate since the US presidential election



Note: Data from 8 November 2016 to 8 March 2017.  
Sources: BIS, Bloomberg.

- **Bond and equity markets** – Asset prices initially fell sharply after the US presidential election, but stabilised relatively quickly. Sovereign bond spreads of East Asian economies increased against US Treasury yields. However, yields in some regional economies have since fallen as the market stabilised, although they have yet to return to the pre-election rates (Chart 2.6). Nevertheless, the spread has narrowed compared with the period before the election.

**Chart 2.6**  
10-year sovereign bond yield spread over US Treasuries



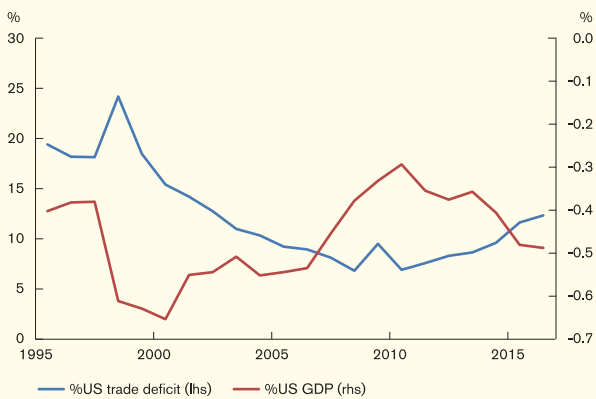
Note: Data from 8 November 2016 to 8 March 2017.  
Source: Bloomberg.

- **Portfolio flows** – East Asia saw portfolio outflows in the final quarter of 2016, but the rate was less than that during the “taper tantrum” in mid-2013. Fund inflows were seen again in the first few weeks of 2017, helping to support asset valuations and financial conditions.

Looking ahead, growth in the region is likely to be stable, but still at a pace below their historical average. Financial market volatility is likely to remain elevated amid heightened policy uncertainty in the US and the associated policy response from the Fed. There is a risk that a sharp rise in the US dollar and yields could induce capital outflows from the region to the US, posing risks of an unwinding in asset markets, particularly those that are already stretched. The resultant tightening of financial conditions could also pose pressure on the debt repayment capacity of companies with significant dollar-denominated liabilities. On a macro level, higher global interest rates may also reduce fixed capital investment in the region, with long-term potential growth implications while being a near-term drag on aggregate demand.

Finally, exporters face the potential threat of protectionist trade policies from the new US administration. The US trade deficit with East Asian economies has been widening in recent years (Chart 2.7), especially in major export sectors from the region, such as electronics, electrical appliances, cars, apparel and textiles. The US has also seen a rise in imports and job losses in these sectors over the past couple of decades. Protectionist policies aimed at reducing the trade deficit and reshoring production to the US could be a major risk to exporters in the region.

**Chart 2.7**  
**US trade balance with East Asian economies as**  
**% of US trade deficit and GDP**



Sources: US Census Bureau, Bureau of Economic Analysis.

## Box 1 Term premium spillovers from the US to international markets

### Introduction

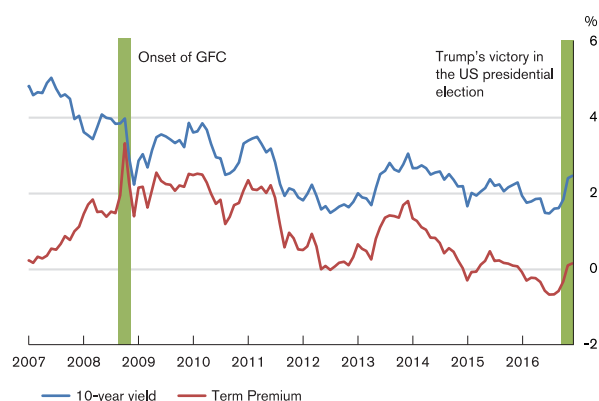
The ultra-accommodative monetary policy adopted by the US since the 2008 GFC has compressed the long-term yields to an unprecedented low level in the US. However, risk to US inflation has tilted to the upside recently amid concerns over surging energy inflation and expectations of a large-scale fiscal expansion under the Trump administration at a time when economic slack in the US is already diminishing. Such a repricing of inflationary risk quickly reverberated globally, leading to widespread and notable increases in long-term yields not only in advanced economies (AEs), but also in many EMEs (Charts B1.1 and B1.2). Against this background, this box assesses the potential spillover impact of higher interest rate expectations in the US on the sovereign bond markets in 26 selected economies (Table B1.A).

### Theory and empirical settings

In theory, long-term interest rates can be decomposed into two key components according to the expectations hypothesis: (1) an expectation of future short-term rates; and (2) term premium. While the former is an expected return from investing in long-term bonds, the latter is the additional return that compensates investors for holding a long-term bond as opposed to rolling over a sequence of short-term bonds over the same period. Given that inflation erodes the nominal value of long-term bonds more than the short-term counterpart, a positive term premium can be interpreted as a compensation for the inflation risk. Thus, instead of assessing the sovereign bond yields directly, we examine the issue through assessing the term premium component that captures transmission of uncertainty about inflation in this analysis. Over the past 30 years, the US term premium estimated by the Federal

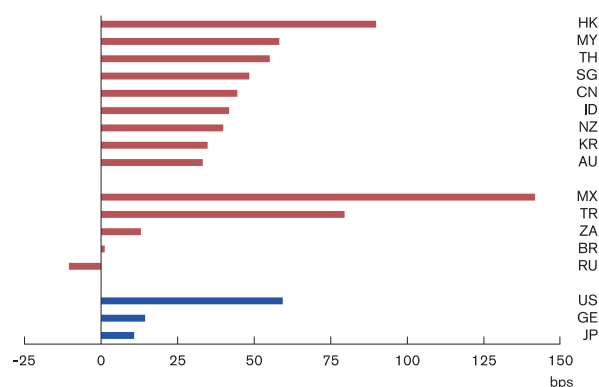
Reserve Bank of New York tracks closely with the 10-year Treasury yields (Chart B1.3).

**Chart B1.1**  
10-year US Treasury yield and term premium from 2007 to present



Source: Federal Reserve Bank of New York.

**Chart B1.2**  
Change in 10-year sovereign bond yields since the US presidential election

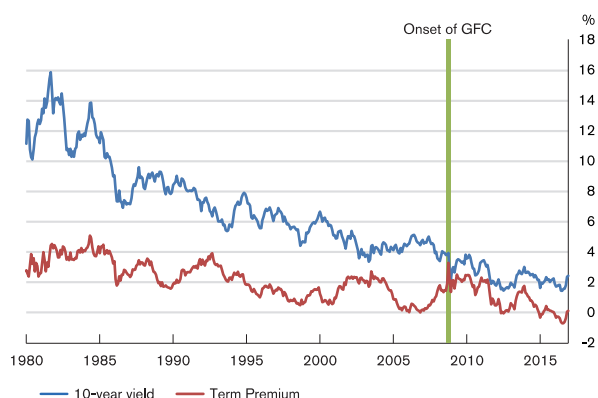


Notes:  
1. 7 Nov 2016 – 6 Jan 2017  
2. 7 Nov 2016 – 30 Dec 2016 for HK and RU  
Source: Bloomberg.

**Table B1.A**  
Eight AEs and 18 EMEs

Group		Economy
AEs		US, Japan, UK, Italy, France, Germany, Canada, Spain
EMEs	Emerging Europe and Africa	Czech, Hungary, Poland, Turkey, South Africa
	Latin America	Brazil, Chile, Colombia, Mexico, Peru
	Emerging Asia	Mainland China, Hong Kong, India, Indonesia, the Philippines, Singapore, South Korea, Thailand

**Chart B1.3**  
**10-year US Treasury yield and term premium**  
**since 1980**



Source: Federal Reserve Bank of New York.

The decomposition is done by estimating an affine term-structure model which takes into account both cross section and time series dimensions of the yield curve data.<sup>4</sup> Based on a vector autoregressive (VAR) model using these estimated term premia as the endogenous variables, we conduct an impulse response analysis to evaluate how term premia in other economies would respond to an interest rate shock of a 200-basis-point increase in the US term premium. This interest rate shock mimics a rise in the US term premium from the current level of 0.14% at December to its long run pre-crisis mean level of 2.2% between 1980 and 2008. To control for the effect of global factors that could affect the global financial markets, we include the Chicago Board Options Exchange Market Volatility Index and the US dollar index as exogenous variables in the regression.

We collect weekly zero-coupon bond data of each economy with various tenors starting from 1989 for the term premium decomposition.<sup>5, 6</sup> As the global sovereign bond markets have become more synchronised following the “taper tantrum” in May 2013, we focus on two sample periods in our impulse response analysis, covering the periods from January 2011 to May 2013 and from June 2013 to December 2016.<sup>7</sup> For ease of discussion, we classify the economies into four groups: (i) AEs excluding the US (AExUS), (ii) Emerging Europe and Africa (EMEA), (iii) Latin America (LatAm), and (iv) Emerging Asia (EmAsia).

### Empirical findings

Table B1.B summarises the contribution of the term premium component to the 10-year sovereign bond yields. As can be seen, term premium explains a significant amount of the fluctuations in the sovereign bond yields for the US and other economies, with an explanatory power of 82% on average during the sample periods. While previous studies only focus on AEs, we find that the significant contribution of term premium in driving the long-term bond yields is also applicable to EMEs.

<sup>4</sup> The affine term-structure model is a commonly used method in the literature. It assumes that the driving forces of the yield curve are the first three principal components of the yield curve. The model imposes no-arbitrage conditions in deriving the expectations components and term premium. For details, see Joslin et al. (2011) “A New Perspective on Gaussian Dynamic Term Structure Models”, *Review of Financial Studies*, Vol. 24, pages 926-970.

<sup>5</sup> Zero-coupon bond data include bond data with tenors of 3-month, 6-month, 1-year, 2-year, 3-year, 5-year, 7-year and 10-year.

<sup>6</sup> It is worth noting that only some economies in the sample have yield curve data from 1989. For each economy, we take the longest possible data from Bloomberg as a sufficiently long data is less prone to identification problems inherited in the estimation of affine term structure model. For details, see Bauer et al. (2013), “Correcting Estimation Bias in Dynamic Term Structure Models”, *Journal of Business and Economic Statistics*, Vol. 30, pages 454-467.

<sup>7</sup> For details, see Fong et al. (2016), “Measuring Spillovers between the US and Emerging Markets”, *HKIMR Working Paper No.8/2016*.



**Table B1.B**  
Share of 10-year yield variation due to term premium from 2011 to 2016

Economy group	Share
US	83%
AExUS	80%
LatAm	86%
EmAsia	83%
EMEA	79%
<b>All economies' average</b>	<b>82%</b>

Note: Denote  $Y$ ,  $RN$  and  $TP$  as the 10-year yield, the expectation component and term premium respectively, then  $Y = RN + TP$ . Given that  $RN$  and  $TP$  may not be always positive, the share in Table B1.B is approximated by  $\frac{\Delta TP^2}{\Delta TP^2 + \Delta RN^2}$  where  $\Delta$  is the difference operator.

Source: HKMA staff estimates.

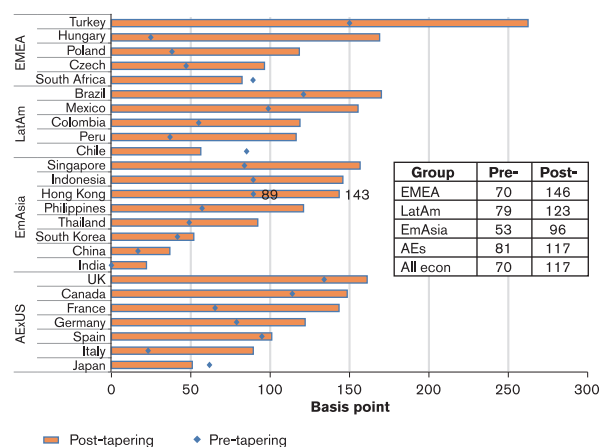
Chart B1.4 shows the cumulative impulse responses in term premium to the US shock during the two sample periods, with the economies in each economy group ranked according to their response's magnitude in the post-tapering period. Taking Hong Kong as an example, the estimated increase is 89 basis points in the pre-tapering period, compared with the increase of 143 basis points in the post-tapering period.

Firstly, the estimated responses of all economies in the post-tapering period are mostly stronger than those in the pre-tapering period, except for South Africa, Chile, and Japan. On average, the estimated increase in term premium for all economies is 70 basis points in the pre-tapering period and 117 basis points in the post-tapering period. This result suggests that the differentiation between the valuation of the US and other economies' long-term sovereign bonds has narrowed since the taper tantrum.

Secondly, by comparing the estimated increases of EMEs in the post-tapering period, economies in EMEA are the most responsive to the US shock on average (146 basis points), followed by those in LatAm (123 basis points) and EmAsia (96 basis points). This probably reflects the fact that geo-political instability remains a key risk confronting emerging economies in EMEA, while the relatively stronger economic fundamentals eases part of the risk in Asian economies in the post-tapering period.<sup>8</sup>

Finally, the spillover impact on AEs is comparable with that on EMEs. On average, the estimated increase in term premium in AEs is 117 basis points in the post-tapering period. The commensurate response may partially stem from heightened economic and political uncertainties in some core European economies with closer trade and financial linkages with the US.

**Chart B1.4**  
The 10-week cumulative responses to a 200-basis-point increase in the US term premium



Note: Pre-tapering period denotes Jan 2011 to May 2013. Post-tapering period denotes Jun 2013 to Dec 2016.

Source: HKMA staff estimates.

<sup>8</sup> As a reference, the average real GDP growth from June 2013 to December 2016 in EmAsia is 4.6%. The corresponding figures for AEs, LatAm and EMEA are 1.4%, 2.2% and 3.1% respectively.

### Conclusion

In summary, our empirical results show that the influence of the US Treasury bond market on other sovereign bond markets has increased since the taper tantrum in 2013, and that higher interest rates and tighter financial conditions in the US will significantly affect many AEs and EMEs. If a repricing of inflation risk leads to a rapid surge in the long end of the US yield curve, the impact on other economies may potentially be outsized.<sup>9</sup> In particular, increases in sovereign bond yields may lead to higher borrowing costs in the private sector that would have a material impact on EMEs with weaker underlying growth and a heavier sovereign debt financing burden. Presently, how the expansionary fiscal policies proposed by the new US administration may impact the US economy and affect the trajectory of future US long-term interest rates should come under close scrutiny.<sup>10</sup>

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<sup>9</sup> It is worth noting that an increase in short-term interest rates due to the Fed tightening may not always lead to an increase in the long-term interest rates. One recent example is the Greenspan conundrum in 2005, during which the US long-term interest rates remained flat when the Fed started the tightening cycle as term premium actually fell (see Chart B1.3). For details on the Greenspan conundrum and its association with term premium, see Backus and Wright (2007), "Cracking the Conundrum", *Brookings Papers on Economic Activity, Economic Studies Program, The Brookings Institution, vol. 38(2007-1)*, pages 293-329.

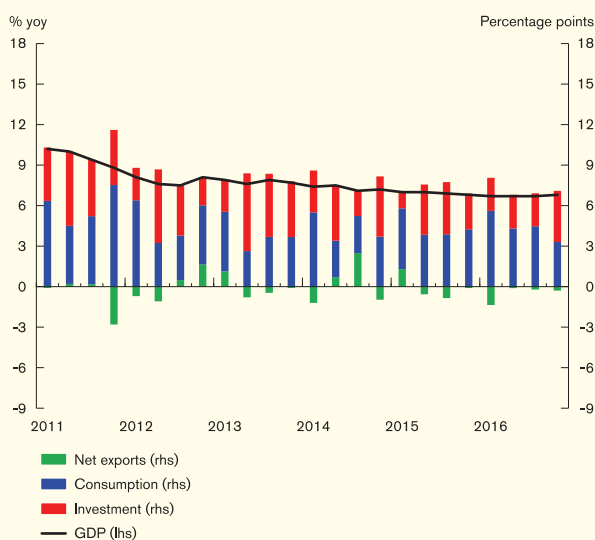
<sup>10</sup> If the expansionary fiscal policy can lift the US economy significantly, which leads to substantial inflationary pressure, the Fed would respond by raising its policy rate thus leading to a possible increase in the US long-term interest rates.

## 2.2 Mainland China

### Real sector

In Mainland China, economic growth crept up in the second half of 2016 amid robust infrastructure investment and improved private sector business spending. In particular, real GDP rose by 6.8% year on year in the last quarter, compared with an average of 6.7% in the first three quarters (Chart 2.8).

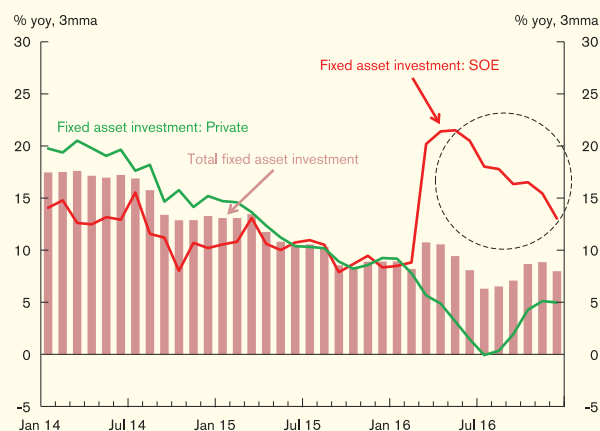
**Chart 2.8**  
Mainland China: contribution to GDP growth by demand component



Sources: CEIC, NBS and HKMA staff estimates.

Among major GDP components, consumption growth remained solid, supported by robust growth in household income amid firm labour market conditions. On the investment front, the contribution of gross capital formation to real GDP growth increased in the second half of 2016, underpinned by robust infrastructure investment through state-owned enterprises (SOEs) and a rebound in non-state-owned business spending since July last year (Chart 2.9). The contribution of net exports to real GDP growth, however, continued to stay negative in the second half of the year, as imports expanded at a faster pace than exports amid improved domestic demand. For 2016 as a whole, real GDP expanded by 6.7%, in line with the government growth target of 6.5%-7.0% for the year.

**Chart 2.9**  
Mainland China: Fixed asset investment growth by type of enterprise



Sources: CEIC and HKMA staff estimates.

In value added terms, tertiary industry recorded faster growth in the second half of 2016 and remained the major driver of growth. In particular, despite the moderation in growth of the financial and real estate sectors, there was acceleration in growth of other service sectors such as transportation and storage as well as wholesale and retail trade. Meanwhile, growth of secondary industry remained largely stable during the period, as the slowdown in the construction sector was offset by expansion in the manufacturing sector. With the growth rate of tertiary industry outpacing other industries, the share of tertiary industry in GDP rose further to 51.6% in 2016 from 50.2% in 2015.

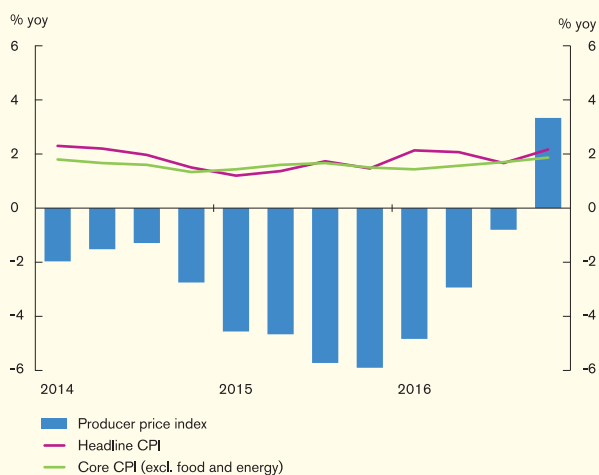
While there have been increased signs of stabilisation in Mainland China, the growth outlook continues to be full of uncertainties in the near term. On the domestic front, the support from the real estate sector may decline if property markets continue to cool down. As such, it remains uncertain whether the improvement in private sector activities, especially business expansion in property-related industries, can be sustained. In addition, the ongoing structural reforms, such as deleveraging and de-capacity of inefficient manufacturers, could also weigh on economic growth in the short term. On the external side, dynamics in the Sino-US trade relations may also add uncertainty to the

economic outlook. Latest consensus forecasts by market analysts expect real GDP growth will ease to 6.5% for 2017, after the official economic growth target was adjusted from 6.5%-7.0% for 2016 to the level of around 6.5% this year.

Along with the recovery in economic activities, upward price pressures emerged in the face of the sharp rebound in upstream prices. Specifically, producer price inflation bounced up to 3.3% year on year in the fourth quarter amid the rally in commodity prices. This was due in part to continued de-capacity on the supply side and stronger demand on the recent property market boom (Chart 2.10). Following the trend in producer prices, consumer price inflation crept up slowly from an averaged 2.2% year on year in the first half of 2016 to 2.3% in the fourth quarter, as moderation in food price inflation was outstripped by price increases in some non-food components such as housing-related and medical items.

Going forward, near-term inflationary pressures in upstream prices would likely remain if the supply-side reforms such as de-capacity and the improvement in economic activities continue. As rising upstream inflation may have a trickle-down effect, the slowly rising trend in consumer prices would also likely continue in the near term.

**Chart 2.10**  
Mainland China: Consumer price and producer price inflation



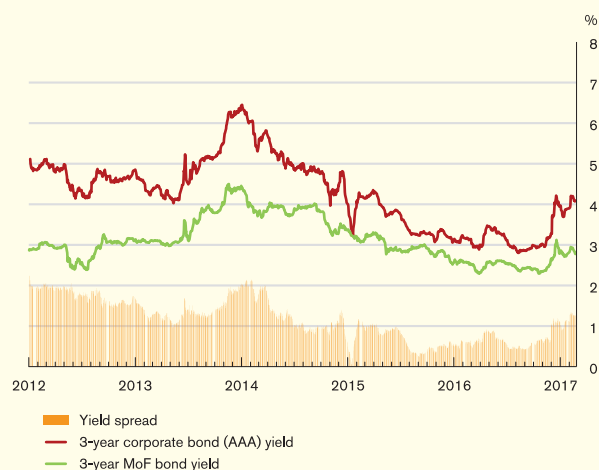
Sources: CEIC, NBS and HKMA staff estimates.

### Asset Markets

During the review period, equity market sentiment remained benign, with stock prices rising moderately in the second half of 2016. In tandem, leveraged trading stayed subdued, with the outstanding size of margin financing stabilising at low levels for the whole year of 2016.

In the bond market, yields picked up in late 2016 along with increased inflation expectations and tightened interbank liquidity (Chart 2.11). Higher bond yields pushed up financing costs of enterprises. This may possibly increase the re-financing risk for firms which rely heavily on bond financing, such as real estate developers. In view of the heightened risks associated with the surge in bond yields, authorities tightened leveraged trading activities of exchange traded bonds.

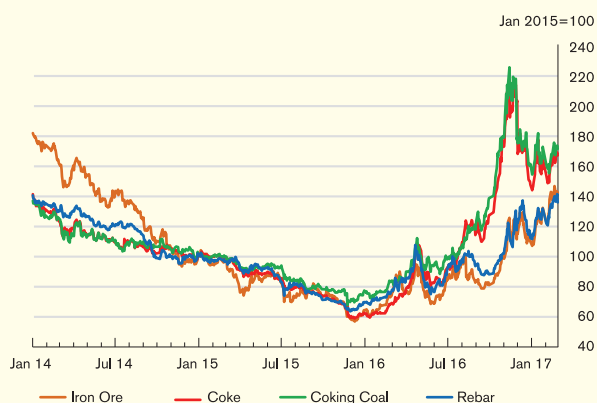
**Chart 2.11**  
Mainland China: government and corporate bond yields



Sources: Wind and HKMA staff estimates.

In the second half of 2016, Mainland commodity markets experienced a roller-coaster ride. The third quarter witnessed a continued investment binge and a sharp rise in commodity prices (Chart 2.12). While the rally in commodity prices was partly driven by continued de-capacity on the supply side and stronger demand on the recent property market boom, the exceptional market exuberance seemed to have also involved some speculative elements. In view of this, Shanghai, Dalian and Zhengzhou Commodity Exchanges introduced measures in mid-November to cool down the markets, including stricter margin requirements and higher transaction levies. In response, commodity prices dropped noticeably from the peak, but remained volatile towards the end of the year.

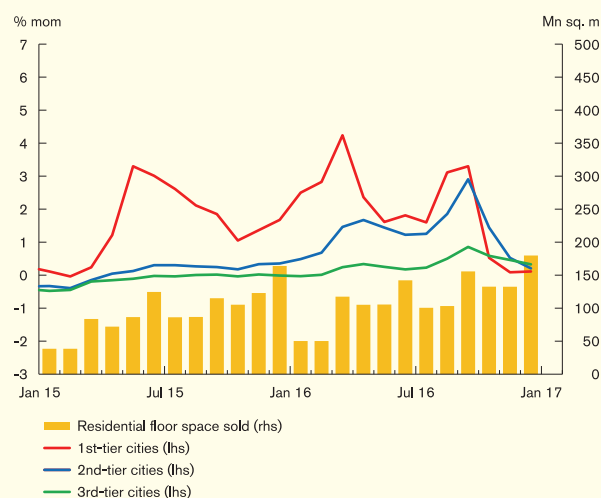
**Chart 2.12**  
Mainland China: major commodity prices



Sources: Wind and HKMA staff estimates.

Mainland property markets showed tentative signs of tightening measures towards the end of 2016, following a housing price rally in the third quarter. Specifically, property price growth decelerated markedly in the last few months of the year after further introduction of tightening measures by local authorities in early-October (Chart 2.13). The sequential house price growth in first-tier cities almost stalled in November and fell below that in lower-tier cities for the first time since September 2014.

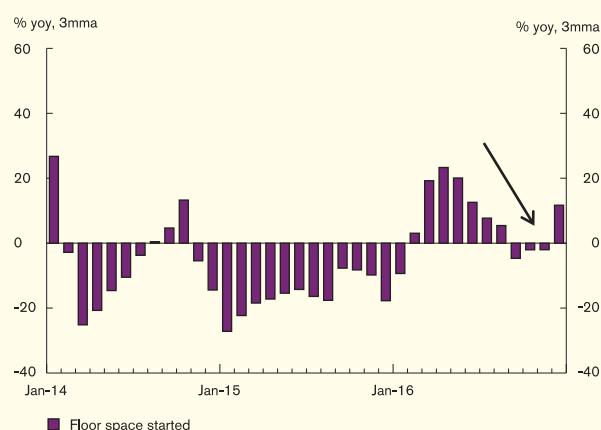
**Chart 2.13**  
Mainland China: residential property prices and floor space sold



Sources: CEIC and HKMA staff estimates.

With the deceleration in property price growth, expansion in total floor space started also moderated before showing some signs of a rebound towards the end of the year (Chart 2.14). However, the real estate sector would likely extend less support to economic growth if real estate investment is to subside and the overheating property markets are brought back to normality given that curbing speculative activities and promoting stable and healthy development of property markets are among the top priorities for the Mainland authorities this year.

**Chart 2.14**  
Mainland China: commercial and residential floor space started

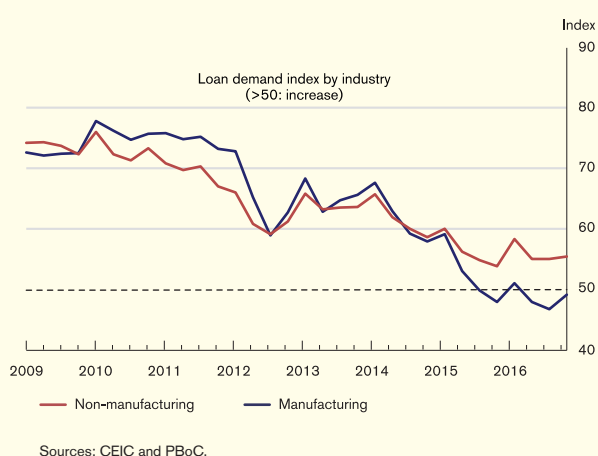


Sources: CEIC and HKMA staff estimates.

### Bank lending and asset quality

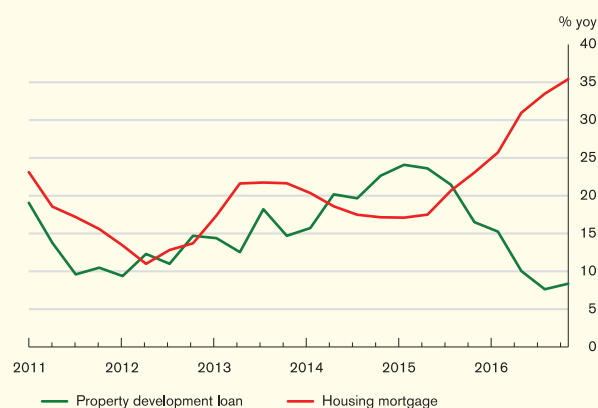
Despite the improvement in economic activities, bank loan growth continued to moderate amid weak loan demand during the review period. According to the quarterly bankers survey by the People’s Bank of China (PBoC), loan demand from manufacturers continued to decline in 2016, while the increase in loan demand from non-manufacturing firms also hovered near historical lows (Chart 2.15).

**Chart 2.15**  
Mainland China: Loan demand index by industry



On the supply side, in view of the potential risks associated with the overheated property markets, Mainland banks tightened their loan underwriting standards to developers, especially smaller ones which were more vulnerable to the real estate boom-bust cycle. As a result, the growth of developer loans decelerated notably to 8.4% at the end of 2016 from 16.5% a year ago (Chart 2.16).

**Chart 2.16**  
Mainland China: Loan growth for property development and housing mortgage



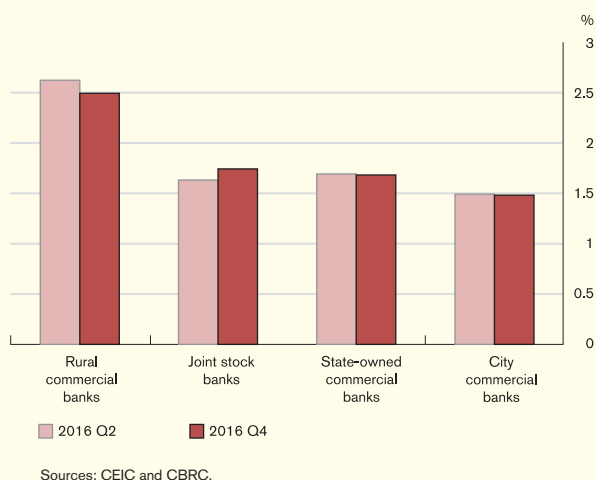
By contrast, bank lending to home buyers remained active and picked up quickly. That said, the risk associated with the fast growth in mortgage loans seemed to be limited. Firstly, the level of household leverage remained low. At the end of 2016, the outstanding size of mortgage loans was only equivalent to around one-third of the total household deposits. Secondly, the loan-to-value ratios also remained relatively low in overheated markets such as first-tier cities, thanks to the tightening measures introduced by the authorities which raised down-payment ratios. Thirdly, as the authorities had already rolled out measures to crack down on down-payment loans, especially those borrowed through the peer-to-peer platforms, the risk of involvement of shadow banking in mortgage lending had been contained as well.

While the direct impact of a boom-bust cycle in property markets on the repayment abilities of households and property developers is not likely to be large for the reasons mentioned above, the indirect effect of a boom-bust cycle in property markets on bank loan quality through collateral value should not be ignored. In particular, some studies pointed out that 30 – 45% of loans in the

five largest banks were backed by collateral, the majority of which was real estate.<sup>11</sup> As such, sharp corrections in housing prices would still increase the risk associated with bank loans especially those secured by properties and land.

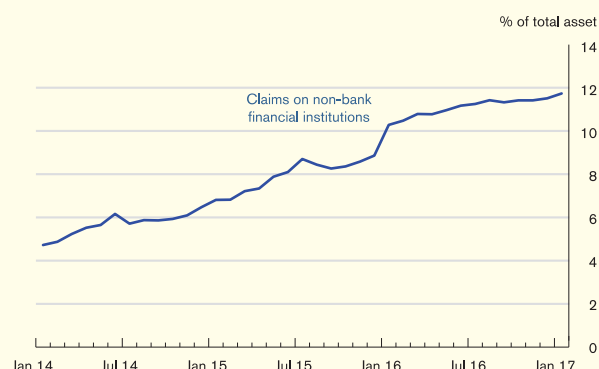
Even with buoyant property market conditions, weak earnings continued to plague most sectors and in turn weighed on the asset quality of Mainland banks during the review period. As a result, the non-performing loan (NPL) ratio edged up to 1.74% at the end of 2016 from 1.67% a year earlier. Among different types of banks, rural commercial banks were found to have the highest NPL ratio, though the ratio came down slightly from six months earlier (Chart 2.17).

**Chart 2.17**  
Mainland China: NPL ratio by type of banks at the end of 2016



In the face of the pressure in corporate lending amid deterioration in loan quality, Mainland banks especially smaller ones continued to increase their exposure to non-bank financial institutions. As a result, banks' claims on non-bank financial institutions over total banking assets picked up notably to 11.5% at the end of 2016, from 6.5% and 8.9% at the end of 2014 and 2015 (Chart 2.18).

**Chart 2.18**  
Mainland China: Banks' claim on non-bank financial institutions



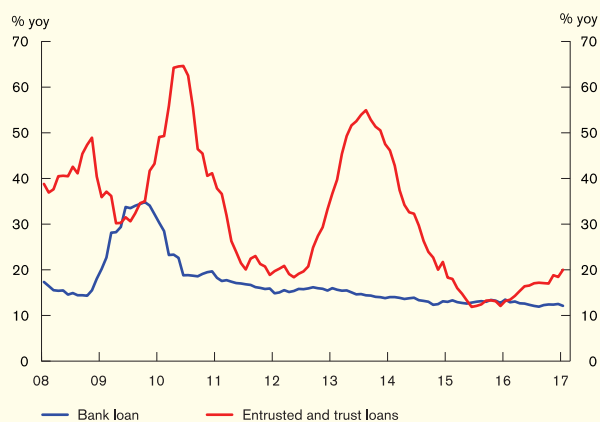
Sources: Wind, PBoC and HKMA staff estimates.

While financial disclosure of such claims is often less transparent than bank loans, information from listed bank financial statements suggests that increased non-bank exposure of banks might have involved scaled-up investment in receivables. Further breakdown of these receivables shows that smaller banks usually tended to hold a relatively larger portion of shadow bank-related products on their balance sheets, such as equities in trust projects or positions in entrusted funds managed by securities companies.

Echoing the fast increase in banks' investment in shadow bank-related receivables, the growth of shadow bank loans, including entrusted and trust loans, picked up from the beginning of 2016 (Chart 2.19). The divergence in bank and shadow bank loan growth may highlight the lengthening of the financial intermediation chain, and also the risk of resurgence in shadow banking activities amid tightened bank lending standards, which therefore warrants close monitoring.

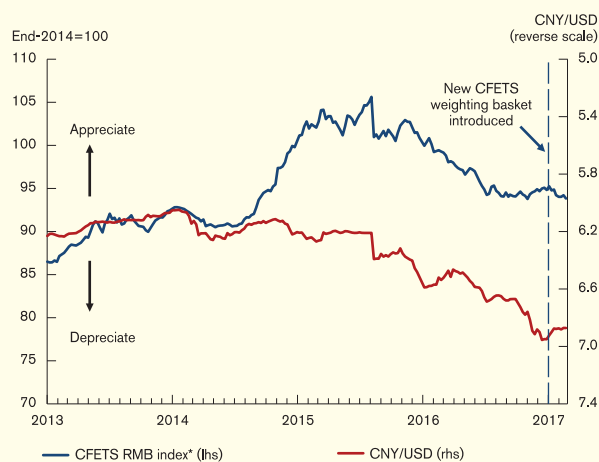
<sup>11</sup> See for instance "People's Republic of China: Financial System Stability Assessment", the IMF, 2011, page 17.

**Chart 2.19**  
Mainland China: Bank loan and shadow bank loan growth



Sources: CEIC and HKMA staff estimates.

**Chart 2.20**  
Mainland China: The CFETS RMB index and 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 money market

Following the strengthening of the US dollar since the middle of 2016, the renminbi weakened against the US dollar, but remained largely stable against a basket of currencies (Chart 2.20). Specifically, after weakening by 1.9% during the period of July – October, the renminbi depreciated further against the US dollar by 2.4% after the US presidential election till the end of 2016. The renminbi however showed some signs of stabilisation against the US dollar in the first two months of 2017, likely reflecting improved market sentiment. By contrast, the CFETS RMB index, a trade-weighted index capturing the movement of the renminbi against a basket of currencies, edged down by 0.2% during the review period.

To further improve the representativeness of the CFETS RMB index, the CFETS revised the calculation of the index by adding 11 currencies, which were newly traded on the CFETS platform, into the existing basket in January 2017. As a result, the weights of major currencies such as the US dollar, the Euro and the Japanese Yen were adjusted lower and the renminbi was expected to link more to regional currencies such as the Korean Won.<sup>12</sup>

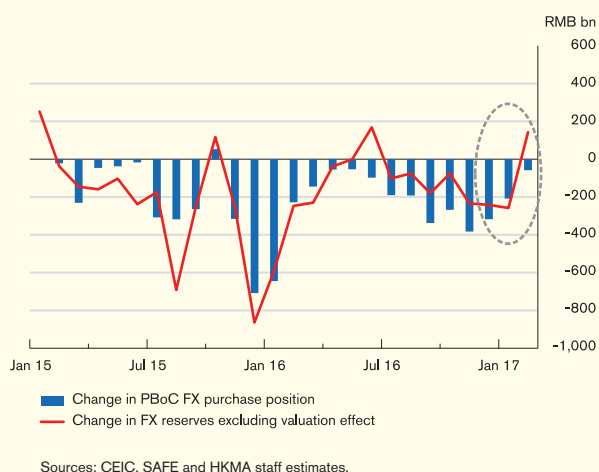
Amid the stabilisation of renminbi exchange rate against the US dollar, capital outflow pressures in Mainland China appeared to have eased somewhat in early 2017 after having intensified in the second half of 2016. Excluding valuation effects, Mainland China's foreign reserves was estimated to have declined by a monthly average of around US\$29 billion during September 2016 – January 2017 amid the strengthening of the US dollar,

<sup>12</sup> For the major currencies, the weights of the US dollar, the Euro and the Japanese Yen declined by 4%, 5.05% and 3.15% to 22.4%, 16.34% and 11.53% respectively, while the newly added the Korean Won alone was assigned a weight of 10.77%.



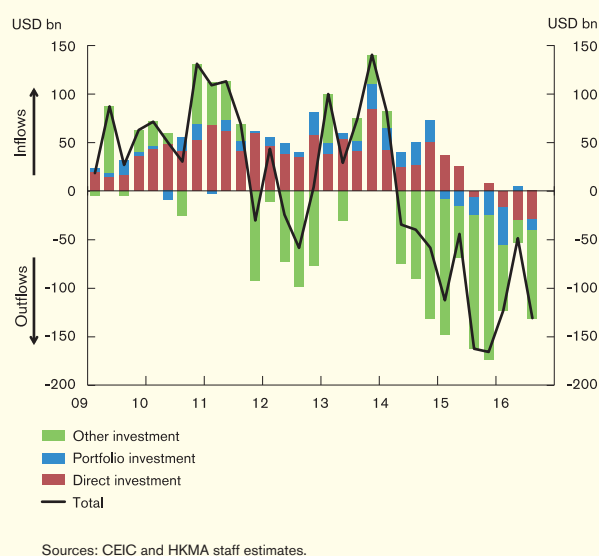
but rebounded by US\$21 billion in February (Chart 2.21). During the review period, the size of foreign reserves in Mainland China decreased by US\$180 billion to stand at US\$3,005 billion in February 2017.

**Chart 2.21**  
Mainland China: Changes in PBoC's foreign exchange purchase position and foreign reserves



Breakdown of net cross-border capital flows data under the balance of payments statistics suggests that flows through other investment remained the most important contributor to capital outflows (Chart 2.22). However, further examination points to the fact that reduction in external borrowing seemed to be no longer a driving force since the second quarter of 2016. In particular, the notable increase in capital outflows through other investment in the third quarter was found to be mainly driven by Mainland banks' lending to non-residents rather than further reduction in external borrowing by Mainland residents. That said, since cross-border bank flows tend to be volatile, more time is needed to discern the new trend in other investment.

**Chart 2.22**  
Mainland China: Net cross-border capital flows by type of flow

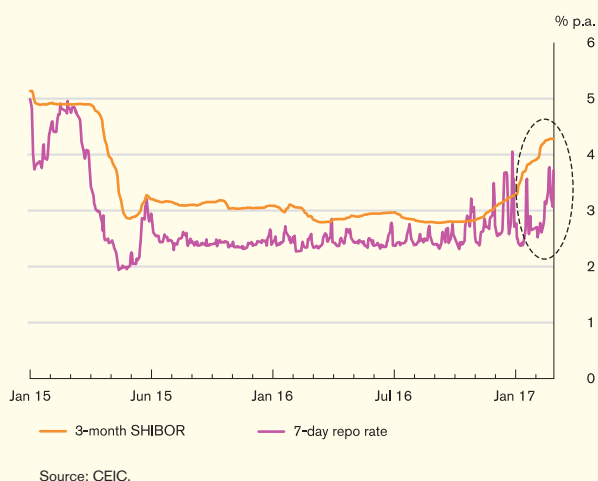


Meanwhile, capital outflows through direct investment and portfolio investment appeared to have become an increasingly important driver of capital outflows in 2016. In particular, direct investment related cross-border capital flows turned from a small net positive inflow in the fourth quarter of 2015 to a net outflow of US\$29 billion in the third quarter of 2016, likely reflecting an increased allocation of assets overseas by Mainland residents.

Looking ahead, while the current account surplus and robust economic and productivity growth would continue to provide support to the renminbi exchange rates over the longer term, the short-term outlook for capital flows remains uncertain, hinging on future movements of the US dollar, the pace of portfolio re-balancing by Mainland residents, as well as global market sentiment.

Amid intensified capital outflows, liquidity conditions in the money market became tighter towards the end of 2016. The 7-day repo rate was on the rise in recent months and became increasingly volatile (Chart 2.23). Longer-end interbank funding costs also seemed to be affected, with the 3-month Shanghai Interbank Offered Rate (SHIBOR) picking up to 4.3% in February 2017 from 2.7% at the end of August 2016.

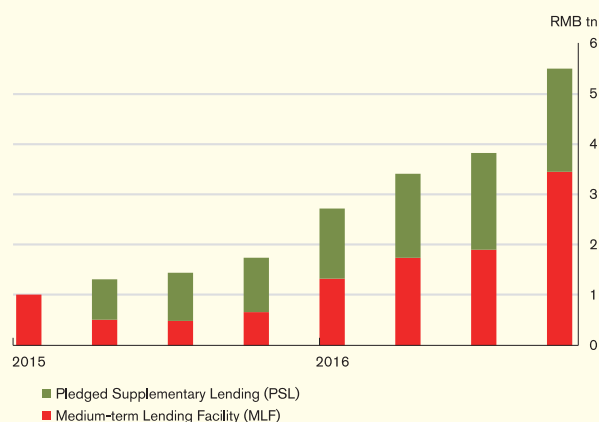
**Chart 2.23**  
Mainland China: 7-day repo rate and 3-month SHIBOR



### Fiscal and monetary policy

In view of intensified capital outflows, the PBoC continued to rely more on targeted measures to provide liquidity support to the banking system during the review period, while keeping the required reserve ratio unchanged. In particular, the outstanding size of the Medium-term Lending Facility (MLF) increased notably to around RMB3.5 trillion at the end of 2016 from about RMB1.7 trillion in June (Chart 2.24).

**Chart 2.24**  
Mainland China: Outstanding sizes of targeted easing tools by the PBoC



In the second half of 2016, the overall monetary conditions continued to ease on a weaker real effective exchange rate of the renminbi and lower real effective lending rates amid rising inflation. Despite the fact that easing monetary conditions helped stabilise economic activities in the private sector, there were still concerns about the deterioration in the effectiveness of monetary policy especially in view of accelerated M1 growth along with a slowdown in M2 expansion. According to some market commentators, the divergence between M1 and M2 growth might have been driven by a quick accumulation of idle funds due to a lack of investment opportunities amid economic slowdown, thus highlighting the possibility that the Mainland economy was entering a liquidity trap.

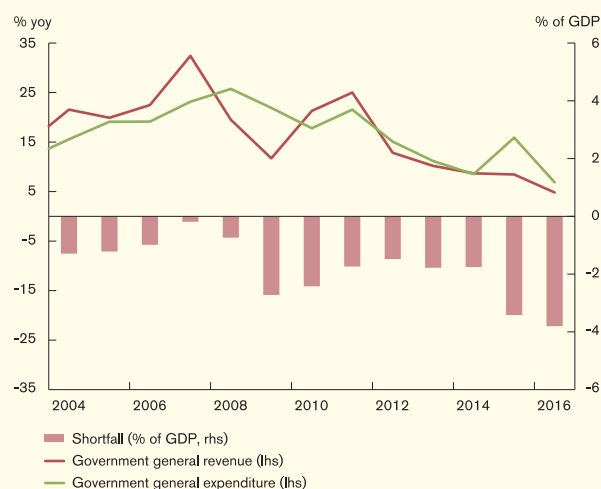
Our analysis in Box 2 finds little support for the view that the Mainland economy was facing a liquidity trap, as there was no quick surge in the interest elasticity of money demand, contrary to the liquidity trap hypothesis. So the question is then what drives the divergence of M1 and M2 growth. In Box 3, we explore the potential drivers for M1 and M2 growth and find that

while recent monetary easing in part accounted for the much faster growth of M1 than M2, increased economic uncertainty, rather than economic slowdown, appeared to have also played an important role through driving up precautionary demand for money and holding off investment.

According to the Central Economic Work Conference and the government work report, monetary policy stance will be prudent and neutral in 2017. On top of that, the authorities will focus more on preventing financial risks in view of the potential systemic impact of overheated asset markets such as property markets. For instance, the PBoC raised both the 6-month and 12-month MLF rates by 10 basis points on 24 January 2017 while providing liquidity support to the banking system. For the whole year of 2017, M2 and aggregate financing growth are both envisaged at a slower pace of around 12%, compared with the government expectation of 13% in 2016.

On the fiscal front, the shortfall between government general revenue and expenditure widened from 3.4% of GDP in 2015 to 3.8% in 2016 (Chart 2.25). While growth in government expenditure slowed in 2016, government revenue seemed to decline at a faster pace. For instance, government revenue from business and value-added taxes reversed from an increase of 36.6% year on year in the first five months of 2016 to a decline of 16.9% in June – December after the value-added tax reform. Meanwhile, growth of government non-tax revenues also slowed notably from 29.0% in 2015 to 6.8% in 2016 along with the government's effort to reduce and exempt business fees. While the decline in government revenue may in part reflect the slowdown in economic activities, it could also reflect the fact that authorities had put more weight on measures such as corporate tax cuts and fee exemptions to promote private sector spending in addition to infrastructure investment.

**Chart 2.25**  
Mainland China: Government general revenue and expenditure



Sources: CEIC and HKMA staff estimates.

To stabilise the economy and continue to support supply-side reforms, the authorities pledged a more proactive fiscal policy stance this year. The government raised the budget deficit from RMB2.18 trillion in 2016 to RMB2.38 trillion in 2017, while keeping the ratio of budget deficit to GDP unchanged from last year's 3.0%. In particular, Mainland authorities planned to further reduce the tax burden and business fees of the corporate sector by around RMB350 billion and RMB200 billion respectively this year. On the expenditure front, the government planned to invest RMB800 billion in railway construction and RMB1.8 trillion in highway and waterway projects in 2017.

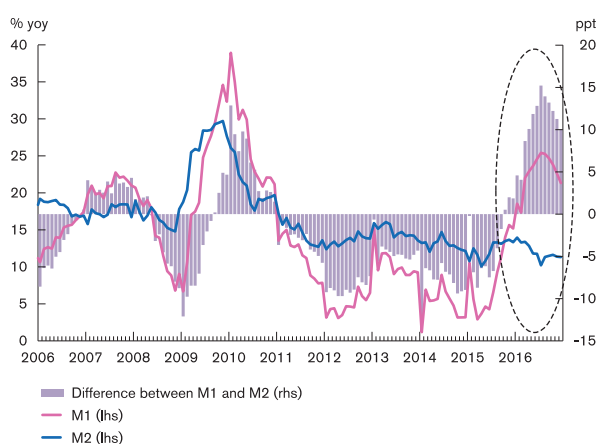
Notwithstanding the government's adoption of a more proactive fiscal policy stance, the increase in overall government debt remained moderate at 2.5% in 2016. As a result, the overall indebtedness of the government lowered somewhat in 2016, with public debt to GDP ratio easing slightly from 38.7% in 2015 to 36.7%. At the local level, the ongoing loan-for-bond swap and improved land sales helped alleviate concerns on the refinancing risks of local government debt during the review period. That said, some provinces such as Qinghai, Shanxi and Shaanxi experienced deterioration in their fiscal positions as government revenue declined in 2016.

## Box 2 Is the Mainland economy entering a liquidity trap?

### Introduction

Historically, M1 (narrow money) and M2 (broad money) usually moved in the same direction in Mainland China, despite the more volatile growth rate of M1. However, 2016 saw the acceleration of M1 growth from around 15% year on year to as high as 25.4% in July, while M2 growth, in contrast, declined from 13.3% to 11.3% during the same period (Chart B2.1). The fact that the rapid expansion in M1 was not accompanied by fast growth of M2 has raised some concerns over the effectiveness of monetary policy. Some commentators even suggested that the Mainland economy was likely entering a liquidity trap, as such divergence in M1 and M2 growth might have been driven by a quick accumulation of idle funds due to a lack of investment opportunities amid the economic slowdown.

**Chart B2.1**  
Growth of M1 and M2 in Mainland China



Sources: CEIC and HKMA staff estimates.

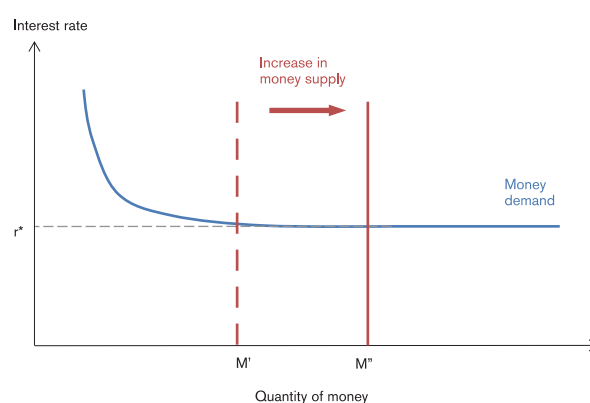
Understanding whether the Mainland economy is entering a liquidity trap is important. If the answer is yes, then monetary policy would be ineffective and the Mainland authorities might need to rely more on other measures, such as fiscal stimulus to support the economy. This analysis formally tests the liquidity trap hypothesis, given that the much faster growth of

M1 than M2 itself may not be a straightforward indicator for whether a liquidity trap exists. In particular, we explore the time profile of the interest elasticity of money demand and examine directly whether the demand for money actually becomes more elastic in tandem with the fall in interest rates.

### Liquidity trap: definition and debate on the Mainland case

Although there is no clear-cut definition of a liquidity trap, related discussion typically focuses on the situation where monetary policy is no longer able to further lower real or nominal interest rates and thus loses grip on the economy.<sup>13</sup> Under such circumstances, interest rates are at low levels or close to zero and money demand becomes very elastic. Therefore, any further increase in money supply will be hoarded so that the interest rate cannot be further lowered to stimulate the economy (Chart B2.2).

**Chart B2.2**  
An illustration of money demand and supply in a liquidity trap



<sup>13</sup> Keynes (1936) in his *General Theory* noted the possibility that after the rate of interest has fallen to a certain level, liquidity-preference may become virtually absolute, and the monetary authority would have lost effective control over the rate of interest. More recent theorists such as Krugman (1998) defined liquidity trap as a situation in which conventional monetary policies have become impotent, because nominal interest rates are at or near zero.

The debate on whether the Mainland economy is entering a liquidity trap is often polarised between two points of view. Focusing on the effectiveness of monetary policy, one strand of thought argues that the Mainland economy is likely mired in a liquidity trap as monetary easing in Mainland China seems to have less apparent impact on real activities, especially in view of a quick surge in M1 growth together with the slowdown in M2 growth, which is a sign of a quick accumulation of idle funds. The other however holds the opposite view, judging from the level of interest rates in Mainland China. Currently, the effective lending rate remains high at above 5%, though has been coming down from higher levels since early 2015.

### *An empirical framework for testing the liquidity trap hypothesis*

One way to evaluate the relevance of the liquidity trap hypothesis is to examine directly whether the demand for money actually becomes more elastic in tandem with the fall in interest rates. Following Hondroyiannis et al (2000), in this analysis we estimate the interest elasticity of money demand in Mainland China using the following equation,

$$\ln(MD_t) = \beta_0 + \beta_1 \ln(r_t) + \beta_2 \ln(Y_t) + u_t,$$

where  $MD_t$  is the money demand and  $r_t$  is prevailing market interest rates.  $\beta_1$ , the coefficient of interest rates therefore captures the interest elasticity of money demand. If the Mainland economy is indeed in a liquidity trap, we should observe a quick surge in the interest elasticity of money demand in tandem with the fall in interest rates.

Apart from interest rates, income levels may also affect money demand. Specifically, other things being equal, higher levels of income may lead to greater demand for money. Therefore,  $Y_t$ , the level of GDP, a proxy for income, is also included in the specification.

### *Testing the liquidity trap hypothesis using Mainland data*

Using monthly data during the period of January 2005 to September 2016, our estimation results suggest that money demand, proxied by M2 or aggregate financing<sup>14</sup>, in general increases when interest rates decline, as shown by the negative coefficients of varied interest rates (Table B2.A).<sup>15</sup> The income elasticity of money demand is found to be positive and slightly above unity, as suggested by the coefficients of GDP.

**Table B2.A**  
**Income and interest elasticities of money demand in Mainland China: 2005/01-2016/09**

Dependent variable:	(a) M2	(b) Agg. Fin	(c) M2	(d) Agg. Fin	(e) M2	(f) Agg. Fin
<b>Explanatory variables:</b>						
<b>GDP</b>	1.176 (.000)	1.381 (.000)	1.163 (.000)	1.363 (.000)	1.224 (.000)	1.425 (.000)
<b>Interest rates</b>						
<b>Estimated 1-year effective lending rate</b>	-0.271 (.000)	-0.286 (.000)				
<b>1-year benchmark lending rate</b>			-0.306 (.000)	-0.358 (.000)		
<b>7-day repo rate</b>					-0.059 (.009)	-0.051 (.149)
<b>Constant</b>	-0.796 (.000)	-3.054 (.000)	-0.633 (.000)	-2.784 (.000)	-1.759 (.000)	-4.017 (.000)
<b>R-squared</b>	.996	.992	.997	.994	.994	.990
<b>No. of observations</b>	141	141	141	141	141	141

Note: Monthly estimates of GDP are based on quarterly GDP, GDP shares of investment, consumption and net exports, as well as monthly data on fixed asset investment, retail sales and trade balance. The estimated 1-year effective lending rate is calculated based on the 1-year benchmark lending rate and the shares of loans extended at the rate below or above the benchmark lending rate during the month. The Newey-West standard errors are calculated and P-values are reported in parenthesis.

Further study on the time profile of the interest elasticity of money demand, using a rolling window analysis, suggests that there is little evidence for the view that the Mainland economy is entering a liquidity trap. More specifically, contrary to the liquidity trap hypothesis, our results find no quick surge in the interest elasticity of money demand despite the

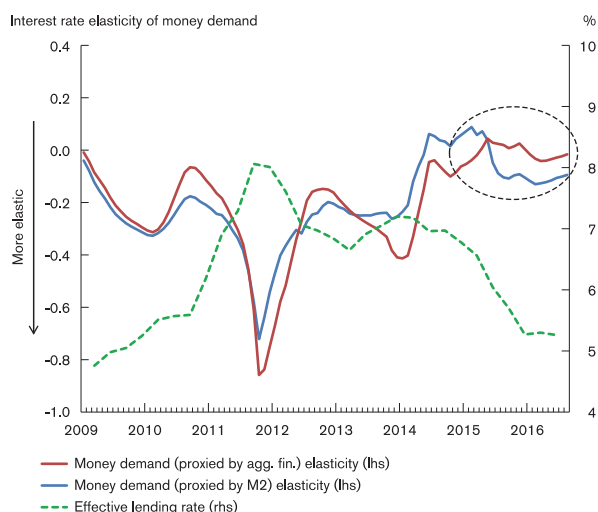
<sup>14</sup> M2 is a commonly used proxy for money demand in literature. In the case of the Mainland economy, we also use aggregate financing as a proxy.

<sup>15</sup> The only exception is that aggregate financing shows to be not very responsive to short-term interbank rates such the 7-day repo rate (column (f) in Table B2.A).

effective lending rate having declined notably after 2015 (Chart B2.3). Following the interest rate decline, money demand indeed became slightly more elastic, but remained much less elastic than in previous episodes.

Our findings of no quick surge in the interest elasticity of money demand during recent periods remain robust irrespective of the choices of interest rates and different rolling windows<sup>16</sup>, or after including further controlling variables such as the required reserve ratio.

**Chart B2.3**  
The dynamics of interest elasticity of money demand based on a rolling window analysis



Note: Interest elasticity of money demand is estimated by a 36-month rolling window during the period of 2005/01 – 2016/09.

## Conclusion

The results presented in this analysis find little support for the view that the Mainland economy might have been entering a liquidity trap. Specifically, the results suggest that there is no quick surge in the interest elasticity of money demand despite the sharp fall in lending rates after 2015, contrary to the liquidity trap hypothesis. In this sense, sustained monetary expansion, if needed, would still be effective in shoring up economic activities in Mainland China.

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<sup>16</sup> Our results are robust for the rolling windows of 24 months and 48 months.

## Box 3 Divergence between M1 and M2 growth in Mainland China

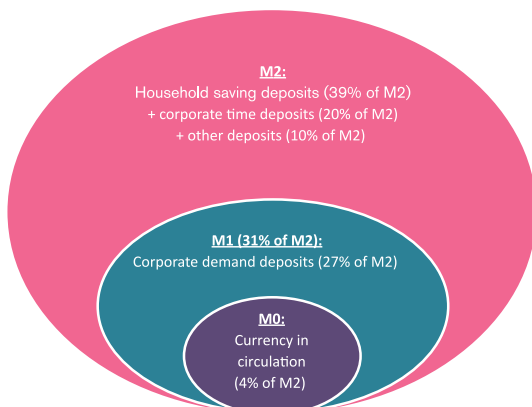
### Introduction

In Box 2 we have shown that there is no evidence for the view that the Mainland economy is entering a liquidity trap. The rising divergence between M1 and M2 growth is however left unexplained. Therefore, this analysis empirically investigates what could be the potential factors driving the much faster growth of M1 than M2, and discusses whether such divergence should be a concern.

### Definition of M1 and M2 in Mainland China

According to the official definition by the PBoC, M1 in Mainland China consists mainly of currency in circulation (also known as M0) and corporate demand deposits (Chart B3.1), which are usually perceived as money held for transactions and precautionary purposes. M2 is a broader measure of money, which includes a wider set of deposits, such as corporate time deposits, household saving deposits, as well as deposits of non-depository financial institutions, in addition to M1. Time deposits are usually held for investment/speculation purposes and receive higher interest rates than demand deposits.

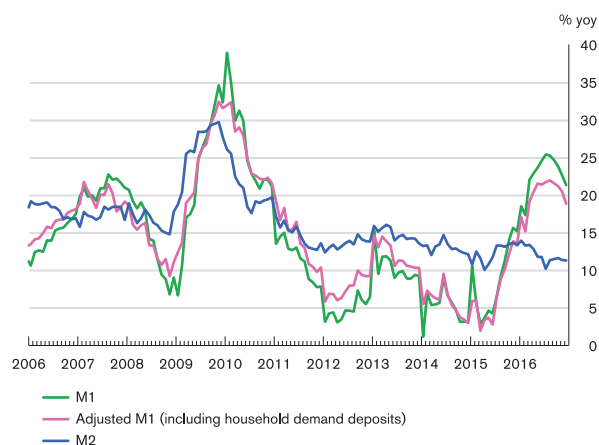
**Chart B3.1**  
Definition of money supply in Mainland China



Sources: CEIC and HKMA staff estimates.

Unlike conventionally defined narrow money, M1 in Mainland China does not include demand deposits from households. Instead, household demand deposits are included in household saving deposits as part of M2. That said, adding back household demand deposits into M1 does not appear to change too much the growth pattern of narrow money, though making it slightly less volatile (Chart B3.2). This may reflect the fact that the demand of household and corporate for the liquid form of money such as demand deposits tends to be affected by similar macro-economic and structural factors.

**Chart B3.2**  
M1 and M2 growth in Mainland China



Sources: CEIC and HKMA staff estimates.

### Potential factors affecting M1 and M2 growth: what does economic theory tell us?

Various factors may affect the demand for money and thus the growth rates of M1 and M2. Firstly, demand for money, especially M1, tends to increase with a higher level of output. As money is used as a medium of exchange, or as a means of payment, higher income or levels of economic activities may lead to greater need for people to hold the most liquid form of money, for instance, cash or money in the checking account, to facilitate transactions or payment. Because of

the strong correlation between money demand and economic growth, rising M1 growth is sometimes perceived as an early sign of improvement in economic activities.

Secondly, demand for money can also be affected by interest rates. When interest rates become lower, time deposits will receive less return and the opportunity cost of holding the liquid form of money will decrease. Therefore, people may have incentives to hold more money in their checking accounts. In this sense, declines in interest rate usually lead to higher M1 growth.

On the other hand, lower interest rates could result in lower demand for time deposits, which is another important component of M2, than demand deposits. Specifically, since changes in interest rates may also affect investment returns, people may be willing to move money out of their savings account into bonds or other interest-sensitive assets whose value will increase amid declines in interest rates. Therefore, declines in interest rates tend to have positive but relatively smaller overall impact on M2 growth than M1 growth.

Thirdly, the precautionary motive for holding money will become stronger amid greater uncertainties, resulting in faster growth of M1. Typically, people tend to increase their holding of precautionary liquidity for emergency expenses if the economic outlook becomes unpredictable. For companies, rising levels of economic uncertainty may discourage investment and, in turn, result in the piling up of idle funds on their balance sheets.

Apart from the above mentioned macro-economic factors, structural changes in the financial system may also affect M1 and M2 growth. For instance, the fast development of shadow banking activities in Mainland China may lengthen the financial intermediation chain and thus slow down money creation. In addition, the introduction of new technologies

improving conversion between checking and savings accounts or providing liquidity, such as credit cards may also reduce the transaction demand for money.

### *Estimating the determinants of M1 and M2 growth in Mainland China*

While in theory M1 and M2 growth can be affected differently by various factors as discussed, which factors actually played the role in driving the M1 and M2 growth divergence in recent periods in Mainland China is an empirical question. To this end, we estimate the demand equation for real M1 and M2 growth separately using the same set of explanatory variables. Following the conventional definition of M1, in addition we also estimated the demand equation of adjusted real M1 growth, which takes into account household demand deposits in addition to currency in circulation and corporate demand deposits. In this analysis, we estimate the money demand equations using quarterly data over the period of the first quarter of 2006 to the third quarter of 2016.

The explanatory variables include real GDP growth and changes in the benchmark 1-year lending rate. To take into account the impact of economic uncertainty, we also include a news-based economic uncertainty index for Mainland China into the specification.<sup>17</sup> In addition, the impact of shadow banking activities is also considered, with the ratio of the outstanding size of shadow banking activities to the outstanding size of bank loans being added to the specification.<sup>18</sup>

<sup>17</sup> To proxy for economic uncertainty, we use the economic policy uncertainty (EPU) index for Mainland China developed by Baker, S.R., Bloom, N., and Davis, S.J., which captures the percentage of economic news reports related to Mainland China in a major newspaper through a text keyword filter (source: [http://www.policyuncertainty.com/china\\_monthly.html](http://www.policyuncertainty.com/china_monthly.html)). Similar news-based EPU indices on other economies developed by the team appeared in many recent studies including those by the European Central Bank and the IMF.

<sup>18</sup> Shadow banking activities include entrusted loans, trust loans and entrusted funds managed by securities firms.



The estimated cumulative effects of these explanatory variables are summarised in Table B3.A. Our findings suggest that while the cumulative effects of GDP growth on M1, adjusted M1 and M2 growth are all statistically positive, the effects on M1 and adjusted M1 growth are much larger. These findings are in line with theoretical expectations, as the transaction demand for money is much more relevant for the most liquid form of money, and the impact of economic growth on time deposits is less pronounced. Similarly, interest rate changes are found to have a significant and negative effect on M1, adjusted M1 and M2 growth, with M1 and adjusted M1 growth appearing to be more sensitive to interest rate changes, in line with what we discussed in the previous section.

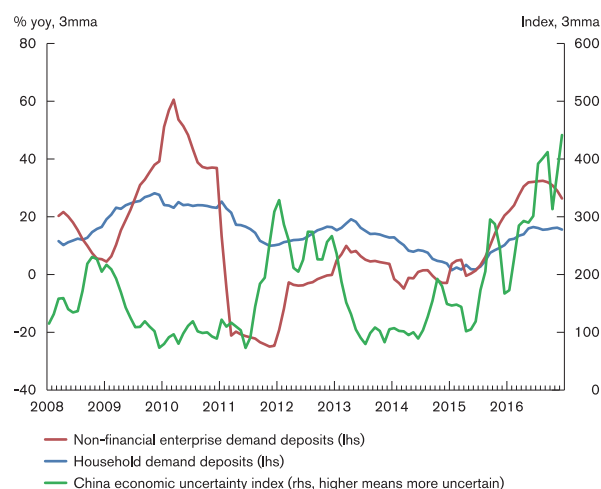
**Table B3.A**  
Cumulative effects of a one unit change of explanatory variables on real M1 and M2 growth<sup>19</sup>

Explanatory variable	Real M1 (%yoy)	Adjusted real M1 (%yoy)	Real M2 (%yoy)
Real GDP (%yoy)	2.026**	1.535**	0.937**
Interest rate (%)	-12.153***	-11.674***	-5.529***
Economic uncertainty (normalised, per standard deviation)	2.973**	2.614***	-0.181
Share of shadow banking (%)	-0.266*	-0.412***	-0.257**
R-squared	0.941	0.944	0.931

Note: \*\*\*, \*\* and \* denote the original estimated coefficients are significant at 1%, 5% and 10% levels respectively.

Economic uncertainty appears to have positive and statistically significant impacts on both M1 and adjusted M1 growth but not for M2 growth, suggesting that higher economic uncertainty tends to be associated with higher precautionary demand for money or a fast accumulation of the idle funds on corporate balance sheets. Indeed, the growth of household and enterprise demand deposits seemed to have strong correlation with the economic uncertainty index, especially after 2011 (Chart B3.3).

**Chart B3.3**  
Growth of household and enterprise demand deposits and economic uncertainty



Sources: CEIC, China Economic Policy Uncertainty Index (source: [http://www.policyuncertainty.com/china\\_monthly.html](http://www.policyuncertainty.com/china_monthly.html)) and HKMA staff estimates.

In comparison, growth rates of M1 and M2 are found to have similar negative correlations with the relative size of shadow banking activities to bank lending. This suggests that while shadow banking activities may have slowed down money growth in Mainland China, they may not necessarily be a key reason for the recent M1-M2 growth divergence.

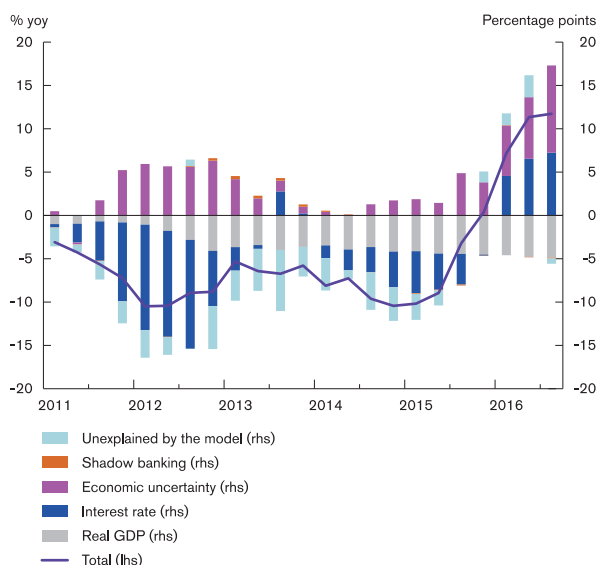
It is worth noting that shadow banking activities appeared to have a larger negative impact on adjusted M1 growth than on M1 growth. This may be because the substitution effect is much stronger between shadow banking products such as wealth management products and household demand deposits than between these shadow banking products and corporate demand deposits.<sup>20</sup>

<sup>19</sup> We include lagged dependent variable and the autoregressive term in the regressions to control for the serial correlation problem. This table reports the cumulative effects, or the long-run propensity, of a one unit change in explanatory variables up to five quarters.

<sup>20</sup> For instance, latest official data suggests that above 50% of newly issued wealth management products were with maturity equal or below 3 months. Source: [www.chinawealth.com.cn](http://www.chinawealth.com.cn)

Based on our estimation results, we disentangle the contributions of different factors to the growth divergence between M1 and M2.<sup>21</sup> Not surprisingly, interest rate declines have been one of the main reasons for the much faster growth of M1 than M2 since 2016 (Chart B3.4).

**Chart B3.4**  
Contribution to the differences in M1-M2 growth



Sources: CEIC, China Economic Policy Uncertainty Index (source: [http://www.policyuncertainty.com/china\\_monthly.html](http://www.policyuncertainty.com/china_monthly.html)) and HKMA staff estimates.

Unlike some market claims that the divergence between M1 and M2 growth is due to lack of investment opportunities amid economic slowdown, our findings do not lend support to this view. Instead, recent economic slowdown resulted in much slower growth of M1 due to lower transaction demand for money. In fact, it is economic uncertainty, rather than the economic slowdown itself, that is found to be the other important factor driving the divergence of M1-M2 growth. In particular, our findings indicate that the contribution of economic uncertainty on the M1-M2 growth differential in recent periods was almost comparable to that of interest rate declines.

### Conclusion

Our analysis documents the important role of economic uncertainty played in shaping money demand in Mainland China in recent periods. While recent monetary easing in part accounted for the much faster growth of M1 than M2, increased economic uncertainty appeared to have also played an important role through driving up precautionary demand for money and holding off investment. By contrast, recent economic slowdown and expansion in shadow banking activities appeared to negatively affect money growth especially through lowering the demand for M1, the most liquid form of money.

<sup>21</sup> We take end-2010, when growth of M1 and M2 were largely similar, as a base period, and estimate the effects of each explanatory factor on the difference between M1 and M2 growth relative to the base period.