

2. Global setting and outlook

Global financial markets recovered shortly after the Brexit-related sell-offs on expectations of further policy support. In response to heightened uncertainties and market volatilities from Brexit, major central banks have maintained, if not further loosened, their accommodative monetary policy. Nevertheless, concerns over major central banks running out of policy ammunition are increasing, and some governments in advanced economies may find it tempting but politically difficult to implement further fiscal stimulus. The increasing divergence between the liquidity-driven stability in the financial markets and longer-term fundamentals, particularly given the growing unusual economic and political uncertainties, could risk sowing the seeds for future financial volatility and disruptions.

In East Asia, financial markets stabilised after a brief surge of volatility following the Brexit decision. Many regional central banks have eased their monetary policy recently to support growth. Although the region may see more capital inflows in the near term due to the search-for-yield behaviour of investors, the full impacts of Brexit, especially those on real activities through trade and direct investment channels with the European Union, remain to be seen.

In Mainland China, growth continued to trend down in the first half of 2016 but the momentum showed signs of stabilisation in the second quarter thanks to accelerated infrastructure and property investment, as well as narrowed declines in net exports. The slowdown in economic growth and weakening corporate earnings continued to weigh on asset quality of Mainland banks. However, the provisions put aside and banks' solid pre-tax profits should be sufficient to cover potential loan losses. The renminbi exchange rate weakened during the review period but currency volatility subsided on improved market sentiment, which also helped ease outflow pressures.

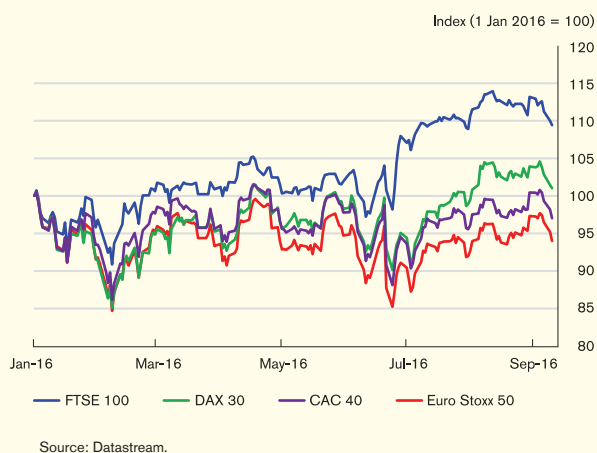
2.1 External environment

Global financial markets tumbled in late June as the United Kingdom (UK) voted to leave the European Union (EU) in the referendum (Brexit).

Nevertheless, the sell-offs were orderly and later proved to be short-lived, cushioned by expectations of further policy support from major central banks (Chart 2.1).

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Chart 2.1
Recent re-pricing in the equity markets



While Brexit has so far caused limited disruptions on the global financial markets, its full impact will take years to show and will depend critically on several factors, such as the outcome of the UK-EU negotiation, and whether risks of a wider political fallout, such as the threat of a European disintegration and the rise of protectionism, can be contained. In the near term, the direct impact of Brexit on the global economy should not be large, given the limited direct real linkages of the UK to the global economy. However, the European economy may still be susceptible given its fragility and the already difficult operating conditions facing European banks. If Europe is significantly affected, there may be second-round effects on emerging market economies (EMEs) given their dependence on export demand and investment from Europe.

In the face of heightened uncertainties and market volatilities from Brexit, major central banks have maintained and, in some cases, further loosened their ultra-accommodative monetary policies. Nevertheless, room for further monetary easing and their effectiveness has diminished. For asset purchases, the European Central Bank (ECB) and the Bank of Japan (BoJ) already hold a sizeable amount of total sovereign bonds outstanding and are currently purchasing sovereign assets at a rapid pace. As such, they could, at some point, encounter limitations on the pool of eligible assets with their purchase

programmes. For negative interest rate policy, central banks in Europe and Japan have already cut their policy rates to negatives. This has further exacerbated the search-for-yield behaviour in an already low growth, low inflation, abundant liquidity and high uncertainty environment, causing an even greater distortion to the global financial markets. A large part of the sovereign yield curves in Europe and Japan have sunk below zero (Chart 2.2). Partly as a result, there is now an estimated total of US\$8.1 trillion of sovereign bonds with negative yields, equivalent to around 32% of the total outstanding across developed markets (Chart 2.3). Further cuts in negative interest rates would therefore not only further impinge on bank profitability, but also drive further inflow into assets with higher risk-adjusted returns, such as the US treasuries.

Chart 2.2
Sovereign yield curves in Europe and Japan

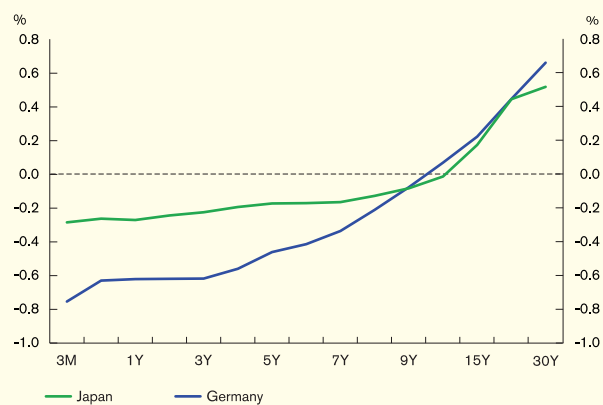
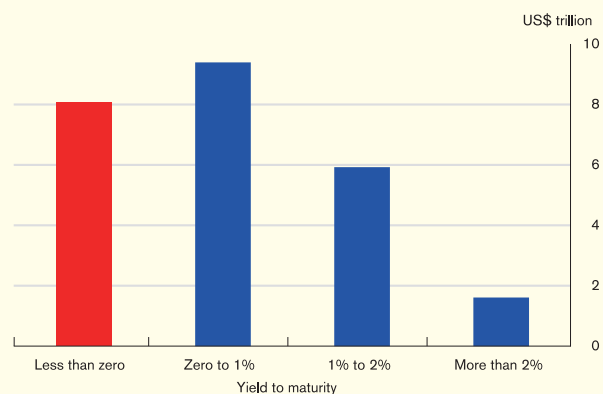


Chart 2.3
Amount of developed market sovereign bonds by yield-to-maturity



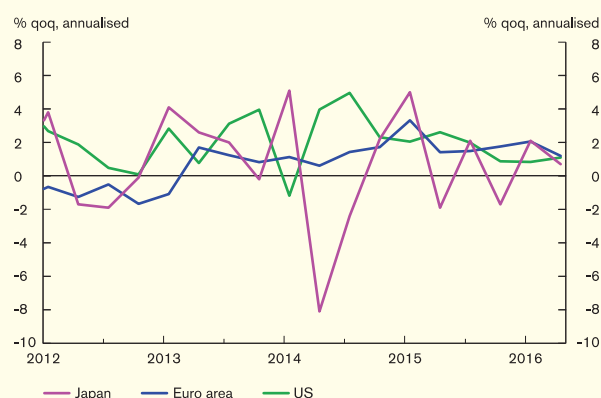
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With increasing concerns that central banks will run out of policy ammunition, the Japanese government has announced a new ¥28.1 trillion (5.5% of Gross Domestic Product (GDP)) fiscal stimulus. Nevertheless, its near-term boosting effects are likely to be much smaller than the headline figures suggest, as new direct spending only makes up ¥7.5 trillion (1.4% of GDP). The rest of the stimulus package comprises fiscal loans and private sector spending to which their take-ups remain uncertain and the actual outlays could spread over a number of years. In fact, the Japanese government has forecast the stimulus package will only boost Japan's real GDP by 1.3%. Meanwhile, governments in other advanced economies may also find it tempting but politically difficult to implement further fiscal stimulus.

The US Federal Reserve (Fed) is now generally expected by markets to gradually normalise its monetary policy. Nevertheless, the brighter economic prospects and faster build-up of underlying price pressures in the US relative to that of Europe and Japan mean global monetary policy divergence could yet intensify further down the road. In the US, although real GDP grew by a disappointing 1.1% quarter on quarter (annualised) in the second quarter, after growing by a modest 0.8% in the previous quarter (Chart 2.4), the weakness was mainly due to inventories drawdown, which has been a significant drag for the past five quarters. Excluding inventories, final sales of domestic product has expanded by a solid 1.9% over the past year. Otherwise, the underlying strength of the US economy, particularly the household sector, remains solid with the unemployment rate falling to 4.9% in August, close to the Fed's estimated natural rate of 4.8%. By contrast, real GDP growth in the euro area nearly halved to 0.3% quarter on quarter (1.2% qoqa) in the second quarter, down from 0.5% (2.1% qoqa) in the previous quarter. The unemployment rate edged down but

remained high at 10.1% in July. Similarly, in Japan, real GDP growth was 0.2% in quarterly terms (0.7% qoqa) in the second quarter, down from 0.5% (2.1% qoqa) in the previous quarter. The recovery remains fragile with the sharp appreciation of the yen and fall back in inflation expectations posing strong economic headwinds.

Chart 2.4
Real GDP growth of major advanced economies



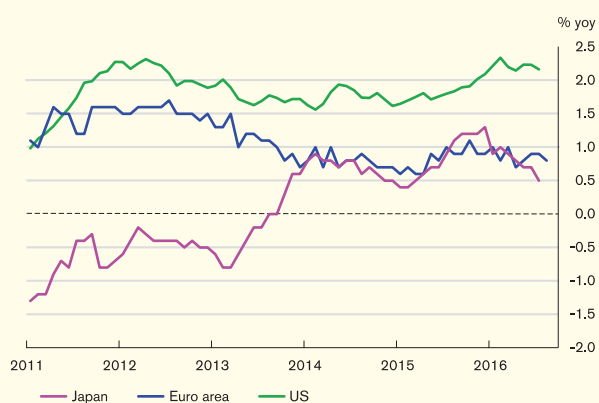
Source: Bloomberg.

As a result of the differences in the strength of recoveries, the underlying inflation continued to diverge across major advanced economies, which could have different implications for monetary policies (Chart 2.5). In the US, core Consumer Price Index (CPI) inflation (excluding food and energy) stayed elevated at 2.2% in July with the core services inflation close to an 8-year high of 3.1% amid the build-up of domestic demand pressures. As the global oil prices and the US dollar stabilise, headline Personal Consumption Expenditure inflation is expected to return to the Fed's 2% target in the medium term. As such, the Fed is still expected to hike rates, albeit gradually. By contrast, core inflation in the euro area edged lower to 0.8% in August amid the modest recovery with market-based measures of longer-term inflation expectations hovering around 1.3%, close to its historically low level. Similarly, in Japan, inflation continued to come under pressure from weak growth and the strong appreciation of the yen

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with the “new core” measure (excluding fresh food and energy) falling to a near-one-year low of 0.5% in July and inflation expectations dipping below levels last seen at the launch of Abenomics in early 2013 (Chart 2.6). The weak growth and subdued inflation mean the ECB and BoJ are expected to maintain, if not further loosen, their ultra-accommodative monetary policies.

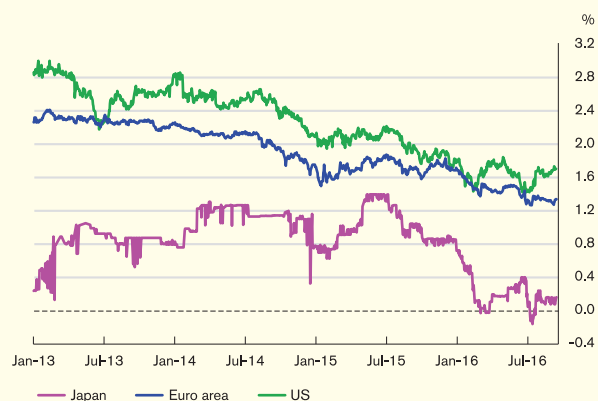
Chart 2.5
Core CPI inflation in major advanced economies



Note: For Japan, 2010 based figures are used before 2016 while 2015 based figures are used since January 2016.

Sources: CEIC and Datastream.

Chart 2.6
Inflation expectations in major advanced economies



Note: Data used for the US is the 5-year/5-year forward inflation expectation rate. Data used for the euro area is the inflation-linked swap rate at 5-year forward 5-year ahead. Data used for Japan is the 5-year/5-year inflation swap rate.

Sources: Bloomberg, Datastream and St Louis Fed.

Looking ahead, despite expectations of a slower pace for the Fed’s monetary policy normalisation, increased demand for US treasuries (amid negative sovereign bond yields and record-low interest rates in Europe and Japan) and growth divergence between the US and economies in Europe and Japan could provide support to a strong US dollar. In such case, renewed downward pressure on oil prices and depreciation pressure on emerging market currencies, especially those with weaker economic fundamentals, cannot be ruled out. The risk is that the increasing divergence between the liquidity-driven stability in the financial markets and longer-term fundamentals, particularly given the growing unusual economic and political uncertainties, could risk sowing the seeds for future financial volatility and disruptions. Financial disruptions, whether in advanced or emerging market economies, could spill over quickly to one another given their increasing interconnectedness. Box 1 analyses the bilateral spillovers between the two in the sovereign bond markets. Our finding suggests that, while shocks originating from the US have a sizeable effect on the EMEs, the spillovers going the other way from EMEs to the US have also increased notably after the “taper tantrum” in mid-2013.

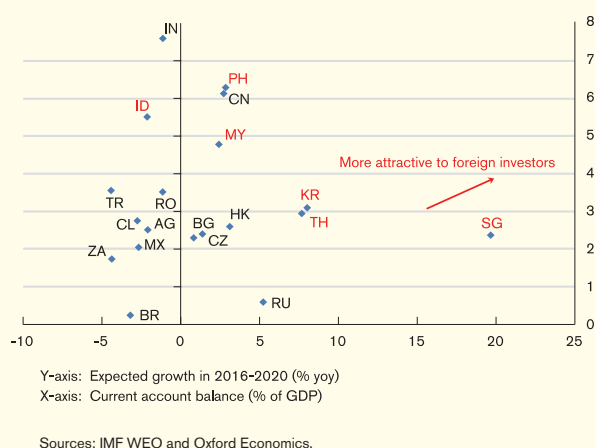
In East Asia¹, financial markets have stabilised after a brief surge of volatility following the UK’s vote to leave the EU. Most regional currencies staged a rebound a few days afterward as sentiment stabilised. In the face of the limited immediate impacts of Brexit on financial stability of the region, and an ample global liquidity from the continuation of the accommodative monetary policy stance of major central banks, many regional economies have seen large

¹ East Asian economies refer to Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand.

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portfolio inflows in July and August. Such inflows, which are likely to be driven by investors' renewal of their search for yield, are, in general, more significant in East Asian economies than other EMEs given the former's better growth prospect and stronger external position (Chart 2.7).

Chart 2.7
EMEs: Current account balance and expected economic growth (As of Q1 2016 or Q4 2015)

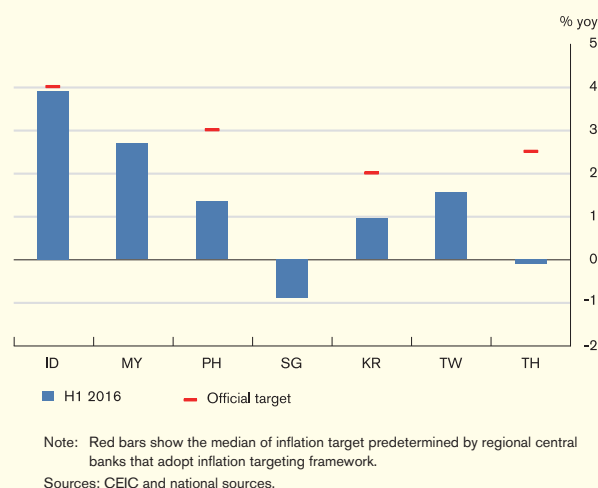


Nevertheless, the scale of potential capital inflows might not be as large as what we saw in the aftermath of the global financial crisis, for several reasons. First, further monetary easing in advanced economies might see limited room now as any further push down of interest rate may result in side effects (such as the squeezing of banks' profit margins or risks of disintermediation as savings rates are pushed lower). Second, with much richer valuation, assets of many East Asian economies have now become less attractive to foreign investors. Third, while regional economies are expected to continue to outperform advanced economies, most of them have already shown signs of slowing down in recent years, reducing the attractiveness of the region to portfolio inflows.

Indeed, growth momentum of most regional economies continued to be constrained by sluggish external and domestic demand in the first half of 2016. In particular, commodity exporters in the region (e.g. Indonesia and

Malaysia) continued to struggle with low commodity prices and sluggish global demand, while manufacturers in Singapore and South Korea also faced challenges from weak demand for their industrial products, such as components of personal computers and cars. Meanwhile, on the back of weak real activities, inflationary pressures were absent in the region with many regional economies having headline CPI inflation lower than their targets in recent months (Chart 2.8).

Chart 2.8
Asia: Headline CPI inflation

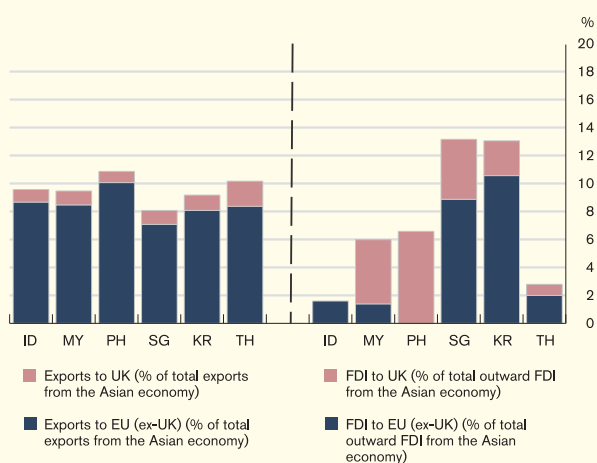


Against the backdrops of weak growth and low inflation, together with the slower-than-expected interest rate hike in the US, many regional central banks have eased their monetary policy to support growth. For example, central banks of Indonesia, Malaysia, South Korea and Taiwan have lowered their policy interest rates in the first half of 2016, while the Monetary Authority of Singapore also eased its monetary policy in April by flattening the slope of the Singapore dollar nominal effective exchange rate policy band. The shift in the central banks' policy stance might reflect that concerns over growth have conceivably heightened. Meanwhile, with many regional economies witnessing portfolio inflows more recently, it might provide more breathing space for regional central banks to adopt a more accommodative monetary policy stance to support growth.

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Looking ahead, while the region is expected to grow at about 3.6% in 2016², this is likely subject to increased uncertainties in the external environment. While the immediate effects of Brexit on the region are mild, the likely repercussions of Brexit on East Asia could be larger over a longer time horizon if Europe is also significantly affected. Slower economic growth in Europe and a sharp depreciation of the euro may dampen the demand for Asian exports. Economies such as the Philippines and Thailand are relatively more vulnerable, given that the EU accounts for a significant share of their merchandise exports (Chart 2.9). Moreover, a significant slowdown of the EU economy may result in firms from Europe reducing, or even pulling back, their outward foreign direct investments (FDI) to the rest of world, including East Asia. Meanwhile, other factors, such as the pace of US interest rate normalisation, US dollar strength and Mainland's economic slowdown, will continue to play a major role in shaping the economic prospect of the East Asian region.

Chart 2.9
Asia: Trade and financial linkages with UK and EU (As of 2014)



Sources: CEIC, IMF and HKMA staff calculations.

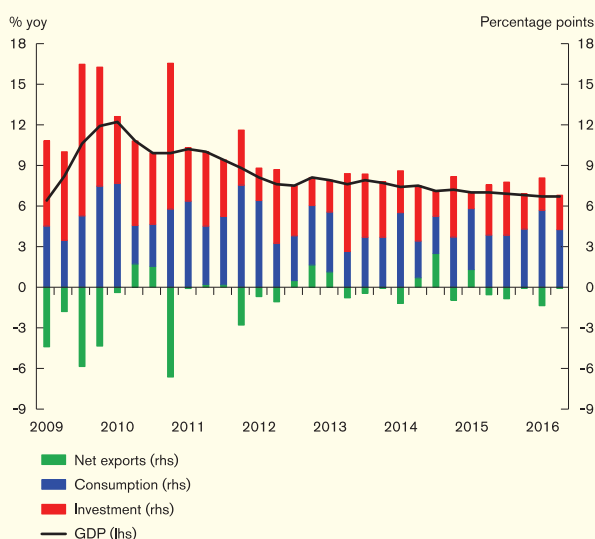
² Weighted average of growth forecasts for the seven East Asian economies. Consensus Forecasts, July 2016.

2.2 Mainland China

Real sector

Growth in Mainland China continued to trend down in the first half of the year, with real GDP growing by 6.7% year on year, compared with 6.9% last year (Chart 2.10). Among major components, consumption continued to hold up well and remained the most important driver of economic growth. Partly reflecting improved ordinary exports and weaker import growth, narrowed declines in net exports helped stabilise economic growth in the second quarter. On the other hand, the support of investment to growth declined, as accelerated public spending on infrastructure projects and increases in property developments were not enough to offset weak private business spending.

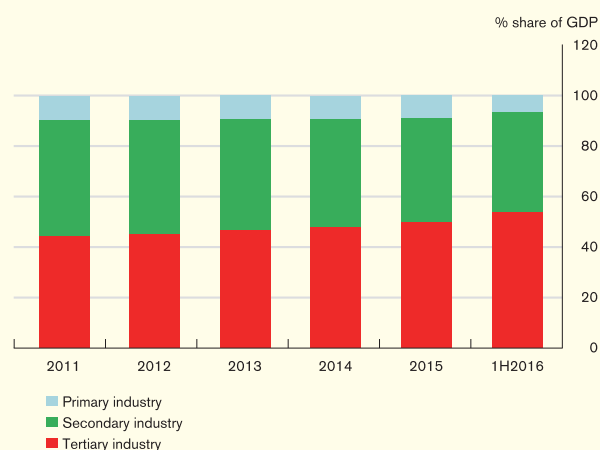
Chart 2.10
Mainland China: contribution to GDP growth by demand component



In value added terms, tertiary industry continued to expand at a faster pace than other sectors, with its share of GDP rising to 54% in the first half of this year from 52% in a year ago (Chart 2.11). Among major sectors in the tertiary industry, value added of the real estate sector saw the fastest growth during the review period amid the recent run-up in home prices, followed by

accommodation and catering, and wholesale and retail trade. Growth of secondary industry, after having eased in the first quarter, also improved in the second quarter this year, in part underpinned by increased demand in property related industries such as construction, chemical and non-metal mineral amid the recent real estate boom.

Chart 2.11
Mainland China: share of GDP by industry



Looking ahead, uncertainty over near-term growth prospects remains in view of the rapidly changing domestic and external environment. On the domestic front, the ongoing supply-side reforms focusing on deleveraging and de-capacity would likely continue to weigh on near-term growth prospects. Meanwhile, the recovery in external demand is uncertain, depending on the pace of recovery in major economies. Latest forecasts by market analysts project real GDP growth to moderate to 6.6% for 2016.

Consumer price inflation remained moderate at 2.2% in the first half of 2016 on weak domestic demand, albeit picking up from 1.5% year on year in the fourth quarter of 2015, partly as a result of the fast increase in food price inflation. The core inflation, which is the headline CPI excluding food and energy, remained benign at 1.6% year on year in June despite having shown a slow rising trend since early this year. As for upstream prices, the decline in producer prices

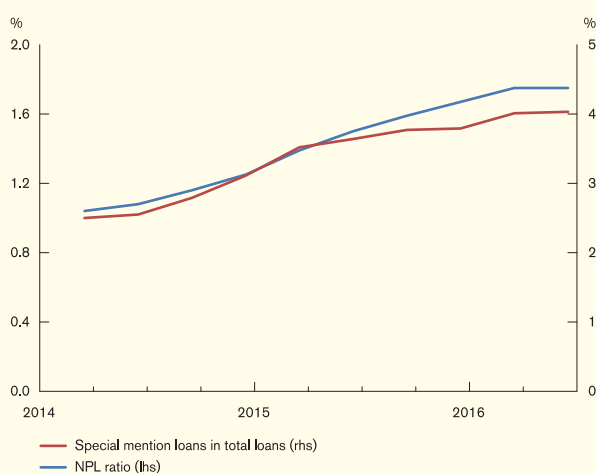
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narrowed notably from -4.9% year on year in the first quarter to -3.0% in the second quarter, in part underpinned by the rebound in commodity prices since March.

Bank lending and asset quality

Asset quality of Mainland banks remained under pressure given the slowdown in economic growth and weak corporate earnings. Reflecting this, non-performing loans (NPLs) picked up from RMB1.39 trillion in the first quarter to RMB1.44 trillion in the second quarter. While the NPL ratio remained stable at 1.75%, the share of special mention loans in total loans edged up from 4.01% to 4.03% over the same period (Chart 2.12).

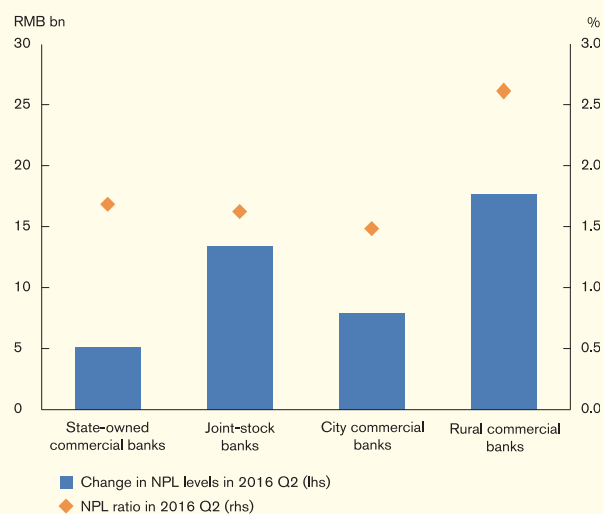
Chart 2.12
Mainland China: NPL ratio and share of special mention loans in total loans



Source: CBRC.

Smaller banks seemed to be more vulnerable to deterioration in credit quality given their larger exposure to small firms and thinner capital buffers. Latest performance indicators show that the level of NPLs increased noticeably in joint-stock, city and rural commercial banks in the second quarter (Chart 2.13), resulting in a decline in the bad debt coverage ratio (i.e., provisions/NPLs) among these banks. Relative to total loans, the NPL ratio came down in state-owned commercial banks, but continued to pick up in smaller banks.

Chart 2.13
Mainland China: NPL ratios of different types of commercial banks



Source: CBRC.

To clean up distressed assets, banks have speeded up the disposal of NPLs through write-offs or transfers to asset management companies. Latest estimates show that Mainland banks still have sufficient buffers to absorb potential loan losses given their strong provisions and solid pre-tax profits. For example, provisions set aside by Mainland banks stood at US\$380 billion in the second quarter. This, combined with pre-tax profits of some US\$400 billion in 2015, should be sufficient to cover potential loan losses suggested by market estimates, including the IMF estimate of US\$760 billion under the stress-case scenario.³

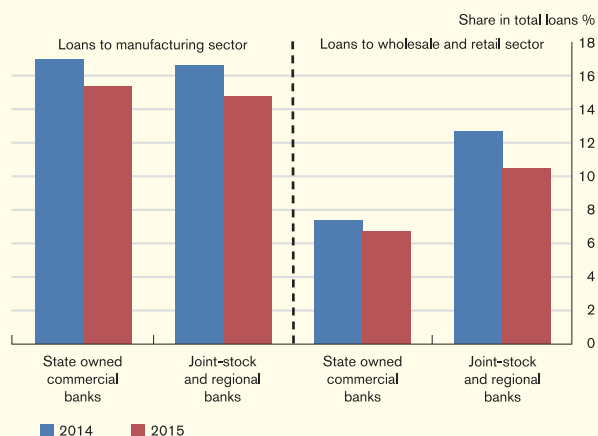
With deterioration in asset quality, banks became more prudent in their lending business and contained their exposure to segments with high NPL ratios such as manufacturing and wholesale/retail trade sectors (Chart 2.14). Meanwhile, the less favourable business environment also weighed on loan demand, particularly for private-sector borrowers. Reflecting this, credit growth weakened in the first half from a year earlier. Breakdown by sector shows that loan

³ The IMF Global Financial Stability Report, April 2016.

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growth continued to ease in the industrial sector as sluggish external demand weighed on the borrowing needs of manufacturers, while growth in mortgage loans picked up, underpinned by the revival of property sales (Chart 2.15).

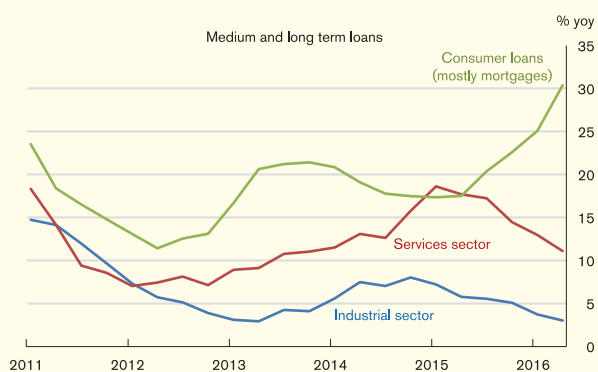
Chart 2.14
Mainland China: Loans to the manufacturing and wholesale / retail trade sectors



Note: The data on loans to the manufacturing sector are collected from 16 listed banks. The data on loans to the wholesale and retail sector are collected from 13 listed banks due to data limitations.

Sources: WIND and HKMA staff estimates.

Chart 2.15
Mainland China: Growth of medium and long term loans by sector



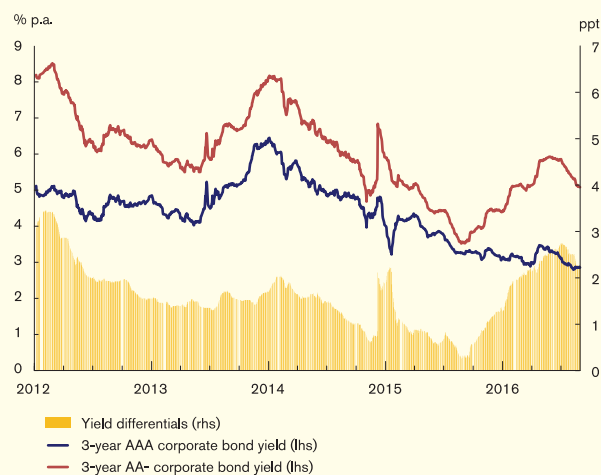
Sources: WIND and HKMA staff estimates.

Asset markets

Mainland China has witnessed a rotation of investment binge in asset markets amid loose monetary conditions since 2015. In particular, after the boom in the equity market in the first

half of 2015 and the bust in the following quarter, the upbeat sentiment seemed to have switched to the bond market, resulting in a quick fall in corporate bond yields. Buoyant bond market conditions however did not last long amid an increased number of issuer defaults.⁴ Corporate bond yields, especially the yields of issuers with weaker financial conditions, started to pick up quickly after the last quarter of 2015. In particular, the yield of 3-year AA- corporate bond surged by 160 basis points from the trough in 2015 to reach 5.1% at the end of August, 2016. Yield spreads between low-rated and high-rated corporate bonds widened to 270 basis points in July, the highest in four years (Chart 2.16). While more reasonable pricing of default risk helped reduce moral hazard and instil discipline in issuance activities, increased borrowing costs weighed on issuance activities, with the net increase in bond financing shrinking by nearly two-thirds in the second quarter from the previous quarter.

Chart 2.16
Mainland China: Yield differentials between low-rated and high-rated corporate bonds



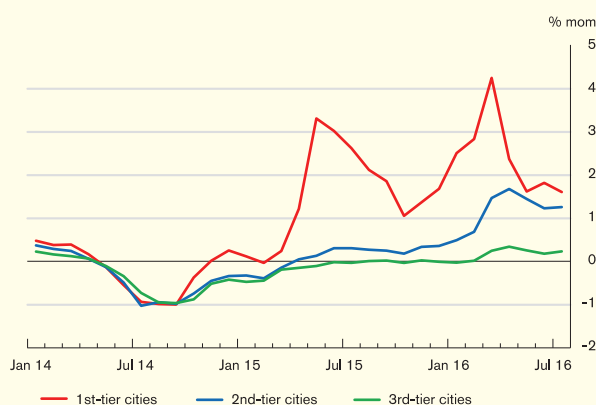
Sources: WIND and HKMA staff estimates.

⁴ In 2015 there were 19 bond defaults. This number increased to 36 in the first half of 2016 involving 18 issuers, of which 6 were state-owned enterprises.

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While late 2015 and early 2016 saw continued corrections in the equity and the corporate bond markets⁵, the real estate market boom accelerated, with the average quarter-on-quarter house price growth rate in the 70 cities monitored by the National Bureau of Statistics (NBS) increasing to 1.5% and 2.1% respectively in the first and second quarters of 2016 from 0.5% in the last quarter of 2015. Following the market boom in first-tier cities, property price growth in second-tier cities started to accelerate in early 2016. Some second-tier cities, including Nanjing, Suzhou, Hangzhou and Xiamen, even reported their land prices to have reached a record high recently. Meanwhile, property markets in third-tier cities also revived, with price growth turning to positive in March and continuing to pick up in the second quarter (Chart 2.17).

Chart 2.17
Mainland China: house prices



Sources: CEIC and HKMA staff estimates.

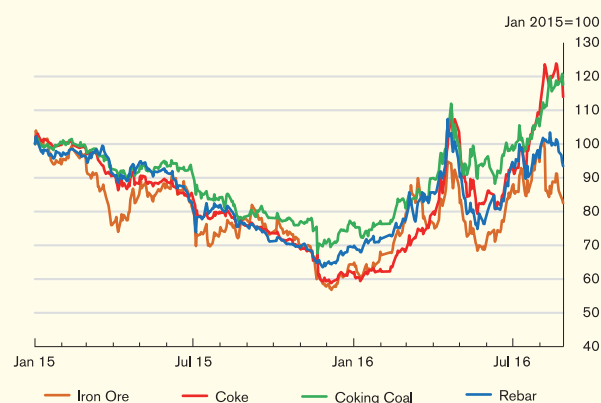
While buoyant property market conditions helped stabilise economic growth, risks may arise should the recent boom not turn out to be sustainable, given the strong linkages between the property market and the rest of the Mainland economy and the financial system. In response,

⁵ The Mainland equity market was largely stable in the first half of 2016 after the correction in early January. In tandem, leveraged trading activities also subsided, with the outstanding size of margin financing on the Shanghai and the Shenzhen stock exchanges coming down from RMB1,174 billion at the end of 2015 to less than RMB900 billion in July 2016.

the government has introduced measures to contain the fast rising property prices in some first-tier cities, including tightening the restrictions on home purchases by people without a residence permit and prohibition of the use of unregulated down payment loans by home buyers through P2P (peer-to-peer) platforms. Meanwhile, authorities have also stepped up supportive measures to tackle property stock overhang problems in third-tier cities, such as subsidising home purchases and lowering the down-payment ratios for mortgage borrowers.

Following the real estate boom, prices of major commodity futures traded in the Shanghai Futures Exchange and the Dalian Commodity Exchange also increased markedly through January–April (Chart 2.18). While the run-up in prices could be in part underpinned by improved demand from accelerated real estate and infrastructure spending, it might have also involved speculative elements amid loose domestic monetary conditions. In view of this, the two exchanges introduced a batch of tightening measures to curb speculative activities in May, such as higher transaction levies, stricter margin requirements and shorter trading hours. The market remained volatile following the introduction of the tightening measures, with commodity prices dropping drastically in May but soon rebounding in June.

Chart 2.18
Mainland China: commodity prices



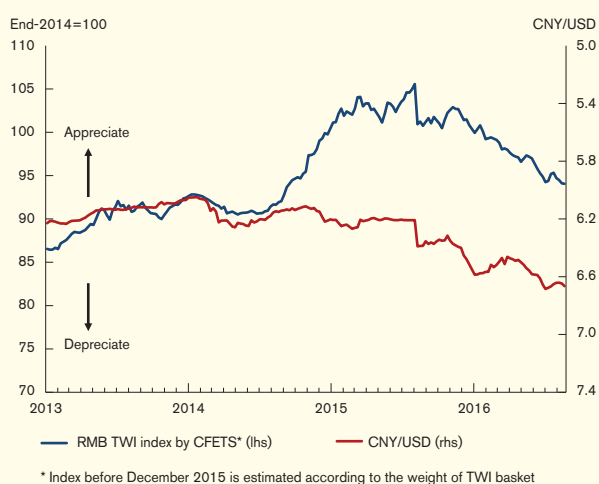
Sources: WIND and HKMA staff estimates.

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Exchange rate and money market

Following the refinements to the fixing mechanism of the central parity rate in August and December last year, the renminbi exchange rate has become more flexible. After gaining 0.4% against the US dollar in the first quarter, the renminbi weakened by 2.6% in the second quarter as the US dollar strengthened on safe-haven demand following the Brexit decision (Chart 2.19). Reflecting this, together with the appreciation of Japanese yen, the renminbi exchange rate index weakened against the currency baskets of China Foreign Exchange Trade System, Bank for International Settlements and Special Drawing Rights by 3.2%, 3.0% and 1.9% respectively in the second quarter.

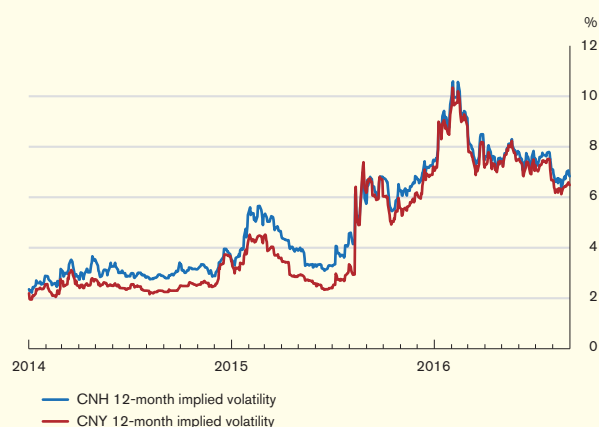
Chart 2.19
Mainland China: Renminbi trade weighted exchange rate index and CNY exchange rate



Sources: CEIC and HKMA staff estimates.

Market sentiment appeared to have improved in the second quarter compared with the first quarter, as suggested by the notable decline in the renminbi exchange rate volatility (Chart 2.20). In addition, while volatility increased in the global foreign exchange market following the Brexit decision, there was little sign of a significant increase in the volatility of renminbi exchange rates in the onshore (CNY) and offshore (CNH) markets towards the end of June.

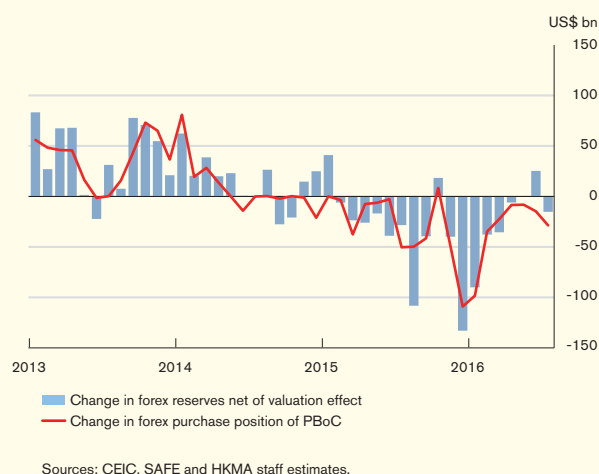
Chart 2.20
Mainland China: Option implied volatility of the CNY and CNH exchange rates



Sources: Bloomberg and HKMA staff estimates.

Reflecting improved market sentiment, capital outflow pressures eased in the second quarter, with foreign reserves stabilising at around US\$3.2 trillion and the decline in the foreign exchange purchase position of the People's Bank of China (PBoC) narrowing towards the mid-year (Chart 2.21). The net sales of foreign exchange by banks to customers also shrank from US\$138 billion in the first quarter to US\$51 billion in the second quarter, suggesting that incentives for residents to hold more foreign currencies started to diminish.

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

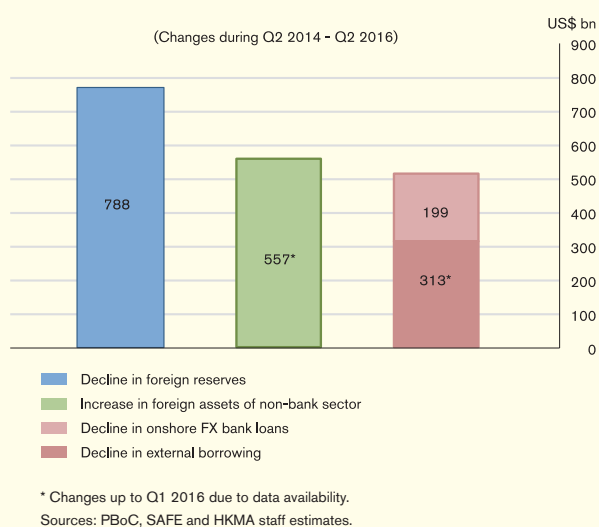


Sources: CEIC, SAFE and HKMA staff estimates.

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Following the depreciation of the renminbi, Mainland firms cut back their external borrowing by US\$313 billion between the second quarter of 2014 and the first quarter of 2016. Meanwhile, external assets held by the non-bank sector increased by US\$557 billion. The asset-liability rebalancing by the private sector helps explain most of the decline in foreign reserves from the second quarter of 2014 through the second quarter of 2016 (Chart 2.22). During the same period, non-bank corporates also paid down their foreign currency borrowing in the onshore market by almost US\$200 billion to reduce the risk of currency mismatch.

Chart 2.22
Mainland China: Factors contributing to change in foreign reserves



Given that external borrowing shrank by nearly half from the peak in 2014, the room for a sharp reduction in external debt would become smaller. Balance of payments (BoP) statistics show that net capital outflows by the private sector moderated to some US\$90 billion in the second quarter from the peak of US\$230 billion in the third quarter last year (Chart 2.23). After excluding errors and omissions, the moderation of net capital outflows by the private sector was mainly driven by a slower pace of reduction in external liabilities by Mainland residents, while the increase in external assets remained largely steady (Chart 2.24).

Chart 2.23
Mainland China: Change in official reserves and private sector cross-border fund flows

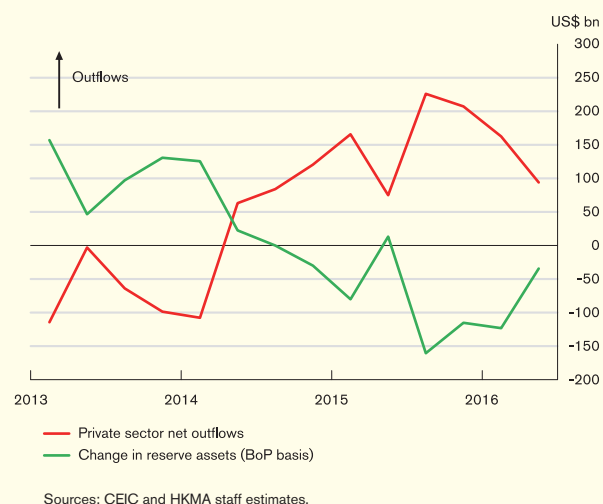
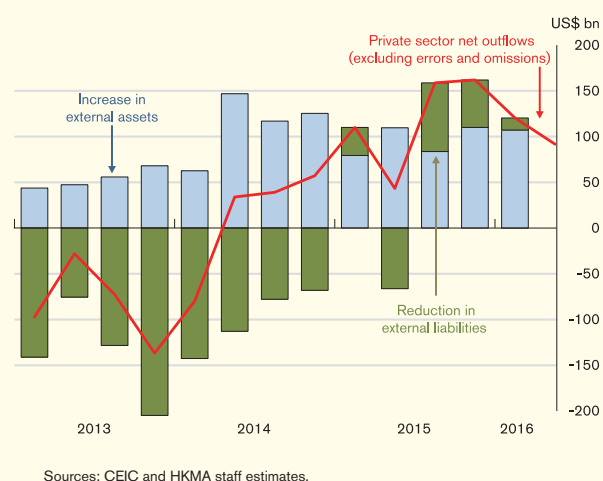


Chart 2.24
Mainland China: Decomposition of net capital flows by private sector

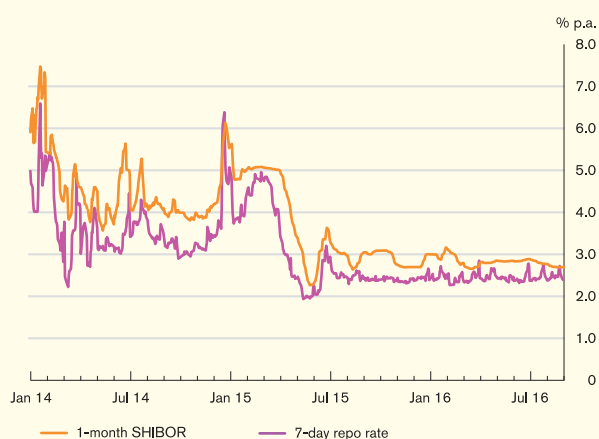


With the sizable pay down of external debt and foreign currency loans by the non-bank sector, the exchange rate risk faced by Mainland enterprises would become smaller, rendering business owners less vulnerable to fluctuations in the renminbi exchange rate. Using listed company data, Box 2 shows that on average the exposure of Mainland enterprises to renminbi depreciation is not high given limited US dollar borrowing by Mainland firms, despite the fact that some tradable goods and service sectors are found to be more vulnerable than others.

Global setting and outlook

Liquidity conditions in the money market remained largely stable during the review period. Short-term interest rates such as 7-day repo rate and 1-month Shanghai Interbank Offered Rate (SHIBOR) mostly traded at around 2.5% and 2.8% respectively in the first half of this year (Chart 2.25). To smooth out short-term fluctuations in interbank interest rates, starting from February the PBoC decided to conduct open market operations daily instead of twice a week, depending on liquidity conditions in the banking system. Stable and low interbank interest rates help contain the funding costs of smaller banks which rely on interbank borrowing and are major lenders to small business owners.

Chart 2.25
Mainland China: 7-day repo rate and 1-month SHIBOR



Sources: CEIC and HKMA staff estimates.

Fiscal and monetary policy

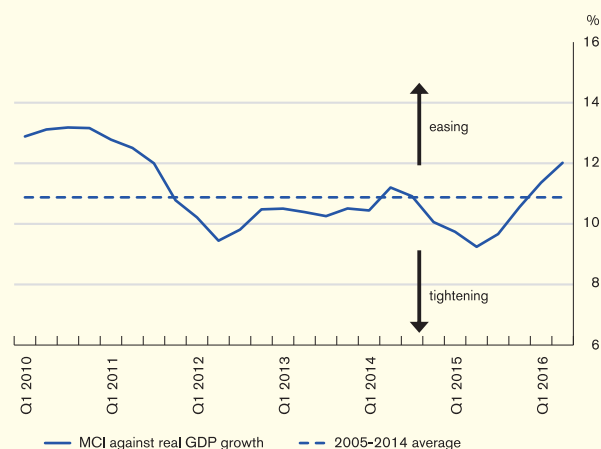
The government continued to strike a balance between restructuring and stabilising growth. In particular, while a proactive fiscal policy stance was maintained in order to shore up infrastructure spending, monetary policy stance remained prudent in view of the financial risks relating to the already high level of corporate leverage.

During the review period, the PBoC kept the benchmark interest rates and required reserve ratio unchanged while relying more on targeted

measures to support bank lending to strategically important sectors such as agriculture and small and micro-sized enterprises, and to accommodate public spending. In particular, the central bank has enhanced its support to the three policy banks in their infrastructure lending, for instance to shanty upgrading and water conservancy projects, through more frequent use of Pledged Supplementary Lending (PSL) since May. Reflecting the greater reliance of the central bank on targeted measures, the year-on-year growth of the outstanding size of Medium-term Lending Facility (MLF) increased to 348% in July 2016 from 3.3% at the end of 2015, and the average monthly increase in the outstanding size of PSL also accelerated from RMB77.5 billion in January–April to RMB140.2 billion in May–July.

Although the central bank did not conduct across-the-board easing, lower real interest rates amid rising inflation, together with weaker renminbi effective exchange rate, appeared to have created more favourable monetary conditions for borrowers during the review period. Our in-house estimate of the monetary condition index rose to the highest loosening level in the second quarter since mid-2011 (Chart 2.26).

Chart 2.26
Mainland China: Monetary condition index

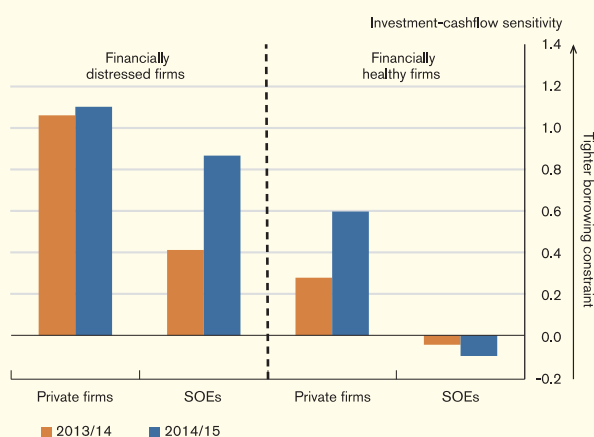


Sources: CEIC and HKMA staff estimates.

Global setting and outlook

However, the easing monetary conditions did not appear to have translated into greater business expansion. While this might have in part reflected the weak investment appetite of private firms amid the uncertain economic outlook, banks' lending attitude in view of worsening loan book quality might have also played a role. Our analysis on the investment-cash flow sensitivity of listed firms suggests that, in general, private firms still faced greater borrowing constraints than state-owned enterprises (SOEs) in recent years, despite the fact that SOEs with weak financial conditions were facing hardened budget constraints over time (Chart 2.27).

Chart 2.27
Mainland China: Investment-cash flow sensitivity of listed firms



Sources: Bloomberg, WIND and HKMA staff estimates.

On the fiscal front, the government adopted a multi-pronged approach to support the economy, with government expenditure expanding robustly by 15% year on year in the second quarter. To facilitate supply-side reforms such as resolving the overcapacity problems, the government allocated RMB100 billion to subsidise local governments and SOEs in eliminating overcapacity in the steel and coal industries. On the revenue side, to boost private investment, the authorities had fully implemented the value-added tax reform in May, which was expected to reduce the corporate tax burden by more than RMB500 billion this year.

In addition to direct government spending, policy banks also enhanced their lending to infrastructure projects. As a result, the financial bond issuance by policy banks increased by 30% year on year in the first half of 2016.

Despite the accelerated public spending, the risks relating to local government debt would remain contained in the near term. Bank lending to local government financing platforms has been tightened by authorities, and the accelerated local government debt swap program also helps lower the refinancing risks and interest burden facing the local governments. In particular, the issuance of local government bonds rose to RMB3,576 billion in the first half of 2016 from RMB2,967 billion in the second half of 2015, most of which were bonds issued under the debt swap program. That said, the debt-servicing capacity of some local governments appeared to have deteriorated on lowered revenues amid recent economic slowdown and the ongoing supply-side reforms. For instance, while the outstanding public debt of Liaoning province, where many of the steel and coal industry SOEs were facing de-capacity pressures, fell modestly by 0.8% in 2015, the revenue of the Liaoning government declined by 33% in 2015 and then by 9% year on year in the first five months of 2016.

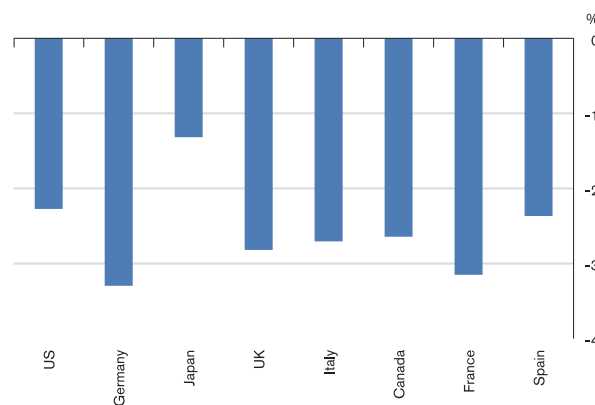
Box 1 Measuring spillovers between the US and Emerging Markets

Introduction

Major advanced economies (AEs) are commonly regarded as a source of financial spillovers to emerging market economies (EMEs). However, the spillovers from EMEs to AEs can be large, given that (i) EMEs have played a major role in global financing flows after years of unconventional monetary policies (UMP) adopted by major AEs; (ii) as EMEs have been net receivers of funds in recent years, some of their corporate leverage has risen to record levels; and (iii) in terms of trade and financial linkages, EMEs have become more integrated into the global economy and financial system over the past decade. Thus, any adverse change in fund flows or in EMEs' economic fundamentals could amplify shock transmission from EMEs to AEs and the rest of the world.

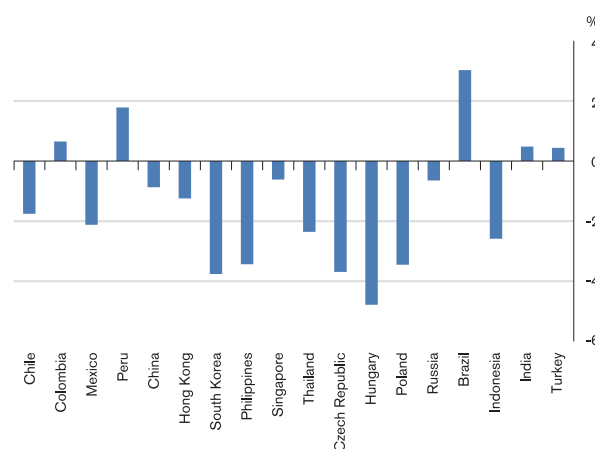
In particular, sovereign bond markets of AEs and EMEs are increasingly interconnected in the post global financial crisis era. Amid uncertain economic outlook, the decline in long-term sovereign bond yields is seen not only in AEs (Chart B1.1) but also in EMEs (Chart B1.2).⁶ Against this backdrop, this Box aims to examine the bilateral spillovers between AEs and EMEs in sovereign bond markets.⁷

Chart B1.1
Change in 10-year sovereign bond yields from January 2010 to February 2016 for AEs



Source: Bloomberg.

Chart B1.2
Change in 10-year sovereign bond yields from January 2010 to February 2016 for EMEs



Source: Bloomberg.

⁶ Theoretically, the movement of long-term yields can be influenced by short-term policy rates, as well as the investors' expectations of the future economic conditions. Hence, the global yield compression could result from the negative interest rate policies adopted by some major AEs that unintentionally affect EMEs. It could be also due to the weaker-than-expected economic performance in many EMEs recently that drags the economic recovery of AEs.

⁷ The IMF recently also conducted a spillover analysis between AEs' and EMEs' sovereign bond, foreign exchange and equity markets using a different sample period and data frequency that differ from us. The IMF finds that while the spillover in sovereign market is significant, the spillovers in foreign exchange and equity markets are more pronounced. For details, see *Global Financial Stability Report* (April 2016) published by the IMF.

Global setting and outlook

Methodology and data

Based on the econometric method proposed by Diebold and Yilmaz (2009),⁸ we first provide a broad picture of spillovers among selected economies, and then assess the spillovers between the US and EMEs specifically.⁹ The spillover effect is measured by the variance decomposition (VD) derived from a vector autoregressive model. The VD indicates the variation that each variable of the model can be explained by another variable's shock. Thus, a larger VD means a larger variation, and hence, a larger spillover effect from one variable to another.

In our application, the 10-year sovereign bond yields of eight AEs and 18 EMEs are used in estimation (Table B1.A). As of the second quarter of 2015, these sovereign bond markets are worth more than US\$40 trillion in total, which covers over 90% of the global sovereign bond markets according to the Bank for International Settlements data.¹⁰ For ease of discussion, we classify all 26 economies into five groups: (i) AEs excluding the US, (ii) the US, (iii) Emerging Europe, (iv) Latin America, and (v) Emerging Asia.

Table B1.A
Eight AEs and 18 EMEs

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

⁸ Diebold and Yilmaz (2009) "Measuring Financial Asset Return and Volatility Spillovers, with Application to Global Equity Market", *Economic Journal*, Vol. 119, pages 158-171.

⁹ The detailed results in this box are in Fong et al. (2016) "Measuring spillovers between US and emerging markets", HKMA Working Paper 06/2016.

¹⁰ Apart from availability of long-term yields, EMEs are selected based on at least one of the following three criteria: (1) A member of either the IMF's emerging or developing economies or World Bank's low and middle-income countries; (2) Constituents of the emerging-market government bond indices; and (3) Stock of public debt exceeding US\$10 billion or long-term sovereign credit rating above BB/Ba.

Apart from the selected endogenous variables, three exogenous variables are used to control for the effect of global factors that could affect the financial markets in both AEs and EMEs simultaneously. They include: (i) the Chicago Board Options Exchange Standard & Poor's 500 Implied Volatility Index (VIX) which proxies for the global risk appetite; (ii) the 10-year US Treasury term premium estimated by the Federal Bank of New York which proxies for the effect of UMP adopted by the Fed; and (iii) the US dollar index to control for the effect of the dollar appreciation.

*Empirical findings**Broad picture*

We provide a broad picture of spillovers across economies by constructing a matrix of VDs. Based on weekly data covering a fixed sample period from March 2007 to February 2016 (or a total of 520 weeks) (Table B1.B), each matrix element is the estimated contribution to the VD of group *i* coming from a shock to group *j*.¹¹ For instance, a shock originated from Emerging Europe explains 15% of VD of Latin America but only 8% of VD of the US. In other words, the spillover from Emerging Europe has a larger impact on Latin America than the US.

Table B1.B
Spillover matrix among five economy groups*

Economy Group	From					Row Average
	US	AE excluding US	Emerging Europe	Latin America	Emerging Asia	
US	–	34	8	9	10	16
AE excluding US	35	38	10	4	4	14
To Emerging Europe	12	14	14	12	6	11
Latin America	13	5	15	17	8	10
Emerging Asia	19	7	9	10	10	9
Column Average	21	17	11	10	7	12

Note: * The spillover effect excludes the economy's own effect.

Source: HKMA staff estimates.

¹¹ In constructing other economies impact on the US, we first note that there are 26 shocks from other economies in the VD of the US. We can then classify the shares of AEs and EMEs on the US by summing the relevant individual component. The regional classification of EMEs is done in a similar fashion. In constructing the US impact on others, we need to extract the US shocks appearing in each of the 26 VDs of other economies and group them accordingly.

Global setting and outlook

Fixing the origin of the shock, the last row of Table B1.B computes the column average which shows the impact of that shock on other economies. It shows that US's shock is the largest (21%), followed by other AEs (17%), Emerging Europe (11%), Latin America (10%), and Emerging Asia (7%). This suggests US's shock has the largest spillover effect on others, while the shock from Emerging Asia is relatively modest in general. Fixing the receiver of the shock, the last column of Table B1.B computes the row average which summarises the responsiveness of that receiver to shocks generated from others. For example, the US is found to have the largest responsiveness to shocks from the others (16%).

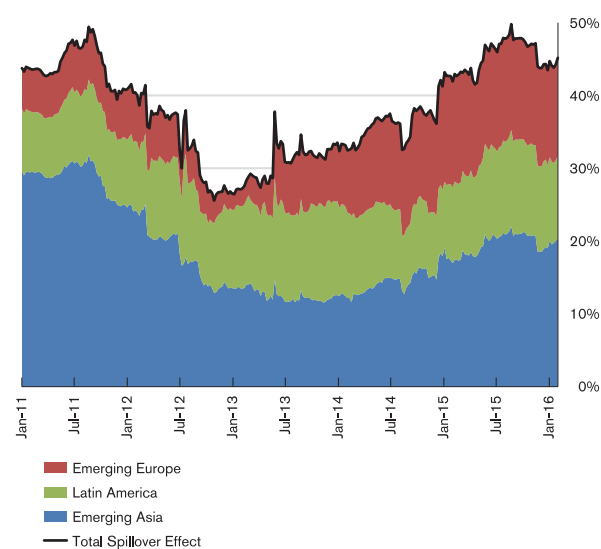
Spillovers between US and EMEs

Given that the US as a single economy has a substantial spillover effect to other economies, we employ a 200-week rolling window to assess the extent and nature of spillovers between the US and EMEs over time. The VD is calculated based on a forecasting horizon of ten-week. The first window starts from March 2007 to February 2011 and the last window starts from January 2012 to January 2016.

Charts B1.3 and B1.4 depict the spillover effects from the US to EMEs and the other way round respectively. Measured by the VDs, the total spillover effect from the US to the three EME groups has increased from 30% in early 2013 to almost 50% in late 2015 (Chart B1.3). The considerable increase is ascribed to growing responses of Emerging Europe (shaded in red) and Asia (shaded in blue) to the US shock. The response of Latin America to the US shock (shaded in green), however, remains generally steady. From the three EME groups to the US,

the total spillover effect has also increased notably after the taper tantrum in May 2013 (Chart B1.4). In particular, the spillover effects from Emerging Europe and Latin America have picked up substantially in share since mid-2013, which could be partly due to the second-round effect¹² of the US tapering shock reverting back to the US from the EMEs with weaker economic fundamentals such as slower economic growth and larger current account deficits.¹³ Meanwhile, Asia's share which explains most of the VD of the US Treasury yield among the three EME groups before mid-2012, falls and steadies at a level of 10% in the last four years.

Chart B1.3
Spillover from the US to EMEs



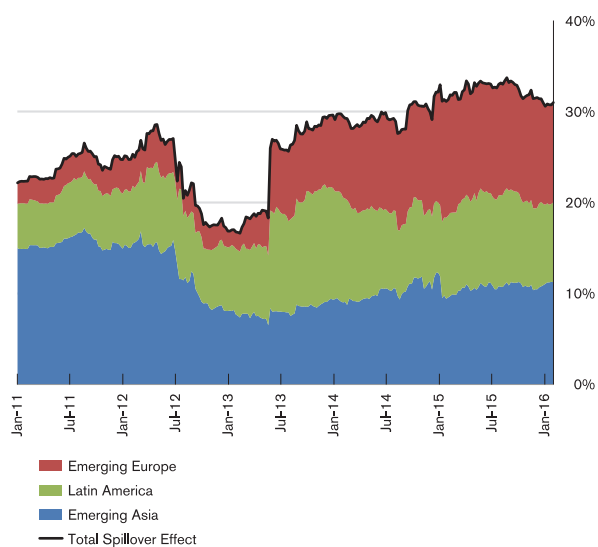
Source: HKMA staff estimates.

¹² The second-round effect denotes the spillovers from receiver countries back to transmitter countries through trade and financial linkages. For details, see Balakrishnan et al. (2009) "The Transmission of Financial Stress from Advanced to Emerging Economies", *IMF Working Paper* 09/133.

¹³ According to the World Bank's data, when compared with Emerging Asia, EMEs in Emerging Europe and Latin America on average had lower real GDP growth and larger current account deficit in 2013.

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Chart B1.4
Spillover from EMEs to the US



Source: HKMA staff estimates.

Conclusion

We find significant interdependence between AEs and EMEs in sovereign bond markets after the global financial crisis. In particular, while shocks originated from the US have a sizeable effect on the EMEs, the reverse side could at times be tangible as well. The fact that sovereign bond yields in the US and EMEs have increasingly synchronised could have been attributable to the fact that (i) as policy rates remain low in many economies, search for yield behaviour has manifested into a yield compression globally; and (ii) banks and insurers are now required to hold more safe assets such as government securities because of regulatory requirements.

From a monetary policy perspective, this analysis implies that the exit from the zero lower bound in the US may have potent spillovers on EMEs on one hand. On the other hand, any monetary policy shocks originated from EMEs could generate undue pressure on the US and affect its subsequent policy decisions. This two-way interaction between the US and EMEs could pose challenges for central banks in formulating monetary policies independently.

Box 2

US dollar liabilities of non-financial firms in Mainland China: How large is the default risk?

Introduction

The ongoing interest rate normalisation in the US and increased renminbi depreciation expectations against the US dollar have raised concerns over the vulnerability of the fast expansion in Mainland external debt over the past few years, especially the part taken on by the corporate sector. During the current economic slowdown, the worsening financial conditions of Mainland manufacturers have made loan repayment abilities of these corporate borrowers a concern for both policy makers and market analysts.

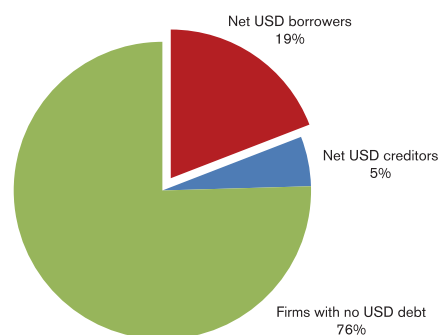
Against this background, using financial data including US dollar loans and deposits of more than 2,300 Mainland listed non-financial firms at the end of 2014 when foreign currency borrowing reached its peak, this analysis attempts to answer the following questions: 1) how leveraged are Mainland firms in US dollar credit and what is the US dollar borrowing pattern among these firms, 2) where do the vulnerabilities lie, and 3) how large is the risk associated with further depreciation of the renminbi against the US dollar.

US dollar borrowing pattern among Mainland firms

Listed company data suggests that only a limited proportion of Mainland enterprises had net US dollar liabilities and on average the size was not large.¹⁴ By the end of 2014, only less than a quarter of listed Mainland non-financial firms reported to have borrowed US dollar loans, among which around 78%, or equivalent to 19% of all listed non-financial firms, were net US dollar corporate borrowers with their

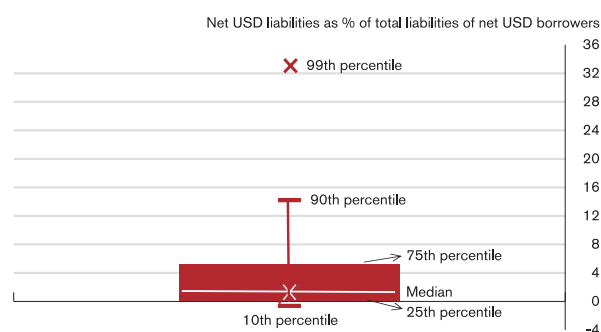
US dollar loans larger than US dollar deposits (Chart B2.1). Net US dollar borrowers are of particular interest as they are exposed to the risk of renminbi depreciation. In our sample, 90% of these net US dollar borrowers had net US dollar liabilities to total liabilities ratios below 15%, suggesting that for most of these net US dollar borrowers the exposure to renminbi depreciation was limited (Chart B2.2). Nonetheless, the other 10% had relatively higher net US dollar liabilities to total liabilities ratios. For instance, the most leveraged firms (at the 99th percentile) in terms of net US dollar borrowing reported to have a net US dollar liabilities to total liabilities ratio of around 33%.

Chart B2.1
Exposure of Mainland non-financial listed firms to US dollar borrowing



Sources: WIND and HKMA staff estimates.

Chart B2.2
Net US dollar liabilities to total liabilities ratio of net US dollar borrowers



Sources: WIND and HKMA staff estimates.

¹⁴ Due to data limitation, only data on foreign currency loans rather than other debt instruments such as bonds are available for Mainland listed firms. By net US dollar liabilities we therefore refer to the difference between US dollar loans and deposits.

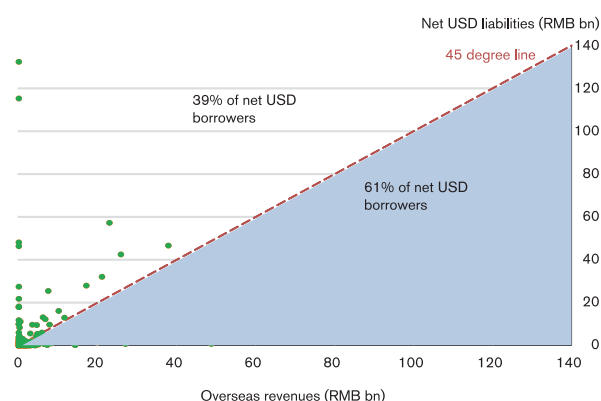
Global setting and outlook

Net US dollar corporate borrowers in Mainland China tended to be larger in size, and most of them had overseas business income. In our sample of listed non-financial Mainland firms, net US dollar borrowers on average had larger total assets compared with net US dollar creditors. In particular, the median size of net US dollar borrowers was RMB6.8 billion, while that of net US dollar creditors was RMB3.8 billion. The positive correlation between firms' sizes and their exposure in US dollar borrowing in one way may reflect the fact that larger firms in Mainland China had better access to credit markets, even for foreign currency borrowing.

Where do the vulnerabilities lie?

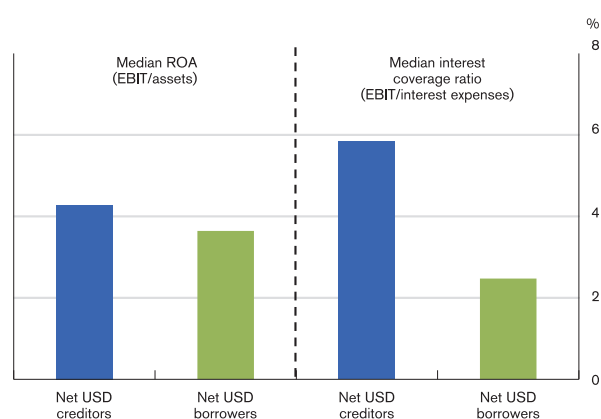
The exposure of Mainland firms to currency mismatch appeared to be small. Among the net US dollar borrowers, 75% had overseas revenues, and 61% enjoyed "natural hedge", with their net US dollar liabilities being able to be covered by 1-year overseas revenues (Chart B2.3). However, net US dollar borrowers in general tended to have weaker financial positions and thus lower loan repayment abilities compared with net US dollar creditors. While the profitability of net US dollar borrowers was comparable to that of net US dollar creditors, net US dollar borrowers had a lower median interest coverage ratio of 2.5 compared with 5.8 of net US dollar creditors (Chart B2.4), implying that the borrowers may face more pressure in generating enough revenue to cover their interest expenses. This also reflects the generally higher leverage of net US dollar borrowers compared with net US dollar creditors. For instance, the average liabilities-to-assets ratio of net US dollar borrowers in 2014 was 0.54, higher than that of net US dollar creditors which was 0.43.

Chart B2.3
Net US dollar liabilities vs 1-year overseas revenues of net US dollar borrowers



Sources: WIND and HKMA staff estimates.

Chart B2.4
Profitability and interest coverage ratio: net US dollar creditors vs net US dollar borrowers



Sources: WIND and HKMA staff estimates.

Further analyses suggest that while different sectors faced different risks, net US dollar borrowers in many tradable sectors were more vulnerable. For instance, the risk of currency mismatch of some tradable goods and service sectors, including materials, consumer goods & services, industrial, and IT, is not high as many of them had overseas business income and thus enjoyed "natural hedge" (Table B2.A). Compared with other sectors, these sectors however had higher net US dollar leverage and also faced higher liquidity risk given their much greater reliance on short-term funding. Moreover, loan repayment abilities of these sectors, especially

Global setting and outlook

overcapacity sectors such as materials, were particularly weak, reflected by their extremely low interest coverage ratios, low return on assets (ROA) and high loss-making ratios. In comparison, non-tradable sectors such as real estate and utilities had lower leverage but were exposed to greater currency risks as they do not usually have overseas business income. Loan repayment abilities of these two sectors were in general better than the tradable sectors, though weaker for real estate developers.

Table B2.A
Risks and repayment abilities of Mainland net US dollar loan borrowers by sector

	Materials	IT/ Telecom- munications	Consumer Goods/ Services	Industrials	Energy	Real Estate	Utilities
<i>Leverage</i>							
Average net USD liability ratio of highly leveraged borrowers (75-99 percentile)	21	19	18	18	14	8	8
<i>Currency mismatch</i>							
% of firms with natural hedge	65	74	68	55	35	33	13
<i>Liquidity risk</i>							
Short-term USD loans as % of total USD loans	73	65	77	28	61	39	11
<i>Repayment ability</i>							
Interest coverage (median)	1.7	3.4	2.7	2.5	3.6	2.9	3.3
ROA (median)	3.4	3.3	3.3	3.8	3.7	3.8	6.5
% of loss-making firms	12	10	15	8	18	0	0

Note: Green, yellow and red shadings indicate that the financial indicators point to low, medium and high risks.

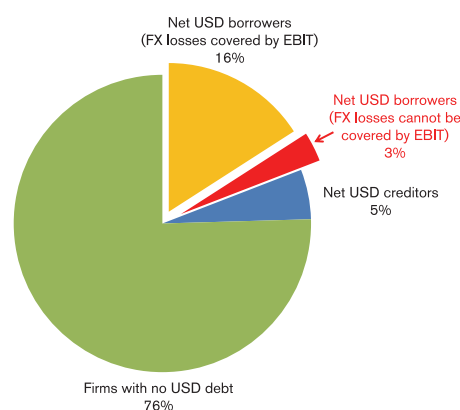
Sources: WIND and HKMA staff estimates.

How large is the risk? A sensitivity test

Given the vulnerabilities identified in the previous section, a natural question is how large the risk would be if the renminbi continues to depreciate against the US dollar given uncertainties in economic outlook and the ongoing normalisation of interest rates in the US. To shed some light on this question, we consider a hypothetical 10% depreciation of the renminbi against the US dollar and then estimate the foreign exchange losses based on firms' reported net US dollar liabilities in 2014, which in turn is compared with their earnings before interest and tax (EBIT).

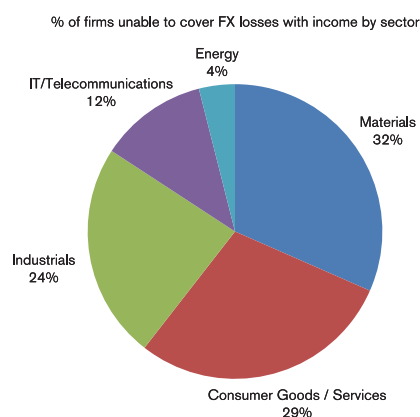
We found that a hypothetical 10% depreciation of the renminbi against the US dollar would cause net US dollar borrowers to suffer foreign exchange losses but 83% of them (or 16% of all listed non-financial firms) could cover their losses by one-year EBIT (Chart B2.5). Firms unable to cover foreign exchange losses by income were mainly concentrated in the most vulnerable sectors, such as materials, consumer goods & services, and industrials (Chart B2.6). Again, our analyses highlight in particular the risks facing overcapacity sectors. For instance, 32% of net US dollar borrowers unable to cover their foreign exchange losses with EBIT in our sensitivity test were from the materials sector.

Chart B2.5
Number of net US dollar borrowers affected in the sensitivity test



Sources: WIND and HKMA staff estimates.

Chart B2.6
Firms unable to cover foreign exchange losses with income by sector



Sources: WIND and HKMA staff estimates.

Global setting and outlook

In particular, loan repayment abilities could be a concern for firms that already made losses while suffering also renminbi depreciation. US dollar loans borrowed by these firms accounted for 5% of total US dollar loans of all listed non-financial companies, concentrating in sectors such as consumer goods & services and materials. Although this implies that the credit risk to US dollar loans of Mainland banks cannot be dismissed, Mainland bank exposure to these loans is relatively small as foreign currency (including US dollar) loans accounted only for around 5-6% of total bank loans in recent years.

Conclusion

Overall, our findings suggest that on average, the exposure of Mainland enterprises to renminbi depreciation is not high given limited US dollar borrowing among Mainland firms. However, some tradable goods and service sectors, especially materials, consumer goods & services, industrials, and IT, are found to be more vulnerable than others due to their higher net US dollar leverage, higher liquidity risk, and weaker repayment abilities. A hypothetical 10% depreciation of the renminbi against the US dollar would lead net US dollar borrowers to suffer foreign exchange losses but only 3% of the firms are found to be unable to cover their foreign exchange losses by EBIT. As US dollar borrowing was concentrated in highly leveraged borrowers, the credit risk to US dollar loans of Mainland banks cannot be totally dismissed, especially US dollar loans borrowed by firms that already made losses. That said, Mainland bank exposure to these loans is relatively small.

It should be noted that our analysis is subject to caveats. First, this analysis focuses only on US dollar loans borrowed by listed firms rather than other debt instruments such as bonds due to data limitation. Second, only listed non-financial firms are studied, and therefore the risk profile of non-listed smaller US dollar loan borrowers is not covered.