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Recent Trends in China's Economy

Summary

The main economic challenge China faces today is industrial overcapacity, a situation that stems, in part, from excessive capital accumulation in the wake of the Global Financial Crisis (GFC). A strategy to address overcapacity is likely involve three key elements: (1) monetary easing to reduce real interest rates and debt service burdens; (2) structural reform to eliminate excess capacity through business combinations and liquidations; and (3) financial sector reform to address existing nonperforming loans and those created by industrial consolidation.

The U.S. has a significant national interest in China's continued growth. At the end of 2015, China accounted for over 17% of global GDP (on a purchasing power parity basis) and over one-third of the growth in global demand.[1] The *growth* in Chinese household spending in 2015 exceeded $380 billion – roughly the size of the entire Austrian economy. As China has integrated into the global economy, it has become the key economic platform for the final processing of manufactured goods and the main driver of demand for primary inputs (steel, etc.), intermediate goods (machined parts and precision tools), and capital goods (tractors and turbines) produced by U.S. manufacturers. In short, a significant further deceleration in Chinese growth, or outright contraction, would be very damaging for the U.S. and global economies.

The slowdown in annual Chinese GDP growth from 10% prior to the GFC to 6.8% in 2015 has been concentrated in manufacturing and fixed investment (infrastructure, property development, and business capex). As a result, the spillovers in the U.S. to-date have been felt in the industrial and resources sectors. China accounts for nearly 25% of global manufacturing output.[2] Any slowdown has a *direct* impact on global industrial orders given the economy's importance to global supply chains. At the same time, slowing manufacturing and investment growth in China also depresses industrial orders *indirectly* through weaker-than-expected demand for industrial inputs (iron ore, copper, oil distillates, etc.). Most of the observed weakness in the global industrial sector is attributable to the collapse in development spending in the energy, metals, and mining sector, as low commodity prices make new development projects uneconomic.

The decline in commodity prices also has raised difficult questions about potential losses on the large stock of credit issued to fund past resource development in the U.S. and elsewhere. Since November 2014, the market value of speculative grade bonds issued by firms in the energy, metals, and mining sectors has fallen by over 40%, on average. As the stock of commodity-linked speculative grade debt exceeds $500 billion, fair value losses of this

[1] IMF, World Economic Outlook Database, October 2015.
[2] Focus: Global Supply Chain and Logistics, March 2015.

magnitude have led to retrenchment among creditors and have contributed to a 2 percentage point average increase in speculative grade borrowing costs in the broader U.S. economy.[3]

As services and consumption account for a larger share of Chinese GDP, a given amount of growth will generate less incremental demand for industrial inputs. As a result, it seems unlikely that demand in China will rebound to the growth trajectory necessary to reverse current fixed investment trends. Commodity prices are likely to rebound, but only after depletion of existing resources causes supply to adjust downward.

The key issue for the U.S. today is that China pursues the structural and countercyclical policies necessary to prevent conditions from deteriorating further and placing global growth at risk. It will likely prove difficult for China to contain current risks to growth without more accommodative monetary policy, which will likely include further currency depreciation. Although not a first-best solution from the U.S. perspective, the benefits of a stronger Chinese economy are likely to far outweigh any competitive advantage derived from a strong renminbi (RMB).

A weaker currency increases inflation pass-through from imports and raises inflation expectations, both of which help to ease financial conditions. Since June 2011, the RMB has appreciated by 24% on a trade-weighted basis, with over half of the appreciation occurring since June 2014. Easing is not designed to siphon demand from trading partners, but to reverse the tightening of domestic financial conditions stemming from currency appreciation. Although China continues to run a large current account surplus and the RMB would be expected to appreciate over the medium-to-long term, current trends in prices and capital outflows suggest that the RMB would likely weaken materially against the U.S. dollar in the absence of official intervention.

Chinese Industrial Overcapacity

Between 2008 and 2011, real fixed investment grew at a 14% annual rate and peaked at nearly 50% of China's GDP. This countercyclical spending allowed China to meet GDP growth targets at a time when external demand collapsed. Between 2007 and 2013, the share of Chinese output consumed by the rest of the world declined by 12 percentage points (from 35% to 23%), as China's growth model shifted from exports to domestic investment.

The legacy of this investment boom is evident today in declining sales and profitability ratios. Since the end of 2011, asset turnover among public companies has declined by 20% (Figure 1); operating margins at the same group of businesses have contracted by 15%, on average; and Chinese producer prices have contracted on an annual basis for 48 consecutive months and are currently falling at a 6% annual rate. Included in this survey are finished manufactured goods, whose prices are declining by a 5.4% annual rate.

In addition, China's aggregate return on incremental capital – the amount of real GDP generated per unit of incremental gross fixed capital formation – has roughly halved since the financial crisis, falling from 27.5% in 2007 to 14% last year as the productivity of recent investment has fallen relative to prior trends (Figure 2). As the capital stock expands, returns naturally decline. The gains derived from the first wave of infrastructure spending on roads, ports, and rail far

[3] Federal Reserve, Shared National Credits, October 2015. Bank of America Merrill Lynch Global Index System Database.

exceed those from second and third generation projects. But given China's relatively low per capita income level, the scale of the decline suggests that some portion of the recent fixed investment has been duplicative or otherwise inefficient.

Global Spillovers

Chinese growth has been concentrated in areas like manufacturing, property development, and infrastructure that require significant amounts of energy, steel, industrial commodities, and (largely U.S., German, and Japanese) high value-added capital equipment. Over the past decade, China became the marginal purchaser of many industrial commodities, accounting for virtually all of the observed growth in global demand for iron ore, aluminum, copper, nickel, and many distillates.[4] Increased Chinese demand for industrial inputs contributed to significant growth in global capital spending (capex) on resource development projects in the metals, mining, and energy sectors.

Since 1996, the annual GDP growth rate in emerging market economies (EME) has been nearly 90% correlated with annual changes in commodity prices (Figure 3). Increases in commodity prices boosted exports and incomes in commodity-exporting EMEs like Brazil, Colombia, Russia, and South Africa and also stimulated new fixed investment in mining, metals, and energy exploration and production. The surge in EM fixed investment between 2003 and 2012 created significant demand for excavators, trucks, metal cutting tools, vacuums, compressors, transmissions, and other capital equipment largely produced in advanced economies like the U.S. The North American shale boom between 2009 and 2013 further augmented the sales of mining and energy-related industrial equipment manufacturers.

As Chinese demand has slowed (Figure 4), the global capex cycle has reversed. Chinese fixed investment growth slowed to a 2% annual rate in 2015;[5] growth in industrial production also slowed considerably from its 2009-2012 average and is now contracting in nominal terms (Figure 5). As commodity prices cratered, incomes and investment in EM economies dropped sharply. GDP growth in EMEs since 2012 has fallen 3 percentage points below its 2003-2011 average and continues to decelerate as commodity prices soften further.

Carlyle portfolio data calibrated to the Fed industrial production index suggest that orders for capital equipment used oil and gas production contracted by 35% in 2015 and continue to fall at a 20% annual rate in January 2016. Orders for inputs used to manufacture industrial drills declined by over 40% in 2015 and are falling at a 50% annual rate globally. Equipment rentals at copper, metallurgical coal, and iron ore mines have dropped at an average annual rate of 30% in 2015.[6] Analysts now expect that equipment purchases by energy businesses will contract by an additional 50% from 2015 levels,[7] while mining firms will cut capex by an additional 36% over the next two years.[8] Globally, capex is expected to fall by 4% in 2016 as the decline in spending among energy and commodities businesses offsets the modest increase expected in other sectors.[9]

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[4] World Bureau of Metal Statistics. Roche, S. (2012), "China's Impact on World Commodity Markets," IMF Working Paper.
[5] This calculation is based on the fixed investment share of real GDP as measured by the IMF.
[6] Carlyle Analysis of portfolio company data.
[7] IHS Energy Analysis of North American Energy E&P Companies, February 2016.
[8] Bloomberg Intelligence, Mining Sector, August 15, 2015.
[9] S&P, 2015 Global Capex Survey, August 3, 2015.

None of this suggests that China is the sole cause of the commodity price declines and corresponding drops in industrial activity. The increase in the foreign exchange value of the U.S. dollar – the currency in which commodities are invoiced – has also played a major role in the price declines, as have dramatic increases in productivity of recent resource investments.

Tightening Financial Conditions

In recent quarters, the sharp fall in Chinese producer prices (-6% annual rate) has spilled over to the broader economy, with China's GDP deflator declining at an annual rate of between 0.7% and 1.5%. Deflation is of such great concern to policymakers because persistent declines in prices tighten financial conditions by increasing real interest rates and debt service burdens. Tighter financial conditions reduce incentives to spend or invest and increase funding pressures and default risks.

A tightening of financial conditions is of particular concern in China given high levels of debt concentrated in industries most impacted by deflation. As of June 2015, nonfinancial corporate debt was equal to 163% of GDP, but 83% of that debt was owed by firms in the mining, construction, and manufacturing industries.[10] With a weighted average lending rate of 6.25% in 2015, real interest rates in the industrial sector are in excess of 12% - much too high relative to decelerating real growth rates.[11]

For the nonfinancial corporate sector as a whole, debt service ratios – interest payments plus amortizations to income – have risen by 6 percentage points since the end of 2007.[12] However, when accounting for the decline in trend inflation, debt service burdens have more than doubled, from 8% of nonfinancial corporate income in 2007 to more than 20% in 2015 (Figure 6). When trend inflation averaged 6% between 2004 and 2008, corporate receipts were growing at a 16% nominal rate – fast enough to easily service increased debt burdens. The sharp decline in nominal income growth means an inordinate share of current income must be devoted to servicing past indebtedness.

Monetary Policy Response

If an advanced economy, like the U.S., euro area, Japan, or United Kingdom were faced with a similar circumstance of debt overhang, slowing growth, and tightening financial conditions, monetary authorities would respond forcefully through rate reductions and balance sheet policies like quantitative easing (QE) to reduce real interest rates and provide incentives to boost spending. Chinese policymakers have not yet pursued similar policies because their freedom of action is circumscribed by the RMB's *de facto* peg to the U.S. dollar.[13]

Exchange rates depend on parity conditions governed by differentials in expected returns across economies. When a central bank reduces domestic interest rates, the "equilibrium" exchange rate declines to compensate. For example, when the Federal Reserve responded to the fallout from the Great Recession by reducing the fed funds rate to 10 basis points and launching QE, the U.S. dollar fell by 16% on a trade-weighted basis. Domestic investors sold U.S. dollar-

[10] Chivakul, M. and Lam, W.R. (2015), "Assessing China's Corporate Sector Vulnerabilities," IMF Working Paper 15/72.
[11] China Monetary Policy Report, Quarters One and Two, 2015.
[12] BIS debt service ratios statistics, November 2015.
[13] For constraints on monetary autonomy introduced by fixed currency regime see: Krugman, P. (2000), *Currency Crises*, National Bureau of Economic Research.

denominated bonds to buy higher-yielding foreign assets. This net selling continued until the dollar reached a level where its expected long-run appreciation compensated for the drop in interest income.

In an economy that "pegs" its currency to that of a trading partner, the necessary adjustment in the exchange rate cannot occur and capital continues to flow out of the economy. Maintaining a pegged exchange rate, or tightly managed float, forces the PBOC to choose between the (higher) interest rates required to maintain parity against the U.S. dollar and the (lower) interest rates necessary to ease financial conditions and stimulate domestic demand.[14] Without currency liberalization, monetary easing would likely accelerate the pace of capital outflows and make further financial liberalization impossible in the near term.

To increase freedom over domestic monetary policy, Chinese authorities may gradually relinquish control over the currency. In its annual review of the Chinese economy, the IMF suggested recent currency reforms were an important step towards an "effectively floating exchange rate regime within 2–3 years."[15] Such a transition will likely require further moderate depreciation this year as the market-based RMB quotation system launched in August 2015 is allowed to operate more freely.

Rather than a provocation that seeks to "steal" sales from other economies, currency liberalization should be interpreted as part of a domestic reflation strategy. Chinese authorities are likely to follow RMB devaluation with monetary stimulus through reductions in benchmark lending rates, increases in liquidity injections to the interbank market, and more targeted reductions in some banks' required reserve ratios (RRR). There is ample scope for policy easing: one-year lending rates to nonfinancial borrowers stand at 4.35%, the one-year SHIBOR interbank rate is 3.25%, and the one-year "offshore" interbank rate exceeds 5%.[16]

"True" Market Value of the RMB Likely Below Current Levels

Relinquishing control over the currency should also boost domestic inflation rates through exchange-rate pass-through. Empirical studies find that every 1% appreciation in China's real effective exchange rate reduces PPI inflation rate by 0.495%.[17] This relatively high degree of PPI pass-through suggests that deflation in the industrial sector may be largely attributable to the RMB's sharp rise relative to the currencies of China's trading partners over the past few years. Movements in the exchange rate are far more important for hitting inflation targets than boosting net exports.[18] The exports of economies integrated into global value chains like China's tend to have high import content, which neutralizes the real benefits of depreciation.[19]

Between 2004 and 2011, the RMB appreciated by 56% against the U.S. dollar, in real terms, thanks to a 30% nominal appreciation from the "crawling peg" instituted in 2005 and a 25%

[14] Glick, R. and Hutchinson, M. (2009), "Navigating the trilemma: Capital flows and monetary policy in China," *Journal of Asian Economics*.
[15] "China's Transition to Slower But Better Growth," IMF Survey, August 14, 2015.
[16] Bloomberg, Accessed February 17, 2016.
[17] Jin, X. (2012), "An Empirical Study of Exchange Rate Pass-Through in China," *Panoeconomicus,* March 2012.
[18] Woodford, M. (2007), "Globalization and Monetary Control," NBER Working Paper No. 13329.
[19] Abmed, S. et al. (2015), "Depreciations without Exports," World Bank Policy Research Working Paper 7390.

increase in relative production costs.[20] The RMB's appreciation against the dollar was generally consistent with that of other major currencies over that period. Since 2011, however, most Asia-Pacific and emerging market currencies began to fall, in real terms, against the U.S. dollar while the RMB continued to strengthen (Figure 7). Relative to a trade-weighted basket that includes currencies of key trading partners like the U.S. dollar, Japanese yen, Korean won, Australian dollar, and euro, the RMB has appreciated by 26% between June 2011 and January 2016 (Figure 8).[21] Deflation may be a sign of an "internal devaluation" where domestic prices fall relative to external prices to compensate for an overvalued real exchange rate.

Signs of an overvalued exchange rate are also evident in balance of payments data. Since June 2014, China's foreign exchange reserves have declined by nearly $800 billion despite a current account surplus in excess of $200 billion over that time.[22] The decline is partly due to valuation losses on non-dollar portfolio holdings, but mostly reflects the desire of Chinese households and businesses to sell RMB to repay existing dollar debts and diversify into other currencies. While such diversification is generally proscribed by capital controls – which have been strengthened in recent months – foreign trade provides significant loopholes for residents to send capital abroad. Eventual liberalization of the capital account and RMB internationalization will make the exchange rate more sensitive to portfolio allocation decisions.

Chinese households are significantly under-diversified globally, which makes financial flows especially sensitive to changes in interest rates and expected exchange rates. At the end of 2014, Chinese residents' foreign portfolio assets equaled just $262 billion, or 2.5% of GDP.[23] By comparison, foreign assets in U.S. residents' portfolios were equal to $9.56 trillion, or 55% of U.S. GDP.[24] While these ratios are not directly comparable because the wealth/GDP of the U.S. is much greater, they suggest that China's capital controls have created strong latent demand for foreign assets. This latent demand helps to explain why the exchange rate could be overvalued at this point in China's business cycle even in the presence of large current account and trade surpluses.

Data from the IMF and Bank for International Settlements (BIS) suggest that a large share of the outflows thus far is attributable to repayment of U.S. dollar-denominated debt by Chinese businesses. As of mid-2015, Chinese residents owed about $1.1 trillion of U.S. dollar denominated debt, equal to about 5% of total domestic credit.[25] The relatively low share of U.S. dollar funding suggests that a decline in the RMB will have a limited impact on Chinese corporations, with the notable exception of the property sector, which borrows heavily in dollars but has no source of dollar earnings.[26]

Conclusion

China is in the midst of a multi-year slowdown concentrated in the industrial and fixed investment sectors that has been exacerbated by sharp real exchange rate appreciation since

[20] IMF, 2015 WEO Database. The GDP deflator is an imperfect proxy for factor costs, see: Bayoumi, T, et al. (2013), "Measuring Competitiveness: Trade in Goods or Tasks," IMF Working Paper.
[21] Obtained via Bloomberg, February 2, 2016.
[22] People's Bank of China, Foreign Exchange Reserves, July 31, 2015.
[23] People's Bank of China, December 31, 2014.
[24] U.S. Bureau of Economic Analysis, December 31, 2014.
[25] McCauley, R. (2015), "Global Dollar Credit," Bank for International Settlements.
[26] Chivakul, M. and Lam, W.R. (2015), "Assessing China's Corporate Sector Vulnerabilities," IMF Working Paper 15/72

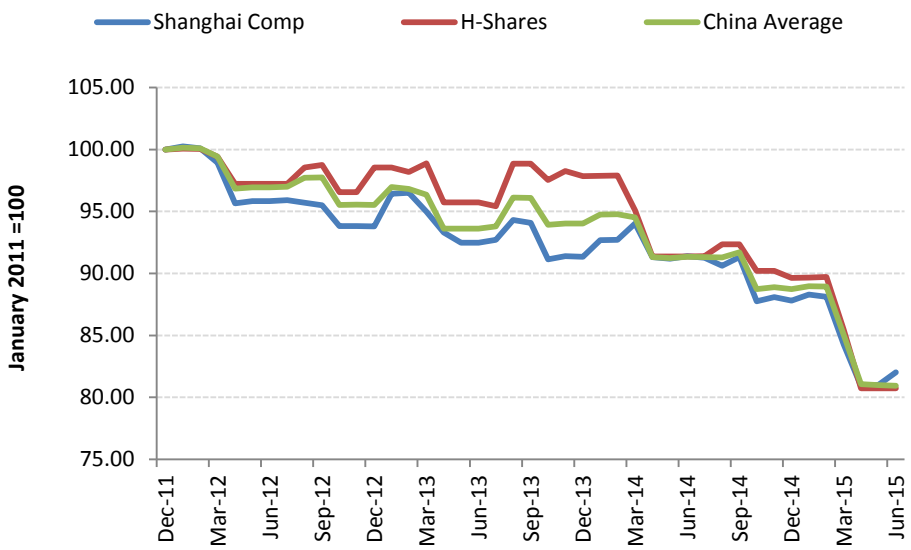
June 2014. The key issue today for the U.S. is that China pursues the structural and countercyclical policies necessary to prevent conditions from deteriorating further and placing global growth at risk. A recession in China – which accounts for one-third of global demand growth – would be especially damaging to the U.S. and global economies.

A policy strategy to address these issues is likely to involve three key elements: (1) monetary easing to reduce real interest rates and debt service burdens; (2) structural reform to eliminate excess capacity through business combinations and bankruptcies; and (3) financial sector reform to address existing nonperforming loans and those created by industrial consolidation.

The first pillar – monetary easing – requires more currency flexibility to allow the exchange rate to adjust naturally to reductions in domestic interest rates. The foreign exchange value of the RMB is currently above levels that would likely prevail in the absence of foreign intervention. The sharp rise of the RMB relative to the currencies of trading partners also helps to explain the scale of the domestic deflation currently plaguing the Chinese economy. Rather than a provocation, a decline in the RMB from further market liberalization should be viewed as part of a broader reflation strategy aimed at averting a far-worse outcome for the global economy.

Appendix

Figure 1: Sales/Book Value of Assets (Scaled to 2011)[27]



[27] Carlyle Analysis; S&P Capital IQ Database.

Figure 2: Aggregate Return on Incremental Capital in China[28]

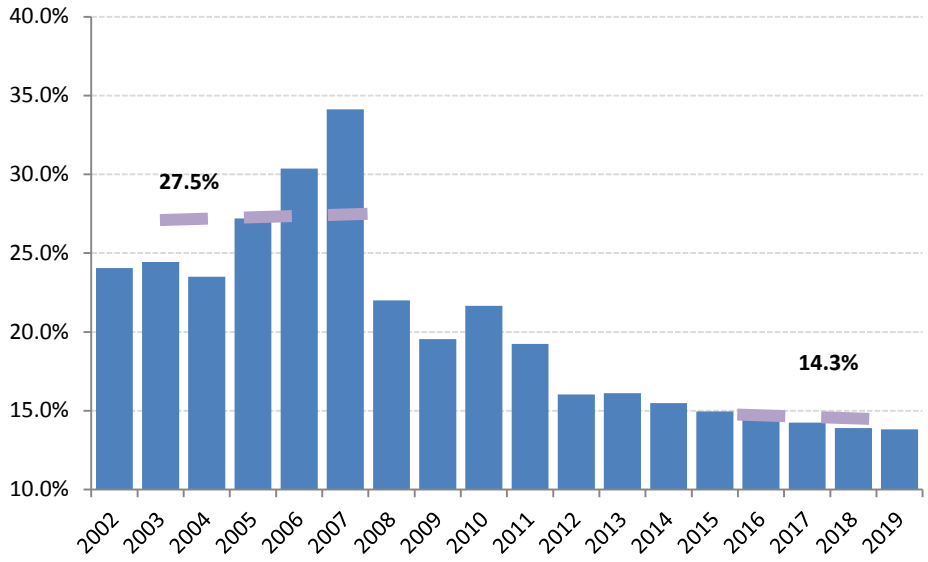
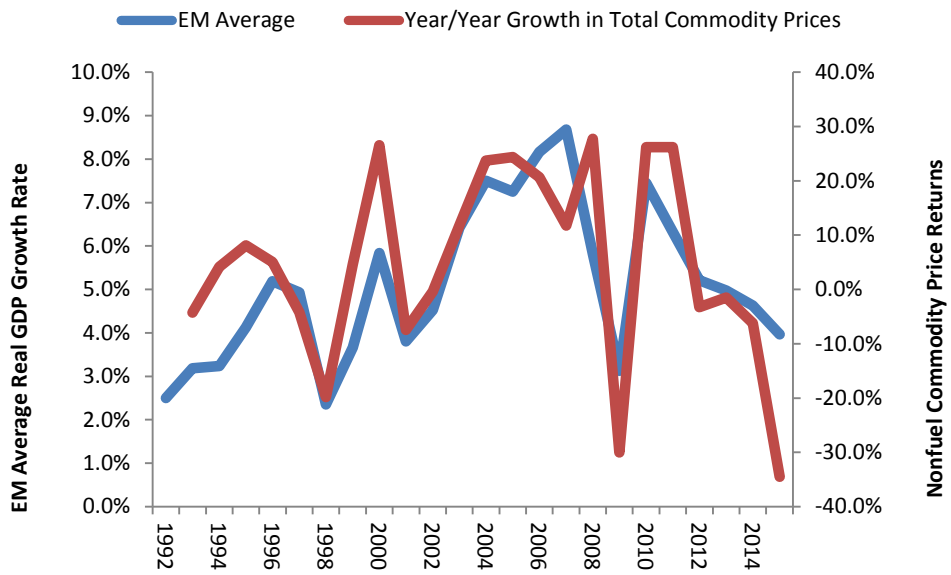


Figure 3: Correlation Between EM GDP Growth and Commodity Price Changes[29]



[28] Carlyle Analysis; IMF World Economic Outlook Database, October 2015.
[29] Carlyle Analysis; IMF World Economic Outlook Database, October 2015.

Figure 4: Chinese Demand for Commodities: Carlyle Asia-Pacific Seaborne Commodity Index

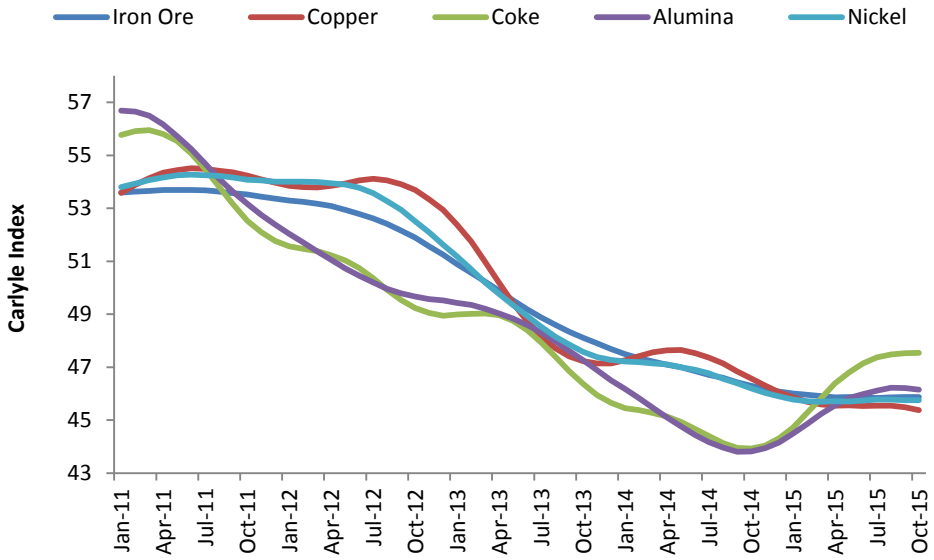
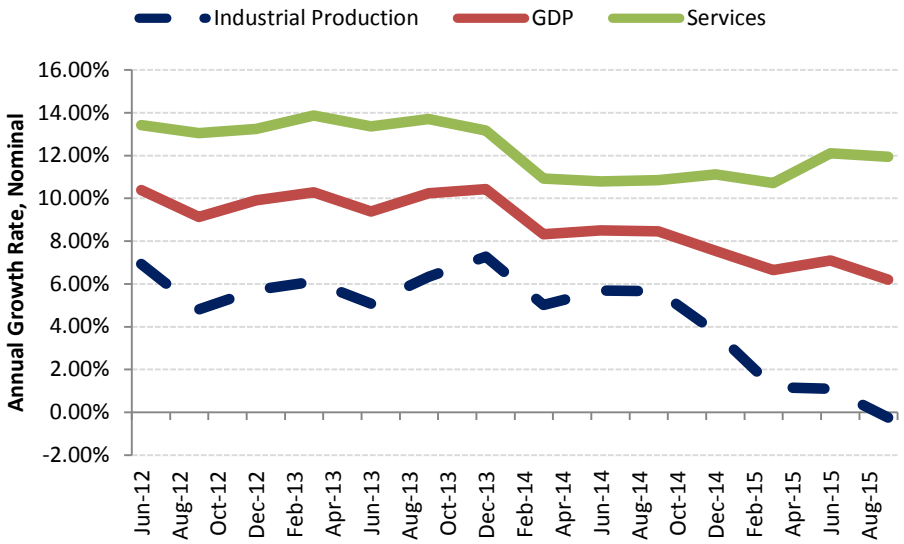


Figure 5: Nominal GDP Growth Rates[30]



[30] China National Bureau of Statistics.

Figure 6: Nonfinancial Debt Service Ratios in China[31]

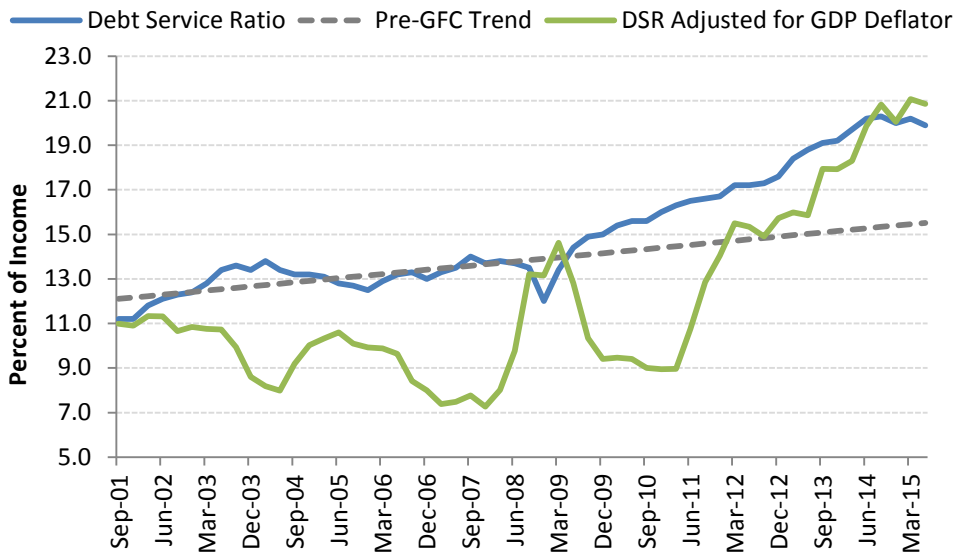
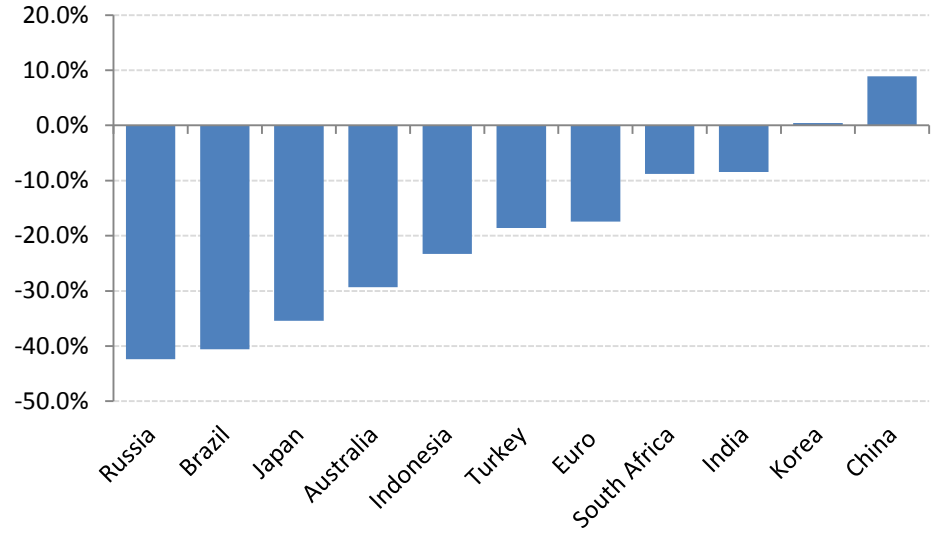
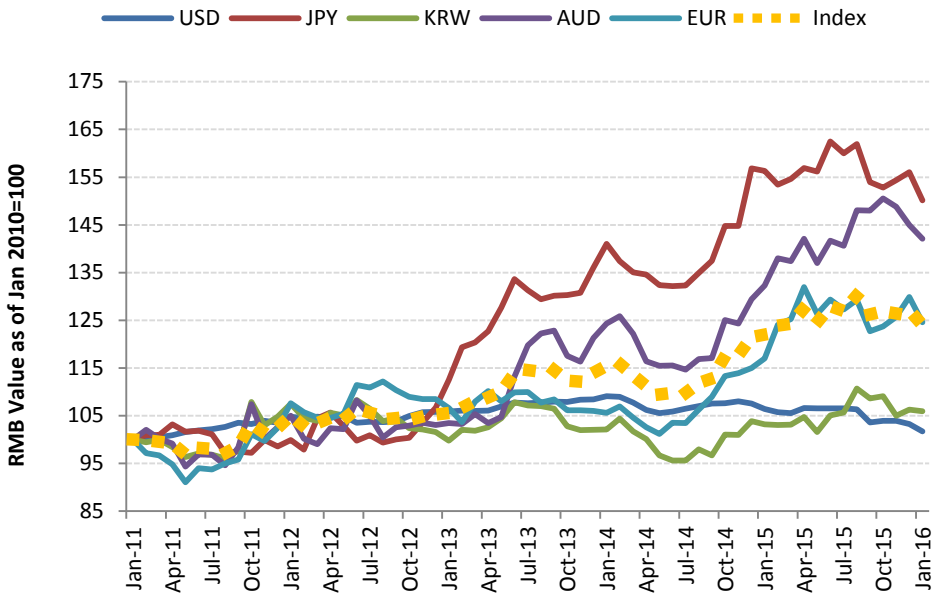


Figure 7: Select Currencies Against the U.S. Dollar Since 2011[32]



[31] BIS debt service ratios statistics, November 2015.
[32] Carlyle; Data obtained through Bloomberg, February 12, 2016.

Figure 8: RMB Exchange Rates, Scaled to January 2011[33]



[33] Carlyle; Data obtained through Bloomberg, February 12, 2016.