



PEOPLE'S REPUBLIC OF CHINA

SELECTED ISSUES

August 2017

This Selected Issues paper on the People's Republic of China was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed on July 14, 2017.

Copies of this report are available to the public from

International Monetary Fund • Publication Services
PO Box 92780 • Washington, D.C. 20090
Telephone: (202) 623-7430 • Fax: (202) 623-7201
E-mail: publications@imf.org Web: <http://www.imf.org>
Price: \$18.00 per printed copy

International Monetary Fund
Washington, D.C.



PEOPLE'S REPUBLIC OF CHINA

SELECTED ISSUES

July 14, 2017

Approved By
**Asia and Pacific
Department**

Prepared by a team led by Sonali Jain-Chandra, with individual chapters authored by Sally Chen, Ding Ding, Joong Shik Kang, W. Raphael Lam, Daniel Law, Rui Mano, Johanna Schauer, Alfred Schipke, and Longmei Zhang (all APD), Philippe Wingender (FAD), Thomas Harjes (MCM), Phil Stokoe (STA) and Calixte Ahokossi (SPR).

CONTENTS

CHINA'S HIGH SAVINGS: DRIVERS, PROSPECTS, AND POLICIES	4
A. Introduction	4
B. Household Savings	7
C. Corporate Savings	11
D. Government Savings	12
E. The Role of the State and Policy Recommendations	13
F. Prospects for Savings	15
References	16
CREDIT BOOMS—IS CHINA DIFFERENT?	17
A. Introduction	17
B. Why Worry About China's Credit Boom?	17
C. Can China-Specific Buffers Prevent Financial Stress?	18
References	22
BOXES	
1. Measuring Credit: How Large Is China's Nonfinancial Sector Credit?	23
2. The IMF's Institutional View on Monetary Policy and Financial Stability	23
TACKLING CORPORATE DEBT AND ACHIEVING PRODUCTIVITY GAINS—THE CENTRAL ROLE OF STATE-OWNED ENTERPRISES	24
A. Introduction and Key Facts	24
B. Recent Developments and Policy Measures	26

C. Policy Implications	28
References	32
APPENDICES	
I. Debt Vulnerabilities of Zombie Companies, Overcapacity Firms, and SOEs	32
II. Reduction of Capacity in Coal and Steel Sectors	33
A MARKET-BASED MONETARY POLICY APPROACH FOR CHINA	
A. Context: Policy Developments and Evolving Framework	34
B. The Transmission of Monetary Policy	35
C. Setting Policy Interest Rates	37
D. The Next Steps in the Transition to a Market-based Monetary Policy Framework	39
References	42
CHINA: CAPITAL ACCOUNT LIBERALIZATION	
A. Capital Account Liberalization and Openness	41
B. Assessing Capital Account Liberalization and Tightening	43
C. Policy Recommendations	45
APPENDICES	
I. Measures Taken by China Since Mid-2016 to Stem Capital Outflows	47
II. Chart of the IMF's Integrated Approach to Capital Account Liberalization	48
ASSESSING CHINA'S RESIDENTIAL REAL ESTATE MARKET	
A. Background and Recent Developments	49
B. Risks in the Real Estate Market	51
C. Policy Implications	51
References	54
APPENDIX	
I. An Empirical Analysis of China's Residential Real Estate Market	55
REASSESSING THE PERIMETER OF GOVERNMENT AND IMPLICATIONS FOR FISCAL SPACE	
	56
A. Broader Definitions of Government Deficit/Debt Remain Relevant	56
B. China Has Some Fiscal Space, But Less Than Headline Debt Figures Suggest	59
C. Policy Implications	62
References	63

BOXES

1. Treatment of Quasi-fiscal Units in Government Finance Statistics Manual (GFSM) 2014 _____ 59
2. If Needed, Fiscal Stimulus Should Promote Rebalancing and Not Increase Investment _____ 61

INTERGOVERNMENTAL FISCAL REFORM IN CHINA _____ 64

- A. Background _____ 65
- B. Recent Government Reforms _____ 66
- C. Policy Recommendations _____ 67
- References _____ 69

INEQUALITY IN CHINA – TRENDS, DRIVERS AND POLICY REMEDIES _____ 70

- A. Introduction _____ 70
- B. What Is the Current State of Inequality? How Has it Evolved Over Time? _____ 70
- C. What Are the Main Drivers That Explain Trends in Inequality? _____ 72
- D. Looking Ahead: What Will Be the Impact of Structural Trends and Policies on Inequality in The Future? _____ 72
- E. What Role Can Fiscal Policy Play in Reducing Inequality? _____ 73
- References _____ 75

APPENDIX

- I. Cross-Country Regression _____ 76

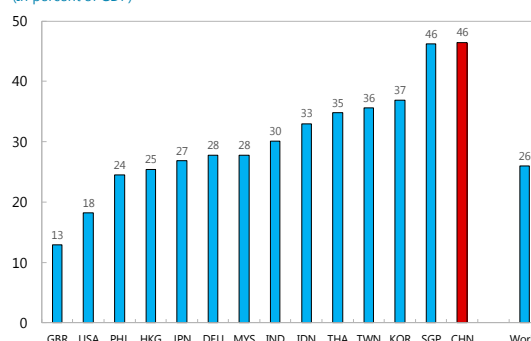
CHINA'S HIGH SAVINGS: DRIVERS, PROSPECTS, AND POLICIES¹

- China has one of the highest national savings in the world, which are at the heart of its external/internal imbalances. High savings fuel excessive investment when kept domestically and generate large global imbalances when they flow abroad.
- High national savings today mostly emanate from the household sector. Corporate savings used to be the main driver in the early 2000s, partly reflecting an undervalued exchange rate, but have now gradually converged to the global average.
- High and rising household savings mainly resulted from the one-child policy-induced demographic changes and the breakdown of the social safety net during the transition from a planned to a market economy. Housing reform and rising income inequality also contributed to the increase in savings.
- Going forward, demographic changes will put downward pressure on national savings. Policy efforts to strengthen the social safety net and reduce income inequality are also needed to reduce savings further and faster and to boost consumption.

A. Introduction

1. China has one of the highest levels of national savings in the world. Historically, national savings have been high since the 1980s, at around 35-40 percent of GDP. After China's integration into the global trading system with WTO entry in 2001, savings surged to peak at 52 percent of GDP in 2008. Since the Global Financial Crisis (GFC), they have gradually come down to 46 percent in 2016. However, despite the moderation, China still stands out with one of the world's highest savings rates, compared to the global average of around 25 percent of GDP.

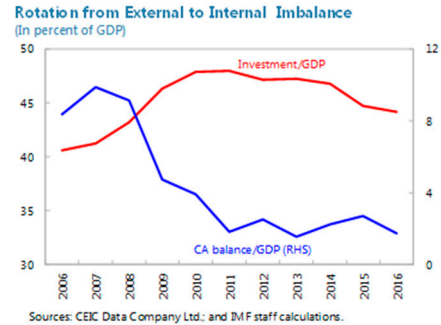
National Savings Rate (2016)
(In percent of GDP)



2. High savings are at the heart of China's external and internal imbalances. While insufficient national savings can pose financing constraints for economic development, excessive savings can also distort the economic structure and contribute to unsustainable growth. In the pre-GFC period, excess savings in China manifested in large external imbalances. The current account surplus surged to 9 percent of GDP in 2007, contributing to the global "savings glut" and low global

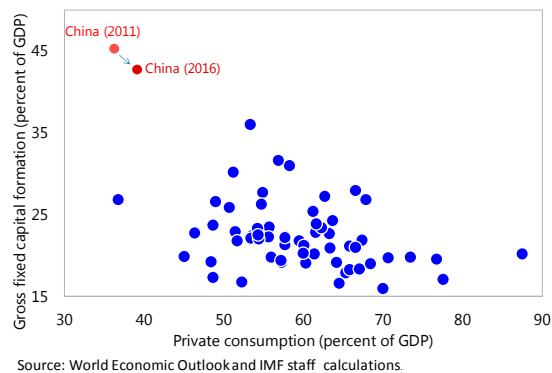
¹ Prepared by Longmei Zhang, drawing on a forthcoming IMF working paper by Longmei Zhang, Ray Brooks, Ding Ding, Haiyan Ding, Hui He, Jing Lu and Mano Rui. Tlek Zeinullayev provided research assistance.

interest rates. On the other hand, excessive savings when kept domestically are often intermediated through the financial system and can fuel a credit-based investment boom. After the GFC, while China's external imbalance declined (with the current account surplus down to 2 percent of GDP), it morphed into a growing internal imbalance. Savings have financed excessive investment with falling efficiency, resulting in slower economic growth and a rapid build-up of debt.



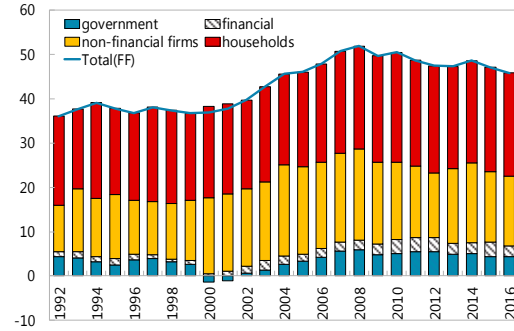
3. High savings also depress household consumption and lower welfare. The flip side of high savings is low consumption. Despite the rebalancing efforts in recent years, China remains a global outlier in its demand structure, with the investment ratio elevated at 44 percent of GDP, while private consumption accounts for only 39 percent of GDP (compared to the global average of around 60 percent). In other words, households have inadequately benefited from economic development. While households could potentially depress current consumption in return for higher consumption in the future via investment, the resulting excess investment beyond the economy's absorption capacity risks leading to negative returns and large defaults, hence lowering current and future household welfare.

Slowly Switching from Investment to Consumption
(Industrial Countries and Emerging Markets; average, 2008-14)



4. The composition of national savings in China has changed over time, and households are now the main driver. Globally, while national savings (in percent of GDP) have been broadly stable in the past three decades, there has been a substantial compositional shift from households to corporates. Against this backdrop, the evolution of sectoral savings in China has shown a different pattern, with the gap today largely reflecting households:

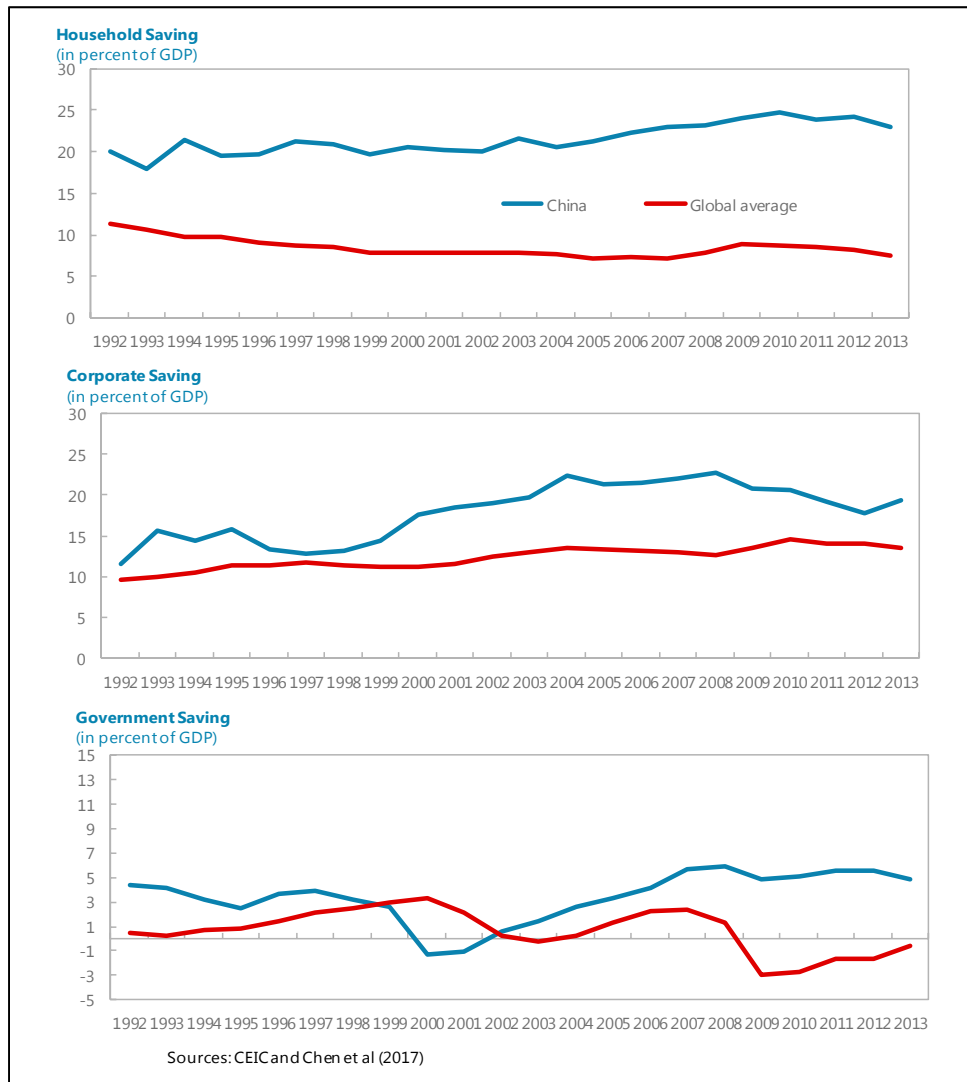
National Saving Rate
(in percent of GDP)



- **Households:** Household savings in China have trended up since the early 1990s, only moderating slightly in recent years. In contrast, globally, household savings have been on a downward trend since 1980s. The diverging trend has led to an increasing gap between China and the rest of the world. At 23 percent of GDP, China's household savings today are 15 percentage points higher than the global average.
- **Corporates:** Corporate savings were relatively low and in line with the global average in the 1990s, but surged in the 2000s resulting in an increasingly large gap compared to other countries. After the GFC, this gap narrowed significantly, reflecting both the decline in

China's corporate savings and the rise elsewhere. Currently, while China's corporate savings are still modestly higher than the global average, the gap is much narrower than for household savings.

- Government:** fiscal savings have been volatile over time, and on average only a small part of national savings. The level was similar as in other countries in the past, but in recent years, China's fiscal savings have been higher than the global average, reflecting low current spending, at the expense of very high capital spending.

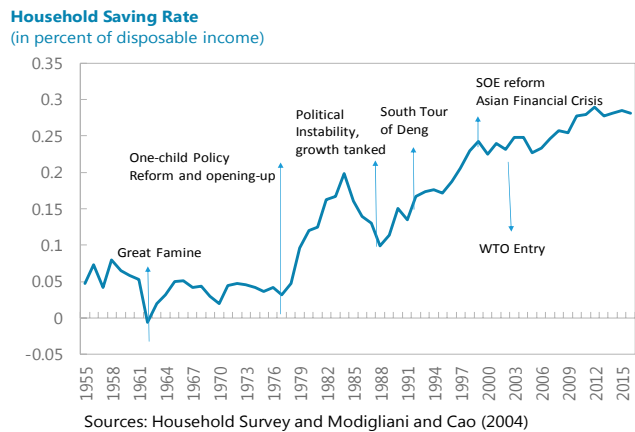


B. Household Savings

Overview

5. From the late 1970s, savings increased dramatically amid massive structural transformation. The surge in household savings can be characterized in three phases:

- The first phase was in the 1980s, following the introduction of the one-child policy and the decollectivization of agriculture in rural areas. The savings rate rose from 5 to 20 percent of disposable income (although with a temporary dip in the late 80s due to policy instability and growth falling sharply).
- The second stage was in the 1990s, after Deng's southern tour reaffirmed China's policy to reform and open-up. SOE reform took centerstage and was accompanied by the breakdown of the social safety net, leading to savings rising further to 25 percent of disposable income.
- The third stage was after China's WTO entry in 2001, when savings rose further to 30 percent of disposable income amid an export-driven boom. Notably, since 2010, household savings have plateaued and gradually started to decline.

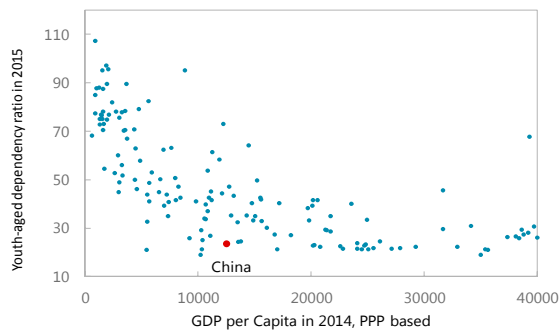
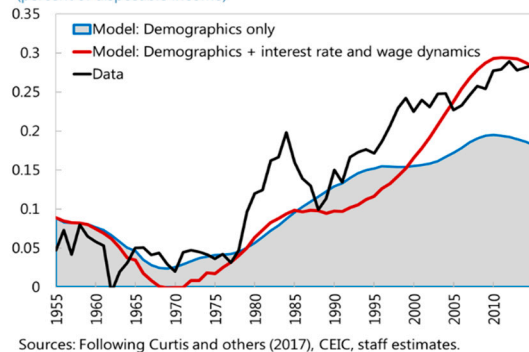


Against this background, we analyze the following potential drivers of household savings: demographic changes, social safety net, income inequality, housing reforms and financial repression.

Demographics

6. Demographic changes account for about half of the rise in household savings. The one-child policy, introduced in late 1970s, has led to a rapid decline of the fertility rate from 6 to below 2 and resulted in an extremely low youth dependence ratio in China given its income level. Such demographic changes have increased household savings via two channels: a) less spending on children on the expenditure side; b) higher precautionary savings for retirement as fewer children imply less old-age support, which is the main source of livelihood for the elderly in China. Using the over-lapping generations model developed by Curtis et al (2015), we find that demographics alone can explain about half of the increase in the savings rate, holding income growth and interest rates constant. Adding income and interest rates, the full model can explain the broad savings trend, except for the 1980s and 1990s, likely reflecting increased precautionary savings with the gradual dismantling of the social safety net.

Youth Dependence Ratio and GDP Per Capita

Household savings rate: model, historical data
(percent of disposable income)

Social Safety Net

7. The economic transition of the 1980s/90s led to the breakdown of the social safety net and rising savings, a trend that recent policy efforts have aimed to reverse. The transition to a more market-based economy in the 1980s and 1990s has led to the dismantling of the social safety net in both rural and urban areas, with much reduced coverage and lower benefits. For example, the health care coverage of urban workers declined by 17 percentage points between 1990 and 2000, and the average replacement rate for urban workers (pension benefits in percent of wages) dropped sharply from close to 80 percent to below 50 percent. In recent years, significant policy efforts have been made to rebuild the social safety net, including the introduction of new rural health care and pension schemes and the basic pension scheme for non-working urban residents. Notwithstanding these policy efforts, government spending in these areas remains below international standards. In addition, access to health care remains an issue for migrant workers, reflecting the slow progress on “Hukou reform”.

8. Our analysis finds that higher social spending significantly reduces household savings, with differing impacts in urban and rural areas, suggesting targeted policy focus. We study the role of precautionary motives by looking at regional variation in government spending on education, health and social security. Using cross-sectional analysis for the 287 prefectural municipalities, we find a significant positive relationship between social spending and urban and rural consumption.

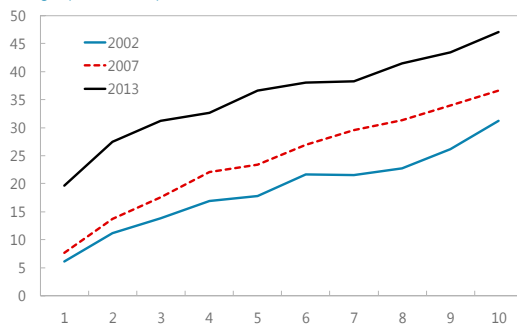
- *For urban households*, social security spending has a stronger relationship with consumption than other types of social spending, with a 1 percent increase associated with a 0.06–0.08 percent increase in household spending. Assessing this impact at the medians for these variables, suggest an 80 yuan increase in social security spending (about 10 percent of median monthly social security per capita) increases consumption by 90 yuan.
- *For rural households*, in contrast, government spending on health care is even more effective, with a 1 percent increase raising rural consumption by 0.11 to 0.19 percent. Assessing at the medians suggests a 50 yuan increase in health spending per capita (about 10 percent of the median monthly healthcare spending per capita) would increase rural consumption by between 70 and 120 yuan.

- The difference in results between urban and rural areas may reflect that the healthcare system is largely in place in urban areas, but still needs to improve significantly in terms of access and benefits in rural areas. And pensions may be less of an issue in rural areas, reflecting self-sufficient agriculture, but a bigger concern for urban households, reflecting persistent increases in living expenses. Such differentiated effects also call for better targeting of social spending in both urban and rural areas.

Income inequality

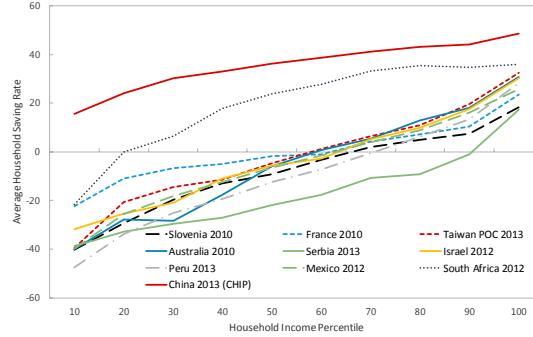
9. Income inequality translates into savings inequality. Income inequality has worsened substantially in China over the past decades, with the Gini index rising from 0.3 in the 1980s to about 0.5 in 2010, though it has moderated in recent years (Jain-Chandra et al 2017). Income inequality is associated with significant savings inequality. Based on Chinese Household Income Survey (CHIP) data, the difference between the saving rates of the richest and the poorest decile is often as large as 20 percentage points, reflecting the different propensity to consume. For example, in 2013, the top earners saved close to 50 percent of their income, while households in the bottom 10 percent saved about 20 percent.

Urban Household Saving Rate by Income Percentile
(saving in percent of disposable income)



Sources: CHIP.

Average Household Saving Rate by Income Percentile
(in Percent)



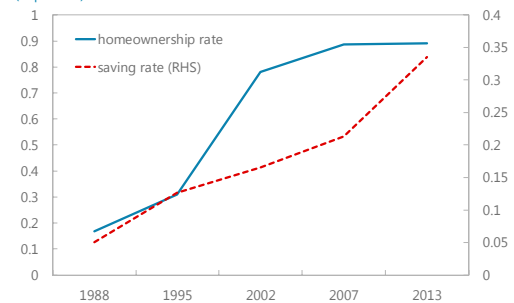
Source: Luxembourg Income Study (LIS), and Chinese Household Income Project (CHIP).

10. Chinese households save more at any income decile compared to other countries, but the gap is largest for the poor. In many countries, the savings rate for the bottom 10-20 percent is often negative, reflecting substantial social transfers, while in China, the savings rate is positive and quite high at 20 percent. This likely reflects the lack of social transfers, inadequate progressivity in taxation, and the limited social safety net.

Housing

11. Housing ownership increased dramatically after the housing reform of the 1990s. Two major housing reforms in the past three decades have transformed China's housing market. The 1988 reforms fostered the privatization of housing, and much of the stock of rental housing was sold to SOE workers at low prices; the 1998 reforms ended enterprise-supplied

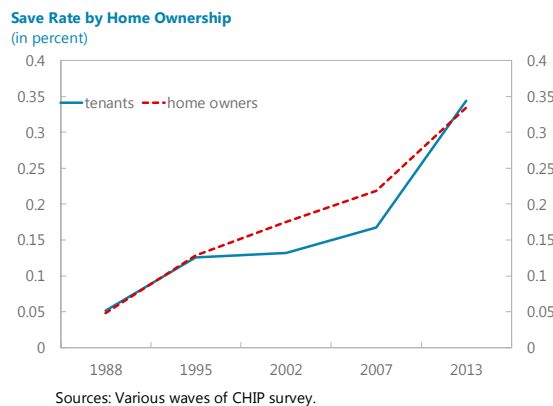
Rising homeownership and Saving Rate
(in percent)



Sources: Various waves of CHIP survey.

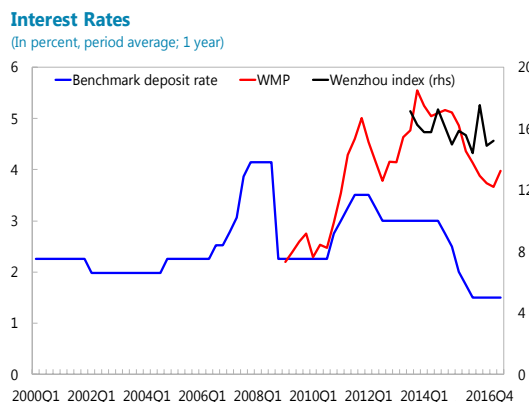
housing and moved to comprehensive market-based housing provision (Man 2011). After the reforms, housing ownership surged from 20 percent in 1988 to 90 percent in 2007, and has been stable since then.

12. Micro-level regressions show that the overall impact of household ownership on savings was positive in earlier years and turned negative in recent years. Prior to the housing reform in 1995, there was no systematic difference in the savings rates between tenants and home owners. After the reform, home owners started to save more than tenants, as shown in the 2002 and 2007 surveys. However, this trend reversed by 2013, with home owners saving marginally less than tenants. These patterns are confirmed by household level regressions, which control for other micro characteristics of households (such as age, sex, education, occupation, income, household size, etc). This likely reflects that the mortgage effect dominated in the early years for home owners, while with the booming housing market, the wealth effect has reduced home owners' savings rate. Tenants' savings rate continued to be higher reflecting the need to save for down payments.

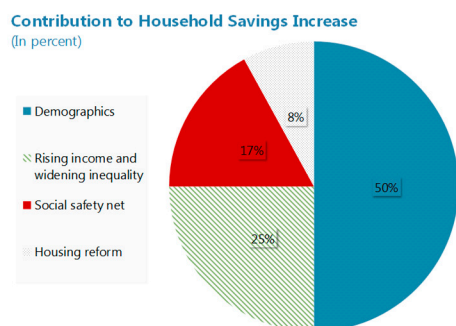


Financial repression

13. Financial repression has become less relevant with interest rate liberalization. The “target saving” hypothesis suggests that depressed deposit rates could lead to higher household savings. Nabar (2013) finds that a 1 percent interest rate decline increases the household savings rate by about 0.5 percentage point. We find that even such a small quantitative effect disappears once cross-region income differences are controlled for in the regression. In addition, with rapid interest rate liberalization, and the proliferation of non-deposit financial products with much higher yields, financial repression is no longer a major driver of household savings today.



Overall, the analysis in this section suggests that rising household savings were largely a result of demographic changes, rising incomes and widening inequality, and breakdown of the social safety net, while housing reforms also contributed. It is difficult to pin down the contribution of each factor, as they often interact and reinforce each other, and some of these factors have started reversing in recent years (including rebuilding

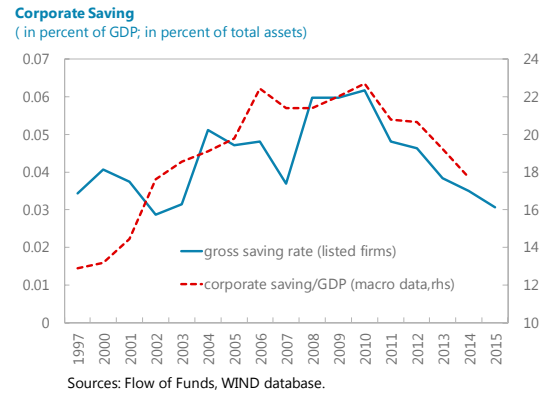


Sources: IMF Staff Estimates.

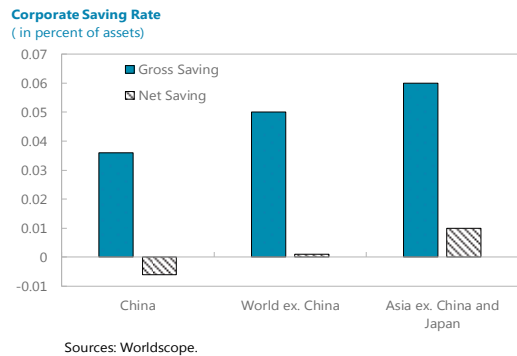
the social safety net and slight moderation in income inequality). Nonetheless, the chart here provides an illustrative assessment of the relative importance of various factors.

C. Corporate Savings

14. The corporate savings rate surged in the early 2000s, but moderated after the GFC. In line with macro data, firm-level data shows a significant increase in the gross corporate savings rate amid the export boom after WTO entry². The rate moderated after the GFC as the economy slowed and the exchange rate gradually moved in line with fundamentals. The net savings rate (which is gross savings minus investment as a ratio to assets) was negative throughout last decade, reflecting high investment in China. As a result, in contrast to some other east-Asian countries, the corporate sector in China is not a driver of the current account surplus.

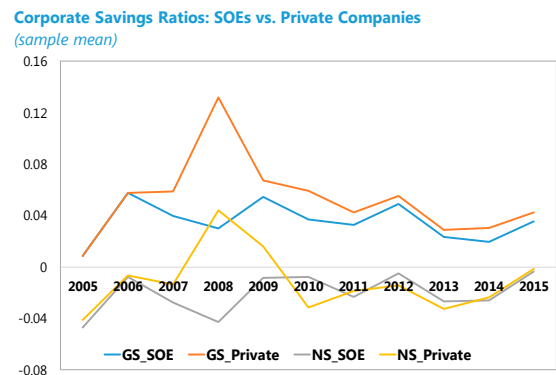


15. Corporate savings in China today are comparable to other countries. Firm-level analysis suggests that corporate savings ratios in China, in both gross and net terms, are comparable to those in the rest of the world. The median gross saving ratio is about 4 percent of assets in China, slightly lower than the 5-6 percent in the rest of the world. The net savings ratio is about -0.01 percent, also lower than global average of 0 – 0.1 percent.



16. SOEs have lower gross savings, but higher net savings compared to private firms. We study the role of ownership in corporate savings using firm-level regressions. After controlling for corporate size, Tobin's q ratios, the impact of sectors and other macro variables (as well as time dummies), we find that Chinese SOEs tend to save less in gross terms, reflecting their low operating efficiency and profits, but more in net terms reflecting their lower investment ratios compared to private firms.

17. The level of the exchange rate played an important role in driving high corporate savings before the GFC. Regression analysis shows a significant impact of the exchange rate on corporate savings, and such an impact tends to be even larger in the tradable sector. During 2005-2008, the RMB was assessed to be undervalued, which contributed to the export boom and

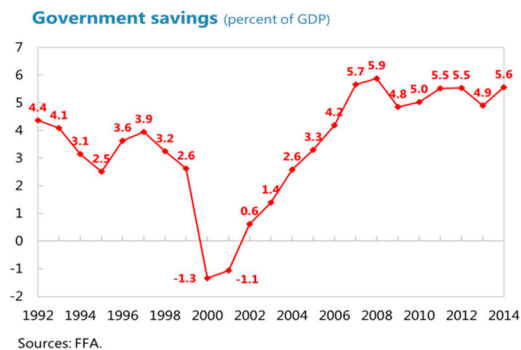


² Following previous literature (Bayoumi et al 2010), we define the firm level gross saving rate as $GS = (\text{Profits} - \text{Dividends}) / \text{Assets}$.

large corporate savings, especially for the export-oriented private sector. In recent years, however, as the RMB has gradually moved in line with equilibrium, the excessive savings of the export sector have largely been unwound.

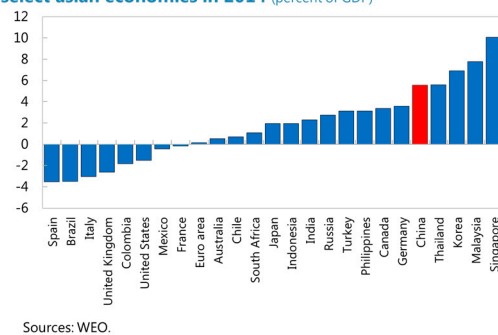
D. Government Savings

18. Government savings have stabilized since 2008 at around 5 percent of GDP, but varied significantly before then. Since 2000, fiscal savings have been on a steady upward trend and peaked near 6 percent in 2008. After the GFC, fiscal savings have moderated and stabilized at around 5 percent in recent years.



19. In a cross-country context, China's higher government savings mostly reflects lower current expenditure. Chinese government savings in 2014, at 5.6 percent of GDP, were among the highest in major economies. This reflects mostly lower government consumption, while fiscal revenues are broadly in line with other countries. The relatively low government consumption is mainly driven by the following factors:

Government gross savings for major economies and other select asian economies in 2014 (percent of GDP)



- More focus on public investment than public services.** China stands out with one of the highest government investment to GDP ratios of 4 percent on-budget and 12 percent including off-budget investment. Hence, despite a large augmented fiscal deficit of 10 percent in 2014, fiscal savings remain higher than other countries, resulting from the skewed composition of spending towards investment.
- Lower social spending.** Despite a significant increase in past years, China still has lower social spending compared to other emerging markets, especially on public education, public health and social assistance. Further strengthening of the social safety net would bring social spending more in line with peers.
- Early stage of social security system.** Reflecting the changing demographic structure, the social security system used to be an engine for savings through the 1990s and early 2000s, turning into deficit in 2013 as payments outpaced contributions. However, it is still at an early stage compared to most advanced economies, reflecting a relatively low old-age dependency ratio. Envisaged rapid ageing will put significant pressure on pension spending (expected to rise from 5 percent of GDP in 2015 to 10 percent in 2050).

E. The Role of the State and Policy Recommendations

20. Policy-induced structural changes have played a pivotal role in driving China's exceptionally high savings and low consumption. While high and rising savings are often observed in economies during growth take offs, the unique policy settings and changing economic structure have played an important role in shaping China's high savings

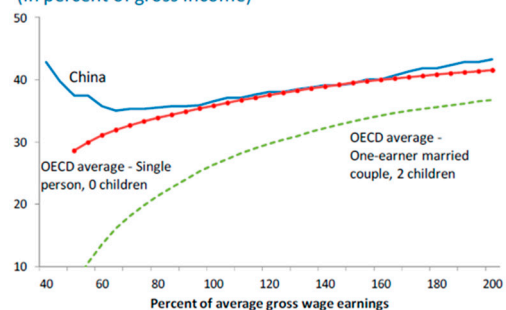
- The one-child policy implemented in the late 70s had dramatically reduced the fertility rate and raised the savings rate.
- The transition during the 1990s from a planned economy to a market economy dismantled the social safety net and led to higher precautionary savings by households.
- In the 2000s, WTO entry led to an export-oriented growth surge, with a significant rise in corporate savings, partly owing to an undervalued exchange rate.
- High government savings due to comparatively weak social spending and excessive investment.
- Housing reform and rapidly rising housing prices led to an increasing need for households to save for either down payment or making mortgage payments.
- In addition, rising income inequality, partly attributable to limited income redistribution, led to higher savings as more income goes to the richer households with higher propensity to save.

More broadly, given the high household savings rate (as measured in percent of disposable income), the falling household share of national income further depressed household consumption, with the consumption-to-GDP ratio falling sharply in early 2000. A less skewed distribution of the benefits of growth between the state and households, including providing the private sector greater income earning opportunities, will remain essential to boosting household consumption.

21. Policy efforts to lower savings should focus on strengthening the social safety net, reducing income inequality, and raising household incomes. Specific measures include the following:

- **Making income tax more progressive and more family-friendly.** The current tax structure is regressive, especially for the very poor. While the personal income tax has a relatively high exemption threshold, the flat nominal amount of social contribution at the bottom puts a heavy burden on poor households, with an effective tax rate higher than 40 percent. There could also be tax allowance based on family size to boost

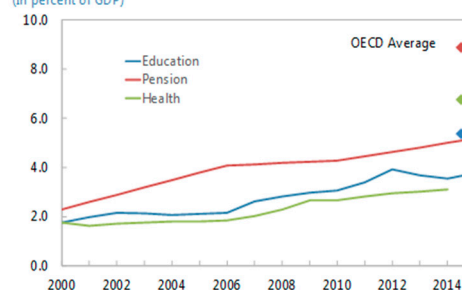
Comparison of Average Tax Wedge by Income Level
(In percent of gross income)



fertility, which would help reduce savings by increasing dependents as well as boost future labor force.

- **Increasing social transfers to poor households.** As shown in earlier analysis, the gap in household savings is notably larger for poor households. In many countries, the bottom-income earners tend to have negative savings rates, reflecting various social transfers. This calls for further increase in social assistance spending in China, more in line with international norms.
- **Increasing expenditure on health care, pensions and education.** While the government has made substantial progress on this front, further effort is needed. As shown in previous analysis, higher health care and pension spending have a significant impact on increasing consumption and reducing precautionary household savings. In addition, continued Hukou reform is needed to make sure that migrant workers have the same access to the social safety net. While spending on education does not appear to have a direct impact on household savings, it would help reduce income inequality in the future by providing equal education access to the poor.
- **Increasing general spending on public services.** While the government's focus on public investment in the past has built comparatively strong infrastructure in China, it is increasingly important to focus more on "soft infrastructure", in terms of policy frameworks and the delivery of public services, which also requires higher spending to attract talent and addressing staffing shortages in various agencies.
- **Higher social spending could be financed by larger dividend payments or asset transfers from SOEs.** Bringing the SOE dividend payment ratio to the announced target of 30 percent could increase budget revenues by about 1 percent of GDP per year, which could fund higher social spending. In addition, transferring SOE shares to social security funds could help address the projected large actuarial imbalance of the system.
- **Improving access to formal financing of private firms.** The government should remove the "implicit guarantee" for SOEs and redirect credit to more efficient users in the private sector. With improved financing access, private firms will rely less on internal savings for investment.
- **Service sector liberalization.** Providing the private and foreign sectors access to restricted service sectors would boost productivity and enhance income-earning opportunities and consumption of households.

Government Spending
(In percent of GDP)

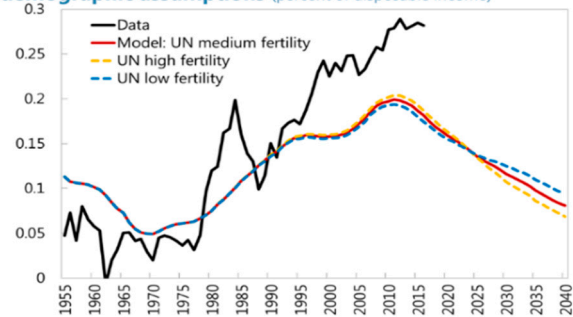


Sources: CEIC, IMF FAD Expenditure Assessment Tool and IMF staff estimates.

F. Prospects for Savings

22. Rapid aging and further strengthening of the social safety net would substantially reduce household savings. Going forward, China is expected to experience rapid aging, with the old-age dependency ratio rising from 15 in 2015 to 50 in 2050. Model simulations show that the projected demographic changes would reduce the households savings rate (in percent of disposable income) by 6 percentage points by 2030. In addition, with continued strengthening of the social safety net (assuming that government budget health expenditure-to-GDP ratio increases from 1.8 percent in 2016 to 2.5 percent by 2022), household savings, in percent of GDP, are forecast to fall by 3 percentage points by 2022. Changing consumer behavior of younger cohorts and slower wage growth may result in a faster decline in household savings rate.

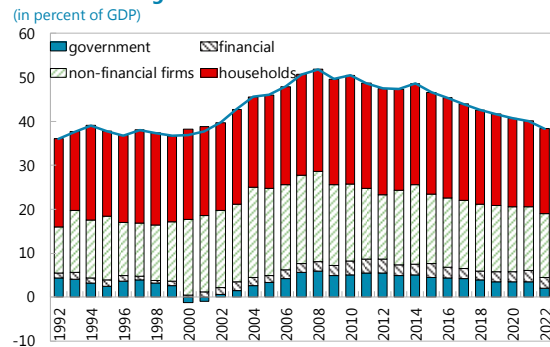
Household savings rate: Projection sensitivity to demographic assumptions (percent of disposable income)



Sources: CEIC, staff estimates.

23. National savings are expected to fall driven mostly by households and the government. Lower household and fiscal savings are expected to reduce overall national savings by about 4 percentage points by 2022. Corporate savings are likely to fall moderately, reflecting falling capital returns as growth slows and rising labor intensity of output as the economy shifts more towards services and the labor share of income rises.

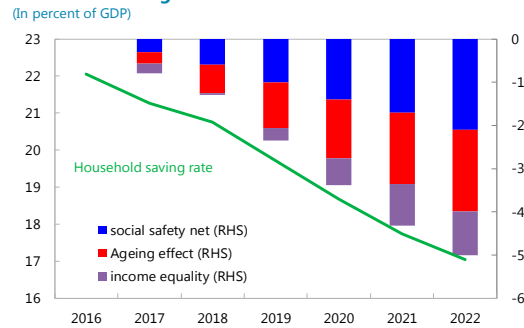
National Saving Rate to Fall



Sources: Flow of funds, IMF staff estimates and projections.

24. A proactive scenario with higher social spending and less income inequality would lead to a faster decline in savings and higher consumption. Policies to increase on-budget healthcare spending to 3.1 percent of GDP by 2022 (compared to 2.5 percent in the baseline), and moderately reduce the income share of the top 10 percent via income redistribution to those at the bottom, would reduce household savings by 5 percent of GDP by 2022 (compared to 3 percent in the baseline) as household consumption would be boosted by an extra 2 percent of GDP.

Household Saving Rate to Fall -- Proactive



Source: IMF staff estimates and projections.

References

Bayoumi, T., Tong, H. and S. Wei, 2010, "The Chinese Corporate Savings Puzzle: A Firm-Level Cross-Country Perspective," NBER Working Paper 16342

Chen, P., Karabarbounis, L. and B. Neiman, 2017, "The Global Rise of Corporate Saving," NBER Working Paper 23133

Chadwick C. Curtis, C., S. Lugauer, N. Mark, 2015, " Demographic Patterns and Household Saving in China", *American Economic Journal: Macroeconomics*, 7(2): 58-94.

Jain-Chandra, S, N. Khor, R. Mano, J. Schauer, P. Wingender, J. Zhuang, 2017, " Inequality in China - Trends, Drivers and Policy Remedies", IMF Working Paper forthcoming.

Nabar, M., 2011, "Targets, Interest Rates, and Household Saving in Urban China", IMF Working Paper 2011/223

Man, Y., 2011, "China's Housing Reform and Outcomes". Lincoln Institute of Land Policy.

CREDIT BOOMS—IS CHINA DIFFERENT?¹

- International experience suggests that China's credit growth is on a dangerous trajectory, with increasing risks of a disruptive adjustment and/or a marked growth slowdown.
- Average real GDP growth would have been around 5½ percent over the last five years in the absence of excessive credit growth (*ceteris paribus*). If the government maintains its current growth strategy, the credit-to-GDP ratio would increase by another 60 ppt to more than 290 percent by 2022.
- Several China-specific factors—high savings, current account surplus, small external debt, and various policy buffers—can help mitigate near-term risks of a disruptive adjustment and buy time to address risks. But, if left unaddressed, these factors will likely not eliminate the eventual adjustment, but only make the boom larger and last longer.
- Decisive policy action is needed to deflate the credit boom smoothly: (i) deemphasize the high and hard GDP targets to contain excessive credit expansion, and reduce credit demand by the least efficient users to increase credit efficiency; (ii) institute reforms to boost consumption to support growth while credit expansion slows.

A. Introduction

1. Strong growth after the global financial crisis was driven by rapid credit growth.

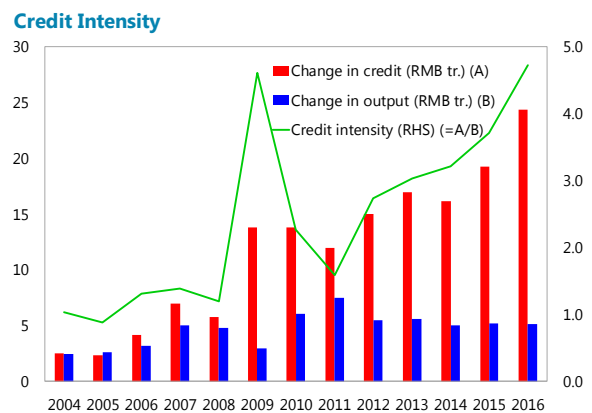
Nominal credit to the nonfinancial sector more than doubled in the last five years, and the total domestic nonfinancial credit-to-GDP ratio increased by 60 ppt to about 230 percent in 2016 (Box 1). As a result, the credit gap—deviation of the credit-to-GDP ratio from its historical trend—is currently about 25 percent of GDP, well above the 10 percent BIS threshold for the maximum counter-cyclical buffer.

B. Why Worry About China's Credit Boom?

2. Credit efficiency has been deteriorating, pointing to increasing resource misallocation.

Credit to certain sectors (industrial), firms (SOEs), and regions (Northeast) is significantly higher than their value added, suggesting that they use credit relatively inefficiently. In 2007-08, new credit of about RMB 6½ trillion was needed to raise nominal GDP by about RMB 5 trillion per year; in 2015-16, it took RMB 20 trillion in new credit.

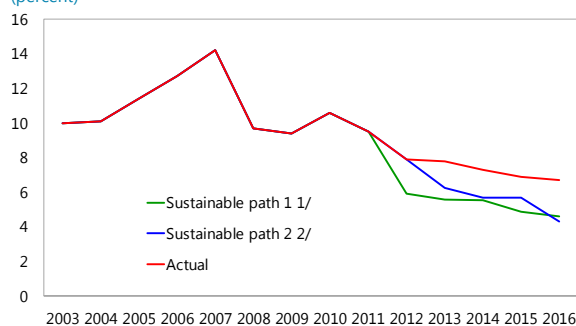
3. Sustainable growth—growth that can be achieved without excessive credit expansion—was likely much lower than actual growth over the last five years. For illustrative



¹ Prepared by Joong Shik Kang, Sally Chen, and Daniel Law.

purposes, we estimate growth under a scenario in which the nonfinancial private sector credit-to-GDP ratio had only increased by 10 ppt, leading to no private sector credit gap in 2016. We use two approaches. The first approach calculates credit and GDP growth paths if credit efficiency had worsened less, in line with slower credit growth. The results indicate that average real GDP growth for 2012–16 would have been 5.3 percent rather than the actual average of 7.3 percent. The second approach (Chen and Ratnovski, 2017) estimates growth using provincial panel data during 2003–15, assuming a lag in the effect of credit growth on output growth. It finds that 2012–16 average real GDP growth would have been 5.9 percent. However, the growth-subtracting effect of credit restraint could have been partly offset by pro-rebalancing, on-budget fiscal stimulus as well as by the productivity gains from more decisive structural reforms.

Sustainable GDP Growth
(percent)



2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016

1/ Kang, Chen, and Law (2017)

2/ Chen and Ratnovski (2017)

4. International experience suggests that China’s current credit trajectory is dangerous with increasing risks of a disruptive adjustment and/or a marked growth slowdown. We identify 43 cases of credit booms in which the credit-to-GDP ratio increased by more than 30 percentage points over a 5-year period. Among these, only 5 cases ended without a major growth slowdown or a financial crisis immediately afterwards. However, considering country-specific factors, these 5 country provide little comfort.² In addition, all credit booms that began when the ratios were above 100 percent—as in China’s case—ended badly.

5. Complex and primarily short-term funding structures underpinning rapid credit growth are a key vulnerability. Banks’ rapid asset expansion has relied on increasingly complex funding structures, extending beyond deposit funding to interbank markets and wealth management products, and via complex and interlinked networks of entities. Asset managers often finance illiquid long-term investments by rolling over short-term funding or pooling investment funds. Complex funding structures and sizable, opaque off-balance sheet investments suggest that a deleveraging process in the financial sector could be bumpy.

C. Can China-Specific Buffers Prevent Financial Stress?

6. There are several China-specific factors that could be mitigating factors over the near term. A current account surplus and small external debt reduces the possibility for a typical external funding crisis as in many other EMs. A low bank loan-to-deposit ratio could help prevent a domestic funding crisis as well. Despite the rapid increase in gross debt, corporate balance sheets have also benefitted from asset values that have increased more than liabilities. Policy buffers can also

² The credit boom in New Zealand (1992) was due to a one-off credit expansion in 1988 from a low base. A boom in Hong Kong SAR (1983) should be seen in the context of its role as a global financial center. A boom in Finland (2003) was the result of economic recovery after large deleveraging in late 1990s. Credit booms in Indonesia (1990) and Switzerland (1985) eventually led to crises after further credit expansion.

mitigate the impact of potential shocks: the government can use its fiscal resources to backstop the system, the PBC can always provide liquidity, and capital controls can contain capital flight.

7. However, these mitigating factors/buffers do not eliminate the eventual crisis risk and, if the risk is left unaddressed, would just make the boom larger and longer.

- **Strong external position** Persistent current account surpluses and low external debt could help avoid a typical external funding crisis as in many other EMs.
 - **However**, several countries experienced credit booms that ended badly despite running current account surpluses and/or small external debt, as funding crisis could still occur without foreign funding exposure. If financial institutions are expanding their balance sheets by relying on short-term funding amid ample liquidity, a funding squeeze could trigger a downturn/crisis. The U.S. savings and loan crisis in the 1980s, Japan's banking crisis in 1997, and the U.S. and U.K. financial crises in 2008 are such examples.
- **High domestic savings and stable domestic deposit base.** A low bank loan-to-deposit ratio (narrowly-defined, 72 percent in 2016) could help prevent a domestic funding crisis. Even the total nonfinancial domestic credit-to-GDP ratio at 118 percent is well below other countries that experienced funding crises (e.g., 400+ percent in Korea (1998), 350+ percent in the US (2008), 250 percent in Japan (mid-1990s)).

(In percent of GDP)	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total deposit	139	163	166	165	170	176	182	191	200
Total credit to nonfinancial sectors	131	160	170	168	179	190	201	214	234
Augmented public sector (GG + LGFVs + Gov funds)	38	43	42	43	44	48	52	57	62
of which General Government a la IMF def.	27	34	34	34	34	37	40	43	44
Private sector	93	117	127	125	135	142	148	158	172
SOEs	40	46	54	53	57	60	61	66	74
Non-SOE corporates	35	46	46	44	48	49	52	53	54
Households	18	24	27	28	30	33	35	38	44

(In percent of total deposit)	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total deposit	100	100	100	100	100	100	100	100	100
Total credit to nonfinancial sectors	95	98	102	102	105	108	111	112	118
Augmented public sector (GG + LGFVs + Gov funds)	28	26	25	26	26	27	29	30	31
of which General Government a la IMF def.	19	21	20	20	20	21	22	22	22
Private sector	67	72	77	76	79	81	82	82	86
SOEs	29	29	32	32	33	34	34	35	37
Non-SOE corporates	25	29	28	27	28	28	29	28	27
Households	13	15	16	17	17	19	20	20	22

- **However**, loan-to-deposit ratios do not capture total assets and liabilities. Many countries experienced crises despite stable deposit funding; these cases are usually associated with balance sheet expansion through non-loans and non-deposit funding. Many of these assets may be weakly regulated (and collateralized), while funding sources tend to include interbank exposure, which potentially increase systemic risk. In China, the ratio of non-loan assets to total assets is about 50 percent in 2016, higher than the median in the cross-country sample.

- **Strong asset side of balance sheets.** Corporate balance sheets have benefitted from rising asset values, which have increased more than liabilities. So, leverage as measured by the debt-to-asset ratio has been falling.
 - **However,** asset valuations could fall sharply were the boom to end. Corporates' liabilities are mostly financial liabilities, while a significant portion of assets are nonfinancial fixed assets (e.g. land), which may not be easily liquidated and are subject to sharp valuation changes. In addition, more vulnerable firms—for example, those with lower debt servicing capacity—tend to hold fewer liquid assets, implying that such firms would have lower buffers during times of stress.
- **Ample fiscal space in a state-controlled economy.** The government has fiscal space with official general government debt of less than 40 percent of GDP as of 2016. The government could use its resources to backstop the system.
 - **However,** actual fiscal space is limited and is eroding with “augmented” debt projected to rise to more than 90 percent of GDP over the medium term, with debt on an unsustainable path. The economy-wide cost of bailouts is likely to be larger than just the direct costs for the financial system due to indirect costs (slower GDP growth, lower tax revenue, higher government spending, higher interest payments, and contingent liabilities). The process of bailing out may not be smooth, and even if the government successfully uses fiscal resources, it could deepen moral hazard and increase the potential cost of future bail outs.³
- **Liquidity provision and capital controls.** The PBOC can always provide liquidity against funding stress and capital controls are still very effective.
 - **However,** even quick action by central banks may not be sufficient (e.g. the U.S. in the global financial crisis) given the size, complexity and interconnectedness of the system. If funding stress were to occur (such as in small banks or non-banks), it is uncertain if such stress could be contained by the authorities given the complexity of the system. Liquidity provision could also lead to capital outflows and FX pressure, as well as exacerbating moral hazard. Capital controls could be tightened substantially, but this could spur a growth slowdown and possibly provoke further capital outflows. Further, such controls tend to lose effectiveness over time.
- **Strong growth and financial deepening.** Rapid credit growth is natural consequence of strong underlying growth and could reflect financial deepening.
 - **However,** faster growth is unlikely to be the answer as the efficiency of investment/credit is falling sharply and financial performance (profitability, leverage, debt servicing capacity) of

³ In cross-country studies, the average direct fiscal cost has been estimated to be 5-10 percent of GDP (Laeven and Valencia, 2010) and indirect fiscal cost arising from the contingent liabilities realization is estimated to be about 6 percent of GDP during 1990-2014 (Bova, et al., 2016). Dell'Ariccia et al. (2012) also estimate the average gross fiscal cost of systemic banking crises to be about 15 percent of GDP.

corporates—particularly SOEs—is deteriorating, affecting asset quality of banks. China's rapid financial deepening has exceeded the turning point that maximizes the positive effect on growth (IMF SDN/15/08); further financial deepening could even drag growth lower.

8. These factors buy time to address risks from the unsustainable credit growth and allow China to delever gradually. We consider an illustrative proactive scenario under which faster progress on enacting structural reform (especially SOE reform) and improving overall efficiency in resource allocation would allow credit growth to slow gradually, while supporting medium-term growth prospects. Near-term growth could dip reflecting the faster adjustment, but medium-term growth would rise driven by higher TFP growth (Lam and others, 2017). Improved credit efficiency would help raise GDP growth even with slower credit growth over the medium term (private credit growth of about 8½ percent), which would stabilize the ratio of total domestic nonfinancial sector credit-to-GDP at about 270 percent in 2022.

9. Decisive policy action is thus needed to deflate the credit boom smoothly. A precondition is to deemphasize high and hard GDP targets and the attendant excessive credit necessary to achieve these targets. To support growth while credit expansion slows, a comprehensive strategy is needed to increase credit efficiency by reducing demand for least efficient/productive uses. Financial reforms are also necessary to bolster the regulatory and supervisory framework, including closing loopholes for regulatory arbitrage, reining in leverage and increasing transparency of nonbank financial institutions and wealth management products (Box 2).

References

- Bova, Elva, Marta Ruiz-Arranz, Frederik Toscani, and H. Elif Ture, 2016, "The Fiscal Costs of Contingent Liabilities: A New Dataset", IMF Working Paper 16/14.
- Chen, Sophia and Lev Ratnovksi, 2017, "Credit and Fiscal Multipliers in China", manuscript
- Dell'Ariccia, Giovanni, Deniz Igan, Luc Laeven, and Hui Tong, 2012, "Policies for Macroeconomic Stability: How to Deal with Credit Booms", IMF Staff Discussion Note 12/06.
- Laeven, Luc and Fabian Valencia, 2010, "Resolution of Banking Crises: The Good, the Bad, and the Ugly", IMF Working Paper 10/146.
- Lam, W.R., Y.Y. Tan, Z.B. Tan, and A. Schipke, 2017, "Tackling Corporate Debt and Achieving Productivity Gains—The Central Role of State-owned Enterprises," forthcoming IMF Working Paper.
- Sahay, R., M. Čihák, P. N'Diaye, A. Barajas, R. Bi, D. Ayala, Y. Gao, A. Kyobe, L. Nguyen, C. Saborowski, K. Svirydzenka, and S.R. Yousefi, 2015, "Rethinking Financial Deepening: Stability and Growth in Emerging Markets", IMF Staff Discussion Note 15/08.

Box 1. Measuring Credit: How Large Is China's Nonfinancial Sector Credit?

- The narrowest measure is banks' claim on the private nonfinancial sector, which stood at about 155 percent of GDP as of 2016.
- Total social financing (TSF) statistics capture not only conventional bank loan channels but also financing through off-balance items of financial institutions—trust loans, entrusted loans, and undiscounted bankers' acceptances—and corporate bond issuance. As of end-2016, TSF stock was about 209 percent of GDP, of which households accounted for about 44 percent. Separately, official general government debt is about 37 percent of GDP.
- Total domestic nonfinancial sector credit is estimated to be about 234 percent of GDP, smaller than the sum of above TSF and general government debt. It is largely because former credit to LGFVs which was explicitly recognized as local government debt (about 17 percent of GDP) is captured both in TSF and general government debt statistics.
- The treatment of LGFV debt that has not been explicitly recognized as government debt straddles the border line between public and private debt. From a legal perspective, the authorities' definition of general government debt (37 percent of GDP), which includes only former LGFV borrowings that were explicitly recognized as LG debt, is public debt and the remaining is private debt (197 percent). But assuming that the non-recognized LGFV debt resulting from public policy and social capital portion of government guided funds and special construction funds are contingent government liabilities, "augmented" debt is then total public debt (62 percent of GDP as of 2016) and the remaining nonfinancial sector debt is private debt (172 percent).

Box 2. The IMF's Institutional View on Monetary Policy and Financial Stability

- In principle, monetary policy should deviate from its traditional objective of price and output stabilization only if costs are smaller than benefits. Costs of raising interest rates arise in the short term from lower output and inflation. Benefits materialize mainly in the medium term, as financial risks are mitigated, though effects are more uncertain.
- The case for leaning against the wind to counter financial risks is generally limited. Even if benefits outweigh costs, implementation remains challenging, including detecting vulnerabilities and predicting crises in real time and calibrating monetary with prudential policies.
- Macroprudential policies should be the key instrument in preventing financial instability. These measures, when well targeted and effective, can target imbalances and market imperfections much closer to their source than monetary policy. Also, they could allow monetary policy to focus on its price stability mandate.
- However, benefits can plausibly outweigh costs in some circumstances, particularly if the transmission mechanism of interest rates is clear. For example, when credit growth is rapid, rate hikes could have a stronger effect on credit growth and crisis probability by discouraging exuberant, self-fulfilling behavior. Benefits also rise when crises are likely to be particularly severe due to a large and interconnected financial system and the absence of well-targeted macro-prudential measures.

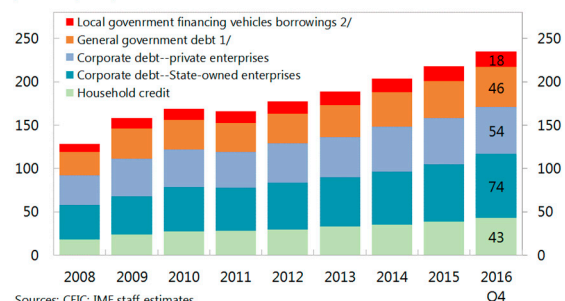
TACKLING CORPORATE DEBT AND ACHIEVING PRODUCTIVITY GAINS—THE CENTRAL ROLE OF STATE-OWNED ENTERPRISES¹

- *State-owned enterprises (SOEs) are at the center of China's high and rising corporate debt. Many of them are nonviable "zombie" firms and in overcapacity sectors. These companies account for an outsized share of corporate debt and have contributed to much of its rise.*
- *Reforms will not only be critical to reducing debt vulnerabilities and containing financial risks, but also to raising productivity and growth. Staff estimates that SOE reforms could raise China's long-term growth potential by about 1 percentage point a year.*
- *Various reforms have been introduced to facilitate deleveraging and resolve weak companies but progress has been slow. Progress is complicated by limited SOE reforms, the reopening of shutdown capacity, and piecemeal exit of zombies.*
- *Accelerating progress requires a more holistic and coordinated strategy, which should include: time-bound actions that "triages" weak firms; recognition of losses; fostering operational restructuring and reducing implicit support; liquidating zombies; and relying on market forces in resolving overcapacity.*

A. Introduction and Key Facts

1. Faced with high and rising corporate debt, the government has put forward a broad agenda to address the risks of excessive leverage. The strategy aims to restructure debt, reduce overcapacity, and eliminate nonviable "zombie" firms.² At the same time, the government is pursuing gradual deleveraging and reforming SOEs to reduce credit misallocation.

Sharp Increase of Corporate Credit
(Percent of GDP)



Sources: CEIC; IMF staff estimates.

^{1/} Includes part of local government financing vehicles (LGFV) debt that is recognized as official local government debt.

^{2/} LGFV debt not classified as official general government debt.

¹ Prepared by W. Raphael Lam based on the forthcoming working paper by W.R. Lam, Y.Y. Tan, Z.B. Tan, and A. Schipke (2017). QI Zhe, TAN Yuyan, WU Yuchen provided excellent research. We are grateful for comments from the People's Bank of China, National Development and Reform Commission, Ministry of Finance, State-owned Assets Supervision and Administration Commission (SASAC), and China Banking Regulatory Commission (CBRC).

² Nonviable zombie firms are those whose liquidation value is greater than their value as a going concern, taking into account potential restructuring.

2. The most pressing corporate debt vulnerabilities are concentrated among SOEs, zombies, and overcapacity firms (Table 1).

As a group, these companies account for an outsized share of total corporate debt and have contributed to much of its increase in recent years (Appendix Table 1). Empirical analysis of firm-level data suggests that weak firms have substantial overlaps and are more likely to be state-owned, in overcapacity sectors, and in north and northeast regions.

Table 1. Scorecard of Corporate Debt Vulnerabilities^{1/}

Indicators	State-owned Overcapacity Zombie		
	enterprises	firms	firms
Different dimensions of corporate debt vulnerabilities:			
1 High corporate debt (in percent of GDP)	Dark red	Red	Yellow
2 Large contribution to the rise of corporate debt	Dark red	Yellow	Yellow
3 Weak corporate fundamentals ^{2/}	Red	Red	Dark red
4 Heavy regional concentration	Yellow	Dark red	Red

^{1/} The degree of vulnerabilities ranks from dark red, red, yellow, green. Dark red indicates the most severe vulnerabilities.

^{2/} Corporate fundamentals measured by profitability, leverage ratios, and interest coverage.

Zombie Firms

3. The government defines zombies as firms that incur three years of losses, cannot meet environmental and technological standards, do not align with national industrial policies, and rely heavily on government or bank support to survive.³ The share of zombies in total corporate debt has risen in recent years. Zombies contribute to corporate debt vulnerabilities, not just because of their debt level, but also their persistent weak performance and potential crowding out of non-zombie firms' investment (Tan and others 2017). They have higher leverage, lower returns, and lower productivity than non-zombie firms. The zombie firms remain so after 3-5 years and their performance continues to deteriorate.

Overcapacity Firms

4. Overcapacity sectors are those that suffer from low capacity utilization rates and persistent losses.⁴ Although overcapacity firms contributed moderately to the rise in corporate debt during 2008–16, they are estimated to account for 10–15 percent of total corporate debt (Appendix Table 1). While profitability has improved since late 2016, their share of total corporate debt has remained high.

SOEs

5. SOEs often undertake noncommercial functions such as pursuing national development strategies and performing social service functions. Central state-owned conglomerates are about 102 in number, each with layers of subsidiaries, that add up to some 167,000 nonfinancial SOEs nationwide. They tend to enjoy implicit support on factor inputs, such as

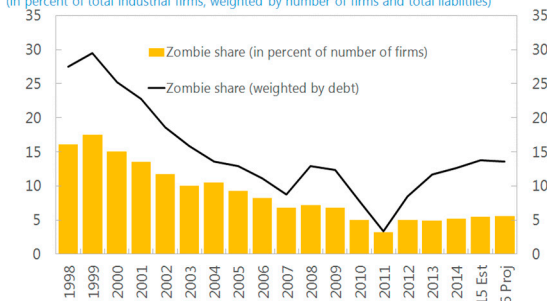
³ This paper also uses an alternative definition proposed by Fukuda and Nakamura (2011), with adjustment applied on short-term debt due less than a year. This defines "zombies" as firms incurring persistent losses and with interest payment costs below market lending rates—a proxy for support from creditors or the government.

⁴ This paper includes coal, steel, cement, plated glass, and aluminum industries as overcapacity sectors. Paper, solar power, chemicals, ship building, coal-fueled power are sometimes included in other studies (such as the European Chamber of Commerce 2016). Data for these industries are grouped into the broader manufacturing sector.

land endowment, credit, and protected markets (estimated at about 3 percent of GDP) while also incurring additional costs in fulfilling social functions (Lam and Schipke 2017).

6. While SOEs account for declining shares of industrial output (from over 40 percent to about 15-20 percent over the last 15 years), they have an outsized share of corporate debt (57 percent of total corporate debt or 72 percent of GDP in 2016) and contributed to almost 60 percent of the rise in total corporate debt during 2008–16. SOEs underperform private firms on average, with lower returns and productivity (IMF 2016). Productivity was also 25 percent lower than that in private firms on average, controlling for industries.

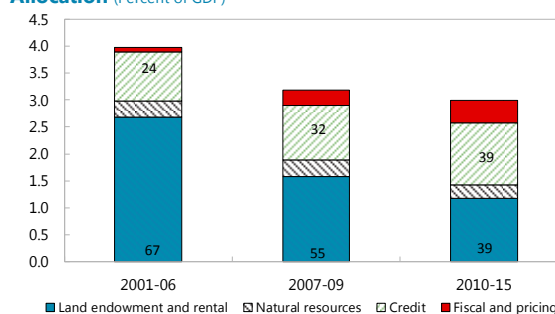
Nonviable Zombie Firms are Rising Again, particularly in Debt Share
(in percent of total industrial firms, weighted by number of firms and total liabilities)



Sources: NBS Industrial Firm Survey and staff estimates.

1/ Data for 2010 are missing and based on average of 2009 and 2011. Estimates are average between two definitions of zombies (State Council and Fukurama and Nakamura (2001).

Implicit Support to SOEs Increasingly Related to Credit Allocation (Percent of GDP)



Sources: Unirule Institute of Economics (2015); CEIC; authors' estimates.
1/ Numbers in the bar chart refer to the share of total implicit support.

Productivity Gains from Resolving Weak Firms

7. Reforms to resolve weak firms and harden budget constraints for SOEs will improve resource allocation and raise efficiency. Based on the productivity distribution of Chinese firms, converging to countries that have a more efficient productivity distribution (measured by the top 75–90 percentile across countries) would generate productivity gains and raise long-term growth potential 0.7–1.2 percentage points per year (IMF 2017; Lam and others 2017; Hsieh and Klenow 2009).

B. Recent Developments and Policy Measures

Deleveraging and Restructuring Debt

- **Government strategy and recent developments.** The overarching strategy envisages a market and legal framework for debt restructuring—rather than state direction or bailouts—and aims to guard against systemic or regional risks. Incremental progress has been made on debt restructuring. An inter-ministerial group, led by the NDRC, was tasked to facilitate deleveraging and regulators have renewed focus to resolve excessive leverage. Guidelines for debt-equity swaps and creditor committees for claims of multiple creditors were issued.
- **Assessment.** The guidelines are positive initial steps toward a comprehensive framework to resolve excessive corporate debt. However, the guidelines lack important details on loss recognition and on operational restructuring of weak firms. While some SOE restructuring cases

contain elements of operational restructuring, details and time frames are not specified (at least not publicly). A few debt-equity swaps appear to be equity in name but debt in essence. And without concerted efforts to slow credit growth, there is an increasing risk of superficial financial restructuring to meet a deleveraging “target” (such as reducing firm-level liability-to-asset ratios) without tackling underlying structural problems, essentially “kicking the can down the road”.

Cleaning up Zombies

- Government strategy and recent developments. The government’s strategy is to allow zombies—mainly focused on SOEs—to exit through a menu of options, including asset transfers, consolidation, and liquidation. The government has identified as zombies over 2,000 central SOE (with total assets of about 4 percent of GDP) and over 7,000 local SOEs. Reportedly, 20 percent of the identified central SOE zombies were resolved in 2016, although without details. Amendments were made to the regulation of nonperforming loans to expedite the liquidation of zombies.
- Assessment. Renewed focus to allow the exit of zombies is appropriate. Lack of resolution details, however, makes it difficult to assess progress. Although zombie debt is estimated to be moderating due to improving profitability, resolving them may still prove difficult as zombies are about 30 percent more likely to remain so if they are state-owned.

Reducing Overcapacity

- Government strategy and recent developments. The government intends to phase out low-technology and high-polluting capacity through a combination of market forces, legal, and administrative measures. The coal and steel sectors have set a medium-term target to cut capacity by 10–15 percent of 2015 output and to reduce employment by 1.8 million workers over 3–5 years. Capacity reduction exceeded the target in 2016 and is on-track in 2017, while the workforce was down by 30 percent over the last 2-3 years without creating major unemployment (Appendix Table 2). The government also broadened cuts to other sectors such as coal-fueled power and building materials and strengthened the social safety net by a RMB 100 billion restructuring fund.
- Assessment. The reduction targets are appropriately frontloaded but could be more ambitious. Under the current cut targets, crude steel capacity would still be close to 2013 levels and account for nearly half of global capacity by 2018–20 due to previously-planned investment (Sekiguchi and others 2016; European Union Chamber of Commerce 2016). By some accounts, some closures have resumed production. The debt in overcapacity sectors has not fallen, suggesting problem loans have not been fully recognized (banks do not classify those problem loans as nonperforming loans). The government has also relied on administrative measures, such as mergers, work day reductions, and window guidance on prices, while banks reportedly refinanced firms with payment difficulties (e.g., seven major coal firms in Shanxi). The impact on production has also been muted, with coal and crude steel output up by 3-8 percent since 2015.

Reforming SOEs

- Government strategy and recent developments. SOE reforms were highlighted as key priorities with the strategy to “integrate naturally” modern corporate governance and leadership of the Communist Party so that they can raise efficiency while meeting national development goals (IMF 2016, Naughton 2016 and Leutert 2016). Recent measures include (1) consolidating some central SOEs; (2) phasing out SOEs’ social functions to workers; (3) transferring about ½ percent of state-owned equity to social security funds; (4) cutting central SOE losses (5) individually incorporating the subsidiaries of central SOEs by 2017; (5) implementing pilot employee stock ownership programs to align incentives; and (6) bringing in other investors under the mixed-ownership pilot reforms and committing to open up sectors (such as travel, medical care, electricity, and power and utilities) to private and foreign investment.
- Assessment. SOE reform implementation has lagged other reforms and has not yet raised growth potential. For example, the transfer of SOE profits to the budget has been well below the target 30 percent level. Preliminary classification suggested that only less than 60 percent of SOEs were considered commercially competitive—the category in which SOEs will face direct market competition—which raise concerns whether SOE reforms can achieve significant productivity gains.

C. Policy Implications

8. Corporate debt vulnerabilities cut across zombie companies, overcapacity firms, and SOEs. Progress is complicated by the reactivation of closed capacity, piecemeal exit of zombies, and limited progress in SOE reforms. Resolving the excessive debt in these weak firms requires a holistic, coordinated approach with time-bound actions. The focus should therefore be a government-led process that allows market forces to operate, while complementary actions should follow with operational restructuring to raise efficiency (Maliszewski and others 2016). Specifically:

9. Restructuring Corporate Debt. Building on recent efforts, steadfast implementation is critical. Particularly:

- Assessing firm viability. A targeted asset quality review would be useful to assess firm viability. Supportive policies will also include reinforcing accounting and audit rules to provide timely and accurate financial information, raising the standards of appraisers for asset valuation, and developing efficient credit registers.
- Recognizing and allocating losses. Regulators should strengthen reviews of regulatory policies such as loan classification, bank capital, collateral valuation, and prudential reporting to foster banks’ proactive NPL resolution.
- Operational restructuring plans should be quickly developed for weak SOEs. Creditors and new equity holders need to have reasonable assurance that the restructured firms will be viable on a going-concern basis. Empirical results strongly support that corporate governance reforms

(possibly divestment and a change of management), deleveraging, and tighter budget constraints will help distressed firms return to viability.

- Refining the restructuring mechanism:
 - Creditor committees should also align with international best practices (for example, the insolvency principles for multi-creditor workouts, INSOLs), which allow a sufficient standstill period, information sharing between debtors and creditors, and restraints on debtors from weakening the firm value.
 - Debt-equity swaps should be preceded by an asset quality review of troubled firms and supported by operational restructuring. Bank loans should be transferred at economic/market value (rather than face value) with independent assessment.
- Ensuring sufficient resources for bankruptcy courts and professionals on valuation and overcoming remaining hurdles in the insolvency framework will be critical.
- Clarifying the role of the public sector. First, the joint-ministerial council should be given an explicit mandate to help guide expectations, particularly for identification of zombies and SOE reform. Second, the government should lead the assessment of SOE viability, which should exclude state support. Third, public creditors such as the tax authorities will need to acknowledge a loss in the debt restructuring (under strict conditions).

10. Removing zombies.

- Suspending implicit support. The government should suspend implicit support and allow banks to manage their claims on zombie SOEs so as to reallocate assets to productive uses. Essential social functions provided by zombies should be transferred to fiscal budget.
- Liquidating identified zombies. Nonviable zombies should be publicly identified and subject to greater use of liquidation. This should be complemented with a clear timetable to resolve *all* identified zombies within 1–2 years.

11. Reducing overcapacity.

- Raising the net reduction target. The government should shift the reliance from administrative measures—which inevitably leads to further distortions—to strict enforcement of a larger, more ambitious net reduction of capacity. Indicative targets can be set for other overcapacity sectors and more ambitiously in *net* reduction terms.
- Phasing out energy subsidies and imposing resources tax. Greater use of (coal) resource and environmental taxes, reducing energy subsidies, and stricter enforcement of regulatory standards (such as safety and environmental) will help phase out substandard capacity.

- Providing social safety net. Capacity closures and debt restructuring will involve social welfare costs, such as layoffs (estimated at 2.8 million workers). Targeted social policies can complement local social security to mitigate the social cost of layoffs.
- 12. Reforming SOEs.** Without decisive progress on SOE reforms, measures to tackle corporate debt could risk being a purely financial restructuring exercise and not improve the allocation of new credit.
- Operational restructuring. Greater emphasis should be placed on operational restructuring of weak SOEs and recognizing (and stopping) losses. The state should neither “window-dress” by merging them with sound SOEs nor encourage creditors to refinance, even if that means immediate loss recognition and a mild growth slowdown.
 - Hardening budget constraints. Reducing credit access and implicit support to SOEs will not only address existing debt overhang but also improve the efficiency of new credit. This requires hardening budget constraints by greater tolerance of defaults and by enforcing the transfer of individual SOE profits to the fiscal budget to reach 30 percent by 2020.
 - Facilitating market entry. Reducing entry barriers and phasing out restrictions that give SOEs a privileged role will level the playing field and make markets more contestable. Implementing the commitment to open up protected markets in the state-dominated services sector, such as logistics, finance, and telecommunications, and breaking up administrative monopolies would foster competition and promote growth.

References

- European Union Chamber of Commerce (2016) "Overcapacity in China—An Implementation to the Party's Reform Agenda", Roland Berger.
- Fukuda, S. and J. Nakamura (2011) "Why Did 'Zombie' Firms Recover in Japan?" *World Economy* vol. 34/7.
- Hsieh, C.-T., and P. Klenow, 2009, "Misallocation and Manufacturing TFP in India and China." *Quarterly Journal of Economics* 124 (4): 1403–448.
- International Monetary Fund (2016) "The People's Republic of China: 2016 Article IV Consultation Staff Report", IMF Country Report No. 16/270.
- W.R. Lam, Y.Y. Tan, Z.B. Tan, and A. Schipke (2017) "The Central Role of State-owned Enterprises and Nonviable Zombie in Corporate Debt Vulnerabilities", forthcoming.
- Lam W.R. and A. Schipke (2017) "State-owned Enterprises Reforms", in *Modernizing China: Investing in Soft Infrastructure*, IMF Publishing.
- Leutert, W. (2016) "Challenges Ahead in China's Reform of State-owned Enterprises", *Asia Policy* 21 (January): pp.83–99.
- Maliszewski, W., S. Arslanalp, J. Caparusso, J. Garrido, S. Guo, J.S. Kang, W.R. Lam, T.D. Law, W. Liao, N. Rendak, P. Wingender, J. Yu, and L. Zhang (2016) "Resolving China's Corporate Debt Problem", IMF Working Paper No. 2016/203.
- Naughton, B. (2016) "State Enterprise Reform: Missing in Action", in *The State Sector's New Clothes: Will SOEs save China's Economy or Drag it Down*, *China Economic Quarterly* 20 (2), June 2016.
- Sekiguchi, N., H. Otsuka, A. de Carvalho, and F. Silva (2016) "Capacity Developments in the World Steel Industry", Organisation for Economic Co-operation and Development, Directorate for Science, Technology, and Innovation (Steel Committee), DSTI/SU/SC(2015)8/FINAL
- Tan, Y., Z. Tan, Y.P. Huang, and W.T. Woo (2017) "The Crowding-out Effect of Zombie Firms: Evidence from China's Industrial Firms", forthcoming in *Economic Research Journal*.
- Unirule Institute of Economics (2015) "The Nature, Performance, and Reform of the State-owned Enterprises", Unirule Institute of Economics, Beijing.

Appendix I. Debt Vulnerabilities of Zombie Companies, Overcapacity Firms, and SOEs

As of end-2016 and in percent unless otherwise stated	Debt level		Contribution to overall corporate debt (2008-16)		Corporate performance				Regional concentration ^{1/}
	Corporate Debt		Increase (in percent of GDP)	Contribution	2003-2008		2016		2015
	Share of total	in percent of GDP			Leverage ratio ^{2/}	Returns on assets	Leverage ratio ^{2/}	Returns on assets	Share of provincial total
Total	100	127	52	100					
Private enterprises	43	55	22	42	144	7.1	98	5.9	...
State-owned enterprises	57	72	30	58	125	3.2	181	2.6	37
Overcapacity sector^{3/}	16	21	4	8	156	6.1	183	3.7	43
<i>of which:</i>									
<i>Coal</i>	3	4	2	5	146	6.9	201	0.8	17
<i>Steel</i>	6	8	0	1	162	6.0	180	3.1	18
Zombie firms^{4/}									
1) State Council definition	5	6	4	7	247	-5.3	346	-5.9	44
2) Modified Fukuda and Nakamura definition	9	11	4	8	242	-1.7	284	-1.6	40

Sources: PBC, CEIC, NBS, IMF staff estimates.

1/ Regional concentration is measured by the average share of industrial liabilities relative to the provincial total among the North and Northeast regions (Heilongjiang, Jilin, Liaoning, Shanxi, Shaanxi, and Hebei provinces, and Inner Mongolia autonomous region). For example, coal firms account for an average of 17 percent of industrial liabilities in the selected provinces (highest in Shanxi at 51 percent) and steel firms account for an average of 18 percent (highest in Hebei province at 37 percent). Overall, overcapacity firms account for 21-65 percent of industrial liabilities in North and Northeast regions.

2/ Leverage ratio is measured by total liabilities to total owners' equity (in percent).

3/ Overcapacity sector includes coal, steel, plated glass, cement, aluminum, nonferrous metals.

4/ The debt share of zombie firm is based on industrial liabilities in National Bureau of Statistics industrial survey from 1998-2013, which is then scaled to total corporate debt based on the aggregate ratio. Data after 2013 are estimated based on overall increase in credit and aggregate corporate performance.

Appendix II. Reduction of Capacity in Coal and Steel Sectors

(in millions of tonnage unless otherwise stated)	Actual				Target or forecast		
	2013	2014	2015	2016	2016	2017	2018-20
Crude steel							
Capacity	1,082	1,160	1,200	1,144	1,155	1,104	1,097
Capacity cut	-9	-31	-17	-65	-45	-50	-35
New capacity added	96	109	57	9	-	9	28
Production output	724	822	804	808			
Utilization Rate (in percent)	67	71	67	71			
Employment (millions) 1/	4.9	4.7	4.2	3.8	3.9	3.5	2.9
Reduction of workforce (in millions)	-	-0.1	-0.5	-0.4	-0.3	-0.3	-0.6
Coal							
Capacity	-	-	5,700	5,410	5,450	5,370	5,160
Capacity cut	-	-	-	-290	-250	-150	-320
New capacity added	67	50	26	-	-	110	110
Production output	3,974	3,874	3,747	3,364			
Utilization Rate (in percent)	-	-	66	62			
Employment (millions) 1/	5.3	4.9	4.4	4.0	4.2	3.9	3.9
Reduction of workforce (in millions)	-	-0.4	-0.5	-0.5	-0.2	-0.1	0.0
Sources: WIND, CEIC, and IMF staff estimates.							
1/ The authorities intend to reduce 0.5 million employment in 2017 (or a total of 1.8 million workers over the medium term) for coal and steel sectors. Here assumes the reduction target for 2016 is one-fifth of the total target based on 2015 employment levels.							

A MARKET-BASED MONETARY POLICY APPROACH FOR CHINA¹

- *The implementation of China's monetary policy is becoming more market-based and the new interest rate corridor has become the main instrument of monetary policy.*
- *There is significant pass through from the PBC's interest rates to bank lending rates, government yields and other market funding or loan rates.*
- *A VAR analysis with output and prices suggests a significant impact of interest rates on economic activity, and with some lag, on prices.*
- *Taylor rules suggest that the monetary policy stance has been accommodative through early 2017.*
- *The next major reform should be the introduction of an inflation target or a range together with operational (instrument) independence for the PBC.*

1. China has witnessed rapid financial innovation and undertaken significant financial market liberalization and reform, which have transformed its financial sector over the past few years. Banks still play a major role in financial intermediation but other nonbank financial institutions and capital markets have become more prominent as a source of credit and in the provision of financial services to Chinese firms and households. Overall, China's financial system has become more market-based but also more complex. In response, the PBC's operational conduct of monetary policy is relying increasingly on a standard market-based system and its policy interest rates have become the main instrument of monetary policy. This paper seeks to answer the following questions on the monetary transmission channel:

- How effective is the transmission of policy rates to market and bank interest rates?
- Do interest rates have a measurable impact on economic activity and inflation?
- What is China's longer-term neutral rate of interest? How accommodative is China's current monetary stance?
- What are the next steps in transitioning to a modern and market-based monetary framework?

A. Context: Policy Developments and Evolving Framework

2. China's monetary policy is becoming more market-based. Credit controls and constraints on bank lending and deposit rates have now largely been abolished and short-term market interest rates increasingly contain information about the monetary policy stance. Although money growth (M2) remains the official intermediate target (12 percent y/y for 2017), the PBC has clearly de-

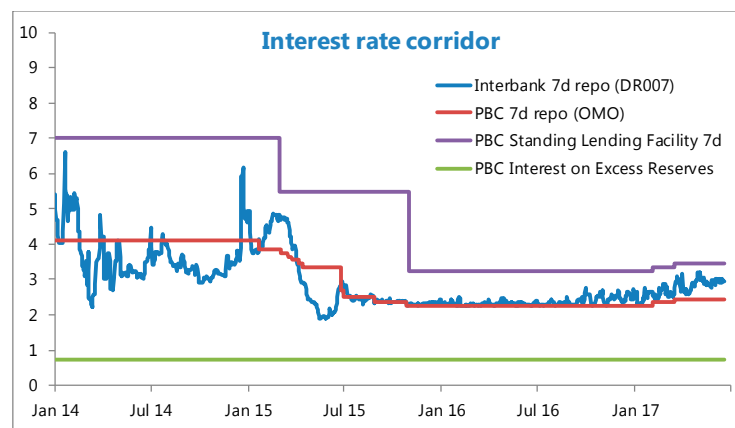
¹ Prepared by Thomas Harjes (MCM).

emphasized its importance and mentioned that it is now using the 7-day repo rate to send policy signals (see, PBC 2016). The PBC has also indicated that it considers the 7-day interbank repo rate (specifically the volume-weighted daily average of repo transactions between depository institutions, published as DR007) as the appropriate operating target. Since about mid-2015, this rate has stayed in the new interest rate corridor which has de facto been defined by the PBC's repo operations bid rate as the lower bound and the rate for the PBC's standing lending facility (SLF) as the upper bound (Figure below).² Domestic banks can access the PBC's standing lending facility at any time against a relatively broad pool of collateral (including bank loans) if they meet the PBC's macro-prudential requirements (MPA).³

3. In early 2017, the PBC started gradually to increase the rate for its open market (repo) operations and SLFs.

The PBC raised its reverse repo operations bid rate and the rate on its standing lending facilities twice by 10 bps in February and March.⁴

These rate hikes came in the wake of somewhat higher money market volatility during the second half of 2016 when the PBC steered the interbank 7-day repo rate towards the middle of the corridor by supplying less liquidity in its daily open market operations than bid for by banks.⁵ In early 2017, the PBC occasionally suspended its daily operations to encourage more market activity.



B. The Transmission of Monetary Policy

4. The monetary policy stance in China can broadly be summarized by the PBC's policy rates. Historically, the PBC has employed several tools (price- and quantity-based) to conduct monetary policy. The PBC's benchmark interest rates for bank lending and deposit rates, the PBC's OMO rates, reserve requirements, FX intervention and direct lending controls have all been

² Since mid-2015, the PBC has maintained a structural liquidity deficit in money markets which prevents the market repo rate from falling below the PBC's rate. In case of a structural surplus (for example in case of quantitative easing, or large unsterilized FX purchases), the interest on excessive reserves would become the lower bound.

³ At the beginning of 2016, the People's Bank of China (PBC) introduced the new macro prudential assessment (MPA) to address macro-prudential risks in the financial system. The MPA uses a scoring system (0-100) for sixteen indicators in seven categories to assess the soundness of banking institutions.

⁴ The PBC also lifted the rates of its longer-term (14-day, 28-day) repo operations and its medium-term lending facilities (MLF, 6-month, 12-month). However, these longer-term operations are conducted infrequently and MLF injections are mainly employed to offset the persistent liquidity drain from the PBC's foreign exchange sales rather than to signal the overall policy stance.

⁵ Interbank refers to transactions between depository institutions in this note but in China the term "interbank" often refers to a broader repo market that include nonbank financial institutions.

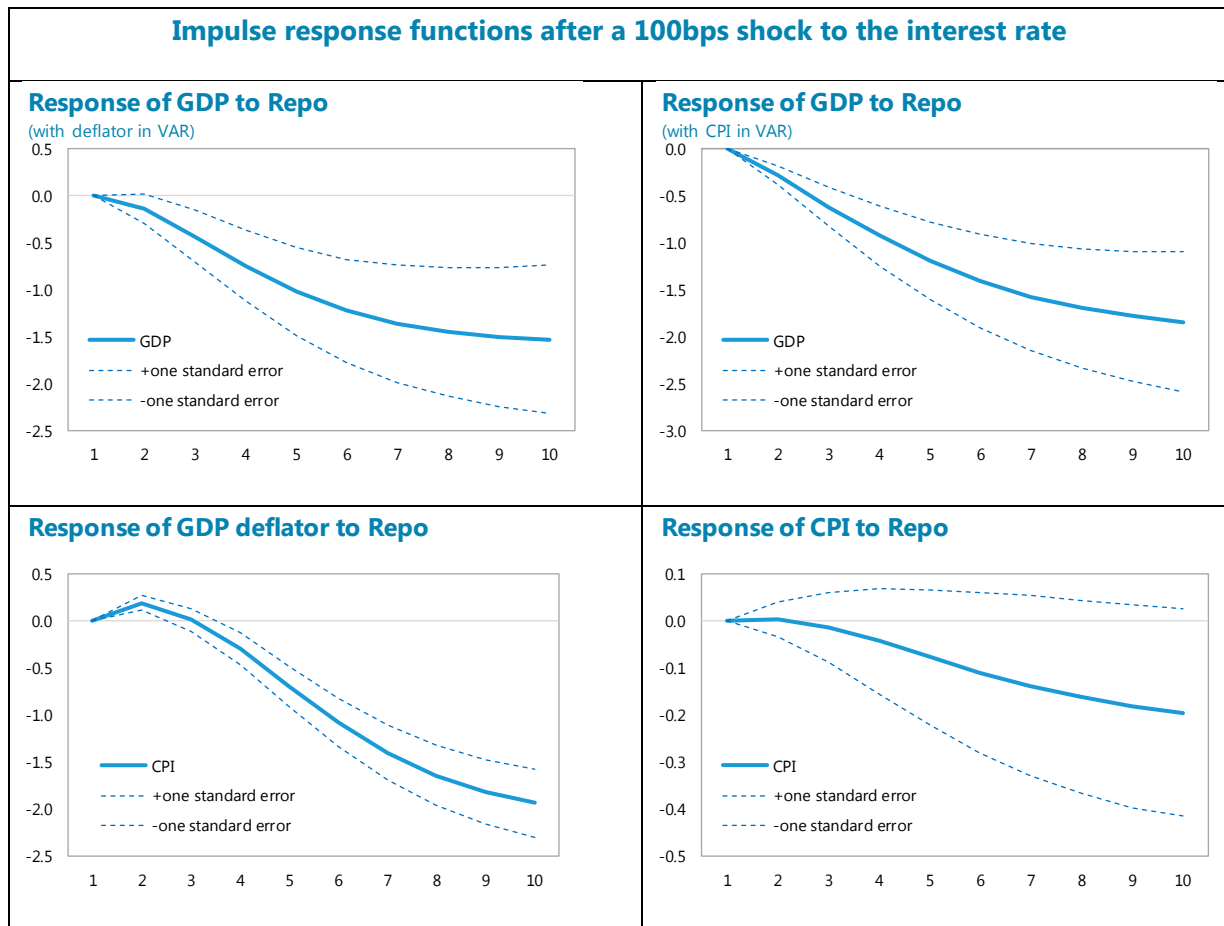
employed as monetary policy tools in the past. Changes in OMO rates, reserve requirements and FX intervention all affect the interbank repo rate but its variations can also reflect liquidity demand shocks that are not fully accommodated by the PBC. In the following analysis, we assume that variations in the 7-day interbank repo rate (even before it effectively became a key operating target in mid-2015) were largely determined by the PBC, especially at lower frequencies/longer horizons, and it can therefore be interpreted as a “shadow” policy rate in addition to the PBC’s benchmark lending rate over our sample 2005-16. This implies that the PBC’s use of quantity tools was calibrated to be broadly consistent with its interest rate stance. De facto, the interest rate corridor has been introduced and the PBC’s 7-day repo rate for its open market operations has effectively taken over the role of the key policy rate, although it has not been officially announced.

5. There is a significant pass through from the PBC’s policy rates to the average bank lending rate. The historically-close link between the PBC’s benchmark rate for bank loans and the average bank lending rate reflects the fact that the PBC’s rates used to define the floor (abolished in 2013) for bank lending rates. Regressing the average lending rate on either the PBC benchmark rate or the (smoothed) interbank repo rate reveals a significant and high coefficient of about 70 percent for the benchmark rate and about 30 percent for the repo rate.⁶ Notably, the interbank rate spike in 2013 also pushed up the average bank lending rate as banks passed on the higher funding costs to protect their margins, notwithstanding the unchanged benchmark lending rate, signifying the increasing importance of the interbank repo rate.

6. Changes in policy rates also have a measurable impact on short-term government yields. The 2-year government bond yield is an important determinant of longer-term and corporate bond yields and can also serve as a measure of market expectations of the monetary policy stance over the next couple of years. All policy rates are positively correlated with the 2-year government bond yield. Bivariate VAR analysis reveals an almost complete pass-through from PBC benchmark rate changes to government bond yields after about 6 months but a lower (25 percent) pass-through for the interbank rate.

7. A VAR analysis with output and prices suggests a significant impact of changes in the PBC’s policy rates on economic activity, and with some lag, on prices. There is growing evidence that the monetary transmission mechanism in China has improved and is increasingly resembling that in major market economies. In a quarterly VAR, the GDP response to changes in the interbank repo rate is significant and the cumulative output loss is large at about 1.7 percent after two years following a 100bps rate increase. There is also a modest reduction in CPI headline inflation (about 0.2 percentage points after two years) but the response is not statistically significant. Changes in the PBC benchmark rate have a modest but significant impact on inflation while the output declines as well but its impulse response function falls within the two-standard error band. Repo rate changes have a significant impact on both output and prices if CPI inflation is replaced with the GDP deflator in the quarterly VAR.

⁶ To account for significant autocorrelation in the lending rate, its lagged values (2) were included in the regressions and the results were robust across various specifications.



Note: Cholesky ordering (CPI, GDP, Repo) and (GDP_Deflator, GDP, Repo).

8. Changes in quantitative measures of the monetary policy stance (M2, or aggregate loan volume) do not produce a significant response in either GDP or inflation/deflator. When M2 or bank loans are added to the VAR with output, prices and policy rates, or replace the latter, their changes do not have a significant impact on output and prices in most specifications. At the same time, positive policy rate changes (rate hikes) trigger a decline in M2 and bank loans. These findings are broadly in line with other studies, including Fernald and others (2014) who find that changes in Chinese interest rates have a substantial impact on economic activity and inflation, while other measures of changes in credit conditions, such as shocks to M2 or lending levels do not on their own.

C. Setting Policy Interest Rates

9. The PBC's new interest rate corridor encompasses the key effective policy rates. These rates include the PBC's 7-day repo rate through which it provides liquidity to the banks on a frequent basis, the rate on excess reserves if banks deposit more funds with the PBC than required, and the rate on the 7-day standing lending facility, which offers weekly liquidity to banks on demand. Since the "de facto" introduction of the corridor (mid 2015), the PBC has steered the 7-day

interbank repo rate (DR007) close to its own repo rate but has recently allowed somewhat more market rate volatility within the 100bps corridor defined by the PBC's 7-day repo and SLF rate.

10. Assessing the appropriate level of policy rates is a difficult undertaking especially in the Chinese context. Although price and output stability are important targets for the PBC, exchange rate, capital flow and financial stability considerations also play a role in China. However, estimations of a policy reaction function with either the benchmark or repo rate as the policy instrument provide the best fit when inflation and output variations are driving policy rate adjustments which tend to be highly persistent.

11. In the longer run, China's neutral real interest rate is likely to be somewhat higher than in other major advanced economies.

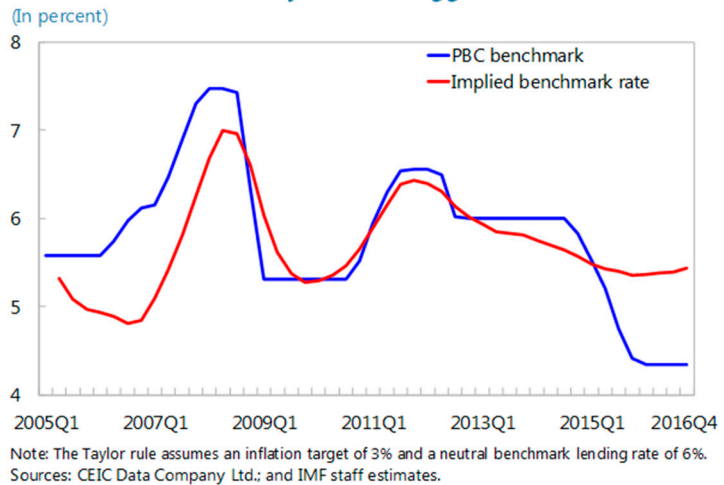
- In view of China's transition to a more market-based economy and uncertainty about its longer-term growth prospects, any estimate of its longer-term neutral real rate— defined as the level of the policy rate that, when adjusted for inflation, is neither expansionary nor contractionary when the economy is operating near its potential— also involves a high degree of uncertainty. Over the sample period 2005-16, both the short-term repo rate and headline inflation averaged slightly below 3 percent implying a real (CPI-deflated) rate of zero on average. At the same time, however, national savings were very high, financial repression was still prevalent and the exchange rate appreciated significantly while the capital account and financial markets underwent some gradual liberalization over the past decade. Therefore, these artificially low historical real rates do not provide much useful information for the current or future level of the neutral rate.
- He and others (2015) estimate the long-term neutral rate in the range of 4.0 to 4.5 percent which is about a couple of percentage points higher than similar estimates for the U.S. undertaken before the global financial crisis (for example Taylor (2003), or Laubach and Williams (2003)). However, the latter have been revised down significantly over the past few years, and the U.S. Federal Reserve Board, for example, currently sees its longer-term (beyond 2020) real rate close to 1 percent. All in all, it seems likely that China's longer-term neutral real interest rate should be considerably above zero and somewhat above the level observed in other major advanced countries given that China will still be catching up with faster output growth for some time.

12. Taylor rules suggest that the current stance of monetary policy (in early 2017) is accommodative. Regressing the PBC's benchmark lending rate on the output gap and inflation provides a reasonably good fit once the relatively high persistence in the effective policy rates is modeled with an appropriate lag structure.⁷ These rules point to an expansionary monetary stance at the end of 2016 as it had been somewhat more accommodative than implied by the rule (by 100 bps). However, the simple Taylor rules implicitly assume a constant neutral rate which may not have

⁷ The fit for the repo rate (using it as the "shadow policy rate" over the past decade) was worse and the output gap did not have any significant impact on the repo rate. This might reflect the fact that the PBC has occasionally hiked the repo rate because of financial stability concerns.

been the case over past decade. Going forward, they are not very likely to provide a stable long-term relationship as China continues its transition to a more balanced and market-based economy. It is likely that China's neutral real interest rate may rise as financial liberalization continues and remaining credit constraints for households and private firms (and preferential credit conditions for SOEs) are removed. A lower national savings rate would likely work in the same direction.

Current Rates Below Taylor Rule Suggested Levels



D. The Next Steps in The Transition to a Market-based Monetary Policy Framework

13. The PBC should gain operational (instrument) independence for its conduct of monetary policy.

- The PBC's benchmark lending/deposit rates are determined by China's State Council. The PBC seems to have some leeway in setting the rates for its new interest corridor but it should be fully and independently in charge of setting these rates. The PBC could then declare the 7-day interbank repo rate as its new operating target and phase out the publication of benchmark rates which are difficult to interpret after the full liberalization of bank lending and deposit rates.
- However, operational independence implies a more narrowly defined mandate for monetary policy where the long-term goals, such as a medium-term inflation target, would be defined by the State Council and the PBC would be accountable to the State Council for reaching these goals. This would require a much greater degree of transparency of monetary policy through the PBC's communication with the public and markets about its plans, objectives and policy decisions.
- While the PBC could also play a major role in the conduct of macroprudential policy, there should be a clear separation with monetary policy, while recognizing that they occasionally interact with each other. The conduct of monetary policy should rely on price-based instruments, primarily the new interest rate corridor. The pricing and access to the PBC's lending facilities should be based on clearly defined collateral rules and not supervisory criteria.

References

Dong He, Honglin Wang, and Xiangrong Yu (2015), "Interest Rate Determination in China: Past, Present, and Future", *International Journal of Central Banking* 12, pp 255-277.

Fernald, John, Mark M. Spiegel, and Erik T. Swanson (2014), "Monetary Policy Effectiveness in China", *Journal of International Money and Finance* 49, Part A, December 2014, pp 83–103.

Laubach, Thomas, and John C. Williams. 2003. "Measuring the Natural Rate of Interest," *Review of Economics and Statistics*, 85(4), November, 1063–1070.

People's Bank of China (2016), Quarterly Monetary Policy Reports.

CHINA: CAPITAL ACCOUNT LIBERALIZATION¹

- *In response to large capital outflows in 2015/16, the Chinese authorities allowed some currency depreciation, used FX intervention, and applied a wide range of measures to stem outflows and depreciation pressures.*
- *The sequencing of past capital flow liberalization was broadly in line with the Fund's integrated approach, but supporting reforms to build resilience to capital flow volatility did not keep pace.*
- *Management of capital flows following liberalization has proven challenging, suggesting a need to accelerate reforms and to proceed cautiously with further liberalization.*
- *If capital outflow pressures re-emerge, macroeconomic policies should play a key role in alleviating those pressures. Capital flow management measures (CFMs) can help and buy time, but cannot substitute for macroeconomic policy adjustment.*

A. Capital Account Liberalization and Openness

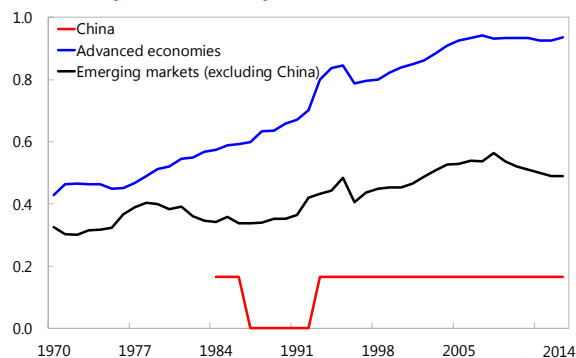
1. The capital account has been opened gradually amid evolving policy priorities. High domestic savings searching for yield and diversification, interest rate differentials and exchange rate expectations have driven capital in and out of China. Also, "Going Global", "One Belt One Road", "RMB internationalization", "Made in China 2025" and other policies have provided impetus for capital flows over time. Generally, capital inflows were liberalized before outflows and FDI flows before portfolio and other flows. The key liberalization milestones were as follows:

- FDI into several sectors was liberalized in the early 1990s, but services and some strategic sectors remain closed to FDI. Overseas Direct Investment (ODI) was opened gradually, starting with the "Going Global" initiative in 1999, in part to secure the supply of commodities, to climb up the value chain, and to alleviate RMB appreciation pressures.
- Portfolio investment liberalization was initiated with access to select Chinese stock exchanges for qualified foreign institutional investors (starting in 2002) and extended to the Chinese interbank market for foreign sovereign and private entities (in 2015 and 2016 respectively). Domestic qualified institutional investors (QDII) were permitted to make global portfolio investments starting 2007.
- Cross-border lending and borrowing was partially relaxed during 2008-10. Chinese commercial banks were permitted to lend abroad in 2008. Qualified domestic enterprises were allowed to lend to their overseas subsidiaries in 2009 and to borrow short-term in 2010.

¹ Prepared by Calixte Ahokpessi (SPR)

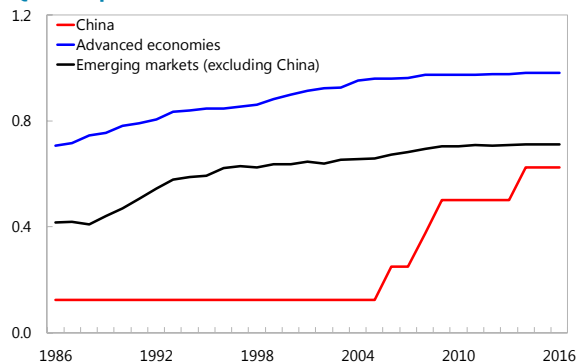
2. Notwithstanding these liberalization measures, China's capital account remains relatively closed from a cross-country perspective. Different indicators of de-jure capital account openness have emphasized various aspects of openness. Thus, some measures (Chinn-Ito)² show that China's capital account is very closed, while others (Quinn)³ show that it has gradually opened. But even the indicator with the most generous interpretation of the openness of the capital account shows that China's capital account openness still lags that of advanced economies and large emerging markets.

De Jure Capital Account Openness: Chinn-Ito Index



Sources: International Financial Statistics (IFS); and IMF staff estimates.

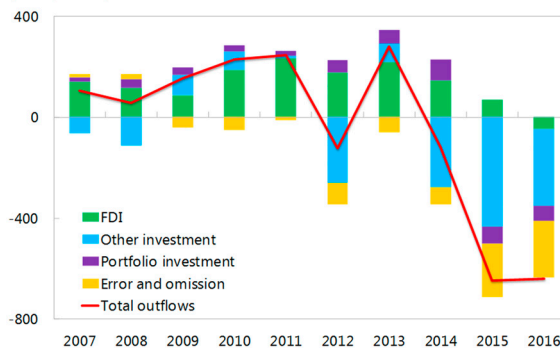
Quinn Capital Control Index



Sources: International Financial Statistics (IFS); and IMF staff estimates.

3. De facto, however, China's capital account is more open than indicated by the above de jure indices as shown by the surge of capital outflows in 2015 and 2016. On a flow basis, capital flows into China (as a percent of GDP) are of similar magnitude as those into comparable emerging markets.⁴ However, as China commenced opening later than others, therefore on a stock basis, capital account openness still lags that of its peers. Net capital outflows reached a record of around \$648 billion in 2015 (5.8 percent of GDP), mostly driven by other investments and errors and omissions. In 2016, outflows amounted to almost US\$640 billion (5.7 percent of GDP), driven by all categories of the financial account and errors and omissions. These outflows resulted in significant depreciation of the RMB, which was partially cushioned by FX intervention.

Capital Flows
(In US\$ billion)



² The Chinn-Ito index is the first standardized principal component of four binary indicators built from AREAER (The IMF's Annual Report on Exchange Arrangements and Exchange Restrictions).

³ The Quinn index measures the intensity of controls in each category, not merely whether it is open or not. It scores (0, 0.5, 1, 1.5, or 2) based on the severity of restrictions (existence of approval requirements and frequency of approval).

⁴ See "Outlook for Net Capital Flows", in China – Selected Issues Paper, IMF 2016.

B. Assessing Capital Account Liberalization and Tightening

4. The removal of Capital Flow Management Measures (CFMs) in the sequencing of capital flow liberalization has been broadly in line with the Fund's Institutional View.⁵ As described above (¶1), China first liberalized FDI inflows, which are a stable source of capital and considered to be a driver of growth resulting from technology transfer and other positive spillovers to the economy. This helped fuel the export sector after China joined the WTO in 2001. ODI was the next to be liberalized, followed by other longer-term inflows (including through mandatory holding periods of portfolio investments). Short-term flows (including external debt) were liberalized later. In general, China cautiously tested its liberalization policy on a small number of companies or in free trade zones before generalizing it to broader sets of sectors or regions.

5. However, progress in implementing necessary supporting reforms has been slower than desirable (Appendix II). In recent years, there has been limited progress in reforms that would improve the resilience to capital flow volatility. In particular, financial stability risks have accumulated and are now complicating the conduct of monetary policy, as even modest interest rate increases have the potential to create stress for smaller and over-leveraged financial institutions. Gaps in supervision/regulation and in the macro prudential framework, as well as high corporate debt and insufficient progress in reforming state-owned enterprises (SOEs), also raise potential systemic risk concerns. Quasi-fiscal pressures from local governments have also contributed to increasing debt and vulnerabilities. Faster progress on increasing exchange rate flexibility and further developing the monetary policy framework would have strengthened the ability of the economy to manage better capital flows following their liberalization.

6. Given the limited progress on reforms and associated growing vulnerabilities, China has relied heavily on tighter enforcement of existing restrictions during recent bouts of capital outflows (Appendix I). Amid persistent depreciation expectations, the inability of exchange rate and monetary policy to help materially absorb shocks has placed the burden on CFMs and FX intervention to deal with capital flow volatility. Since mid-2016, the authorities stepped up enforcement of existing CFMs and tightened a few others, which has contributed to curbing outflow pressure since late 2016.⁶ Subsequently, intervention by the PBC has subsided and headline reserves have increased modestly to stabilize at slightly above USD 3 trillion. While the authorities' measures have contributed to the reduction of outflows, other factors (e.g. a better growth outlook in early 2017, anchored exchange rate expectations) appear to have played an important role as well.

7. While the recent tightening of CFMs is in line with the IMF's institutional view on capital flows, there are several concerns to consider. As necessary supporting reforms have not kept pace with the liberalization of capital flows, a tightening in CFMs is a possible policy response to capital outflows. Nonetheless, macroeconomic policies should play a more central role in

⁵ For a comprehensive summary of the IV, see: Box 1 in "Capital Flows—Review of Experience with the Institutional View", IMF 2016 and Box 1 in "Managing Capital Outflows—Further Operational Considerations", IMF 2015.

⁶ There have also been reports of the use of window guidance to tighten the enforcement of existing CFMs or to temporarily introduce new ones.

managing outflows and structural reforms should be accelerated;⁷ in addition, tightening of CFMs will likely lose effectiveness over time, adversely affect the business climate and could reduce incentives for reforms.

- **Role of macroeconomic policies.** Notably, interest rate and exchange rate adjustment – as well as financial policies-- should play a primary role in addressing capital flow pressures. Given that the exchange rate is fairly valued, reserves are assessed as adequate, and balance sheet FX exposure is limited, the room for additional macroeconomic policy actions should be explored and CFMs should not be used as a substitute.
- **Effectiveness and costs.** First, the effectiveness of CFMs over a long period is questionable, as outflows are driven largely by Chinese residents who have proven adept at moving capital in and out as evidenced by the surge of errors and omissions in the BOP (2 percent of GDP in 2016 against an annual average of 0.7 percent of GDP in 2010-14). Second, the cost of monitoring and enforcing extensive CFMs represents a heavy administrative burden that could be difficult to sustain. Third, administrative measures could impede economic efficiency (for example, by curtailing ODI in non-core businesses the government could be making sub optimal decisions in areas where it lacks expertise).
- **Inconsistent enforcement over time and across locations and the resulting impact on the business climate.** During times of large capital inflows and pressures for exchange rate appreciation, the enforcement of CFMs appeared more relaxed. Amid capital flow reversals, enforcement has been stepped up. In addition, the extent of enforcement varies by location, depending on how local officials interpret regulations. This inconsistent enforcement, along with the broad reach of recent enforcement measures has created uncertainty in the market as to the authorities' intentions and strategy to deal with depreciation pressures. Uncertainty related to the ability to repatriate FDI earnings and conduct other current account transactions is not conducive to attracting new capital into China. Also, CFMs should be enforced in a way that does not result in a breach of China's obligations to the IMF to not restrict current international payments and transfers. More generally, the perception that the authorities use moral suasion to modulate the enforcement of measures could erode confidence in the regulatory system and damage the business climate. Recognizing these challenges, the authorities recently took steps to improve their communication and to further liberalize inflows.
- **Incentives for further reform.** There is also a risk that the use of CFMs would lead to delays in reforms and increase risks of asset price bubbles and financial instability.

⁷ Per the Fund's Institutional view (IV), capital outflows should be handled primarily with macroeconomic, structural, and financial sector policies, with CFMs only being useful in certain circumstances, i.e. as part of a broader policy package in crisis-type situations or when liberalization has outpaced the capacity of the economy to safely handle the resulting flows.

C. Policy Recommendations

8. When imposing CFMs is warranted, they should be implemented consistently and transparently. First, CFMs should be implemented consistently over time and across locations, and clearly communicated to market participants. Loosening or tightening implementation in response to capital flows creates the perception that rules are enforced in ways that are uneven and unpredictable. Second, CFMs should be implemented transparently, preferably through written rules. Even a perception that new CFMs are introduced through window guidance could give rise to unintended consequences (e.g. corporations could switch from transacting in RMB to transacting in FX if they perceive cross-border RMB transactions might be constrained, thereby reversing progress in RMB internationalization). Finally, even when CFMs are warranted, they should be designed and implemented such that they not restrict current international payments and transfers.

9. The authorities should expeditiously implement key reforms that would help strengthen the resilience of the economy and financial system to capital flows. Financial sector reforms (including to supervision and the macro prudential policy framework) and further strengthening of the monetary policy framework are vital to ensuring an efficient allocation of capital. In this respect, the regulatory/supervisory tightening in the financial sector, starting early 2017, is critically important and should continue. SOE reforms are also critical to increase efficiency of resource allocation and contain financial sector vulnerabilities. Hard budget constraints would help dispel the wide-spread perception of state guarantees, which leads to mispricing of assets and risks.

10. Further liberalization should proceed cautiously by assessing benefits and costs, while pushing ahead with supporting reforms. Liberalization should be paced and phased appropriately in tandem with the necessary reforms. Further liberalization of inflows for the purpose of providing immediate relief against outflow pressure could increase risks of disruptive outflows in the future, should depreciation expectations resume. However, in areas where capital flows are less volatile and where China would benefit from more openness, the benefits of liberalization may outweigh risks. Liberalization could proceed in these areas, potentially including FDI in service sectors, where there is room for rapid efficiency and productivity gains. Not only does FDI provide a stable source of capital, but entry of high-quality investors could help raise sectoral productivity. Financial services and health are areas where carefully crafted liberalization could also be beneficial. In the financial sector, the recent envisaged opening to foreign entities, including credit rating agencies, could help improve capital allocation and boost the overall efficiency of the financial sector. To help support a more flexible exchange rate, consideration should also be given to eliminating or gradually reducing the reserve requirement for onshore FX hedging. If derivative transactions give rise to financial stability concerns, appropriate macro prudential measures should be considered.

11. The challenges of the “impossible trinity” are becoming apparent. Among other reasons, the size of the Chinese economy makes it desirable to move towards an independent monetary policy. This implies that the authorities must choose between the extent of capital account openness and exchange rate flexibility. Exchange rate flexibility will help absorb the impact of shocks, including those resulting from capital flows surges, while relaxing the necessity to impose or

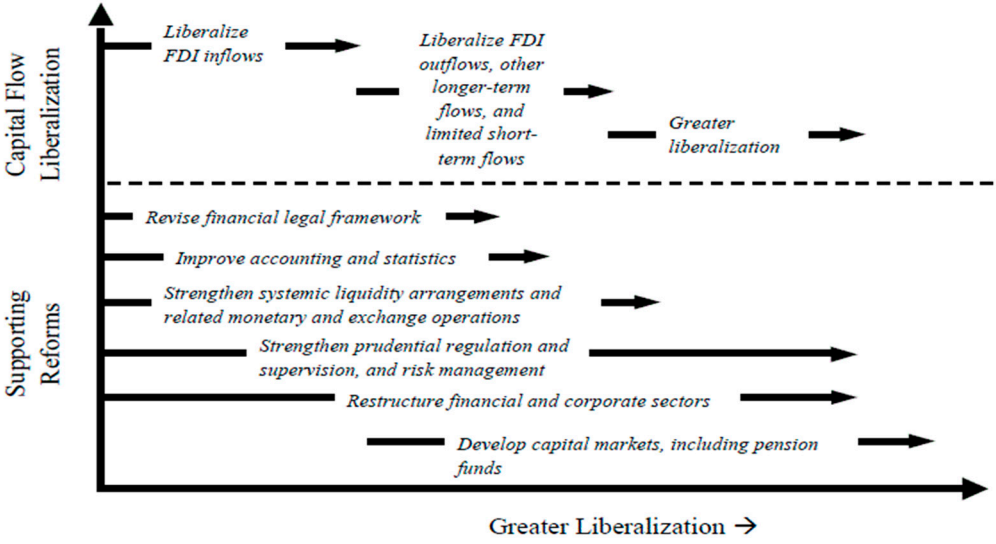
maintain a wide range of CFMs. Thus, deep reforms, including those which allow for greater macroeconomic policy adjustment should be expedited to allow the country to benefit from greater financial openness while mitigating the associated risks.

Appendix I. Measures Taken by China Since Mid-2016 to Stem Capital Outflows

Key areas of tighter enforcement of existing CFMs since mid-2016:

- ODI, where the authorities are paying closer attention to certain activities (e.g., investment in non-core businesses). In addition, SAFE issued in January 2017 a circular requiring companies to explain to banks the sources and purposes of the investment funds, and present the resolutions of board of directors. The PBC also urged commercial banks to tighten their verification of the authenticity of certain ODI.
- Offshore RMB lending by non-financial institutions: commercial banks were urged to enforce strictly existing rules (including the prudential lending limit of 30 percent of lender's equity). Banks must strictly examine whether the business operating scale of the overseas borrower is suitable for the loan size, and the authenticity and reasonableness of the use of outbound loan.

Appendix II. Chart of the IMF's Integrated Approach to Capital Account Liberalization



ASSESSING CHINA'S RESIDENTIAL REAL ESTATE MARKET¹

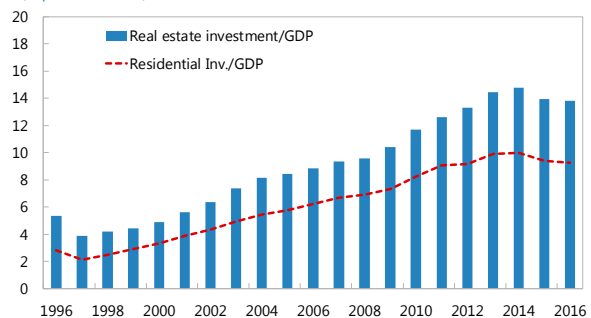
- *China's real estate market rebounded sharply after a temporary slowdown in 2014-2015. The tightening measures since late 2016 seem to have dampened market activity, but house prices and sales remain strong, particularly in smaller cities.*
- *Risks are significant on the downside. If house prices rise further beyond "fundamental" levels and the bubble expands to smaller cities, it would increase the likelihood and costs of a sharp correction, which would weaken overall growth, undermine financial stability, reduce local government spending room, and spur capital outflows.*
- *To stave off such risks, the increasing intensity of macro-prudential and city-specific policies is appropriate, given the diversity in housing conditions, and should continue to be deployed to ensure a smooth adjustment. The government should expand its toolkit to include additional macroprudential measures including more active use of debt servicing-to-income (DSTI) caps and capital requirements on banks' exposure to the real estate sector.*
- *A longer-term solution to manage better the frequent house price cycles is to introduce recurrent property taxes, resolve land supply constraints in large cities, mitigate local governments' reliance on land sales, and accelerate reforms of the social security and "hukou" systems.*

A. Background and Recent Developments

1. **Real estate has been a key engine of China's rapid growth in the past decade.** Real estate investment grew rapidly from about 4 percent of GDP in 1997 to the peak of 15 percent of GDP in 2014, with residential investment accounting for over two-thirds of total housing investment. Local markets vary significantly because of China's large geographical and economic size, economic and social diversity, and fragmented local government policies.

Housing cycles tend to be more pronounced in top-tier cities in terms of price volatility, but they account for a small fraction of real estate inventory and investment. Smaller cities constituted over half of residential real estate investment, but price increases on average were much lower.

Real Estate Investment
(in percent of GDP)



Sources: CEIC, NBS

2. **Distortions render China's property market susceptible to both price misalignment and overbuilding.** On the supply side, the market is distorted by local governments' control on land

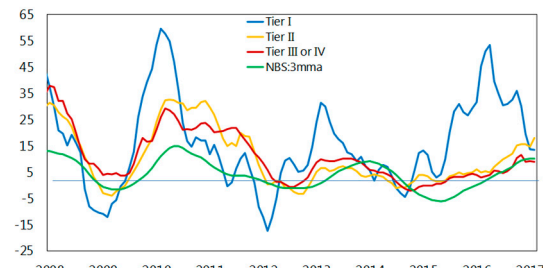
¹ Prepared by Ding Ding and W. Raphael Lam

supply and their reliance on land sales to finance spending (land sales accounted for about 30 percent of local government revenue in 2016). On the demand side, the market is prone to overvaluation—housing is attractive as an investment instrument given a history of robust capital gains, high savings, real deposit interest rates that tended to be negative, a lack of alternative financial assets, and capital account restrictions.

3. After a temporary slowdown in 2014-2015, the real estate market rebounded sharply.

The strong pick up in both prices and transaction volumes reflected accommodative credit conditions and progressive policy easing starting in 2015, including reductions in down payment requirements and benchmark lending rates as well as property transaction tax cuts. This round of the upturn, however, differed somewhat from previous real estate cycles, with the investment rebound more modest, and until recently, the price surge largely concentrated in tier 1 and a few tier 2 cities. Residential property sales have moderated recently across city-tiers, but are still at 12 percent y/y in May 2017 in terms of volume of floor space sold. Strong sales, including the sales of social housing under government policies, coupled with soft housing starts have led to a rapid destocking across all city-tiers, with the nationwide housing inventory ratio (measured by unsold units to annualized sales) declining sharply to about 18-20 months from 30 months at the peak in 2014.

Residential Real Estate Price by Tier
(In percent, year-on-year growth, 3mma)



Sources: Local Housing Administrative Bureau (Fangguanju), IMF staff calculations.

4. The housing market rebound has been accompanied by strong mortgage growth and a buildup of household debt.

Down payment ratios have remained high for new mortgages (40 percent of buyers of a first home have a down payment ratio of 25 percent or higher), but the average loan-to-value ratio (calculated as new mortgage loans to property sales ratio) has increased from around 15 percent in 2012 to 48 percent in 2016. Household balance sheets have remained robust, though buffers are eroding. Household debt increased from less than 20 percent of GDP in 2008 to more than 40 percent, with mortgages accounting for more than half of outstanding household debt. Although this ratio is still far below the average OECD level of 102 percent of GDP, it is already higher than in some other large emerging economies.

5. As signs of overheating emerged, the government implemented a range of measures differentiated across cities.

Key measures include: tighter down-payment requirements, home purchase restrictions, higher mortgages rates and financing restrictions for property developers. Our analysis suggests that these measures have been effective, as evidenced by the moderation in price rises (in sequential month-on-month basis) in large cities, as well as in new mortgage loans and real estate sales. Empirical estimations confirm that changes to down payment requirements have been effective in dampening price cycles (Annex I). Given the so-far modest recovery in real estate investment, robust underlying demand in major cities, and still solid household balance sheets, the

impact of overheating should be contained, especially if government action continues and broadens as recommended by staff (see below).

B. Risks in the Real Estate Market

6. The main near-term risks are house prices rising further beyond “fundamental” levels and the bubble expanding to smaller cities, increasing the likelihood and costs of a sharp correction. Although nationwide house prices deviate only 5 percent from their long-term trend (based on HP filtering), the price deviation for tier-1 cities is much greater at about 10-15 percent. In previous cycles, this level of overvaluation was followed by a slowdown in real estate activity.

7. A sharp correction, possibly from overzealous tightening measures, could weaken growth through weaker housing investment and consumption. Our estimation suggests that a correction of house prices by 10-15 percent (roughly the magnitude in previous cycles) would reduce GDP growth by around 0.9 percentage points through the impact on property investment and household consumption. Indeed, real estate investment may start to slow in the coming months reflecting intensified regulatory and supervisory tightening. A sharp correction in prices would also weaken local public finances. Even if local governments can maintain prices by restricting land supply, tighter government spending would have knock-on effects on growth.

8. A sudden correction in the housing market could also pose risks to financial stability. It would likely lead to an increase in impaired loans and deterioration in profitability and capitalization of financial institutions. The impact through the mortgage channel is likely to be limited given still low household leverage. The highly leveraged small real estate developers, as well as small city-level banks that are exposed to the weak developers, are likely to be the weakest link in the short run. A sharp decline in valuations and household and corporate borrowing would have knock-on effects on the real economy, which would exacerbate asset quality problems and amplify the impact of the initial shock. Banks and other intermediaries would be simultaneously hit by credit and market losses. China has never experienced a significant decline in house prices, so it is uncertain how such a scenario would unfold. On the other hand, the government still has much control over the real estate markets and the financial system, and will likely take further administrative measures to stabilize in response (as it did in 2015).

C. Policy Implications

9. Given the significant divergence in China’s housing markets, macro-prudential policies tailored to local conditions should continue to be the first line of defense. The differentiated LTV limits by borrowers (first-time home buyers versus investors) and by regions are appropriate as they can be targeted at the riskier segments of the markets. On the other hand, changes in the LTV limits can be pro-cyclical and result in higher credit losses in the future by allowing borrowers to borrow more during boom cycles. In this regard, the government should consider expanding the macro-prudential policy toolkit to include measures such as a more active use of debt servicing-to-income (DSTI) caps. DSTI requirements can ensure affordability and enhance the effectiveness of LTV limits in addressing excessive credit growth by restricting the use of unsecured loans to attain the

minimum down payment. The current cap (50-55 percent) should be gradually tightened to the international norms of below 45 percent and extended to other types of household loans including loans from non-bank financial institutions.² Stress testing of household debt servicing capacity to interest rate and income shocks can also be used to gauge the potential risks in adverse scenarios.

10. The government should also consider sectoral capital requirements through increasing risk weights or loan given default (LGD) floors on banks' exposure to the real estate sector.

These requirements can be tightened during market booms to increase the cost of funding for property developers and build additional buffers (He et al 2016). To make better use of macro-prudential tools, stepped up efforts are needed in collecting information beyond aggregate credit and house prices, such as indicators on borrowers and speculative activities .

11. Less reliance on administrative measures such as home purchase restrictions and funding restrictions would be desirable over the medium term. Although they tend to be effective in suppressing demand in the short run, these measures can have an excessively abrupt impact, resulting in more distortions and circumvention compared to market-based or macro-prudential measures. Moreover, home purchase restrictions tend to affect disproportionately new migrants, thus undermining the efforts in urbanization.

12. The government should also introduce recurrent property taxes by overcoming the remaining hurdles on registration of properties and legislation procedures. The recent announcement to have a nationwide system on property registration by 2017 is welcome. The benefits of property taxes are two-fold. First, cross country evidence points to the dampening impact of property taxes on house price volatility (Andrews 2010). Second, the introduction of recurrent property taxes can provide revenue sources for local governments to finance local public services and avoid excessive dependence on (volatile) land sales, which in turn would dampen the adverse effects of boom bust cycles in real estate (Wingender 2017). A (partial) decoupling of house prices and local government financing is also likely to change households' expectation that the housing market is "too important to fail". The implementation of property taxes can be gradual (but decisive) given the potentially large impact on the economy.

13. More focus on increasing real estate supply at a pace commensurate with that of demand, especially in higher-tier cities where incomes and productivity growth are highest, is welcome. Increasing land supply and building higher-density housing in major cities can attract migrants and facilitate a smooth transition in the housing market.³ This can be complemented with reforms on social security and household registration (hukou) to give migrants from rural areas greater access to public services (World Bank 2016). Also, reducing (excessive) domestic savings and

² Most countries with caps on DSTI ratios have imposed 40–45 percent as the limit (IMF 2014).

³ Population density in Chinese cities is typically much lower than major American metropolitan areas. For example, the first tier cities have population density varying from 1,000 to 2,000 people per square kilometer in 2010, whereas the top 100 American MSAs (metropolitan statistical area) all have density above 4,000 people per square kilometer (Glaeser et al 2016).

continuing gradual and cautious opening of the capital account would help reduce pressure on housing prices and the propensity for recurrent asset price boom/bust cycles.

14. More fundamentally, China should de-emphasize quantitative GDP growth targets that have fostered an undesirable focus on short-term, low-quality stimulus measures. The government has had the tendency of boosting infrastructure spending, real estate activity and credit during economic downturns to meet growth targets, creating the perception that housing is an aggregate demand instrument. This perception can reinforce the role of housing as an asset class and amplify the boom/bust cycles. If quantitative targets were to be de-emphasized, dynamics in the real estate market would be more aligned to reflect fundamental demand and supply conditions, which would allow prudential policies to play a larger role in guarding against macro-financial risks.

References

- Andrews, D., 2010, "Real House Prices in OECD Countries: The Role of Demand Shocks and Structural and Policy Factors," OECD Economics Department Working Papers, No. 831.
- Glaeser, E., W. Huang, Y. Ma, and A. Shleifer, 2016, "A Real Estate Boom with Chinese Characteristics", NBER Working Paper No. 22789.
- He, D., Nier, E. and H. Kang, 2016, "Macroprudential Measures for Addressing Housing Sector Risks," BIS Paper No. 86.
- Igan D. and P. Loungani, 2012, "Global Housing Cycle," IMF Working Paper 12/217.
- International Monetary Fund, 2014, "Staff Guidance Note on Macroprudential Policy—Detailed Guidance on Instruments."
- Wingender, P., 2017, "Intergovernmental Fiscal Reform in China", IMF Working Paper, *forthcoming*.
- World Bank (2016) "Urban China: Toward Efficient, Inclusive, and Sustainable Urbanization" World Bank Group, Washington, D.C.

Appendix I. An Empirical Analysis of China's Residential Real Estate Market

We conduct a panel regression using the methodology in Igan and Loungani (2012). The basic model is specified as follows.

$$\Delta hp_{i,t} = \alpha + \beta_i + \beta_1 A_{i,t-1} + \beta_2 \Delta YPC_{i,t} + \beta_3 \Delta WAP_{i,t} + \beta_4 \Delta C_{i,t} + \beta_6 \Delta LTV_{i,t} + \beta_7 \Delta LS_{i,t} + \beta_8 \Delta LG_{i,t} + \beta_9 \Delta MR_{i,t} + \gamma Y + \varepsilon_{i,t}$$

where $\Delta hp_{i,t}$ is the change in the real residential house prices in city i over the last year, $A_{i,t-1}$ is the affordability level of housing in the previous year measured by the log of the ratio of house prices to income per capita, $\Delta YPC_{i,t}$ is the change in real income per capita, $\Delta WAP_{i,t}$ is the change in working-age population, $\Delta C_{i,t}$ is the change in bank credit to the private sector, $\Delta LTV_{i,t}$ is the change in loan to value ratio (down payment requirement for first homes) in the last period, $\Delta LS_{i,t}$ is the change in land supply per capita in the last period, $\Delta LG_{i,t}$ is the change in local government fiscal deficit, $\Delta MR_{i,t}$ is the change in local mortgage rates, and Y is a vector of macroeconomic variables including stock prices, exchange rate, interest rate and a dummy variable for house price downturns. We also included dummy variables for city-tiers (tier 1 and 2) and interact them with the loan to value ratios and land supplies.

Our sample included the annual data for 68 cities for which the National Bureau of Statistics reports the monthly house prices. For variables that are not available at the city level, namely, bank credit to the private sector and local government fiscal deficit, we use provincial level data as proxies. Regression results show significant impact of changes to down payment requirements on house prices, especially in tier 1 cities. A tightening of down payment requirement by 10 percentage point in tier 1 cities corresponds to a decline in real residential house prices by 3.5-4.5 percent, other things being equal. Increasing land supply per capita is also found to have a negative impact on house price increases.

Dependent variable: real residential house prices, change				
	(1)	(2)	(3)	(4)
Affordability, lagged	-0.1419**	-0.1568***	-0.1726***	-0.2117***
Income per capita, change	0.0225	0.0126	0.0225	0.1424**
Working age population, change	0.0228	-0.0350	-0.0231	-0.0009
Bank credit, change	0.0938	0.0905*	0.0900*	0.0476
Downpayment ratios, change, lagged	-0.0709*	-0.0431	-0.0221	-0.1313
interacted with Tier-1 dummy		-0.3528***	-0.4680***	-0.4369***
interacted with Tier-2 dummy		-0.0252	-0.0283	-0.0503**
Land supply per capita, change, lagged	-0.0023	-0.0023	-0.0055*	-0.0020
interacted with Tier-1 dummy			0.0850***	0.0621**
Local mortgage rate, change	0.0107	0.0121**	0.0116**	-0.0029
Local government fiscal balance, change	-0.4279	-0.3997	-0.4450	0.0065
Stock prices, change	0.0744***	0.0724***	0.0706***	
RMB per USD, change	-2.0645***	-2.1142***	-2.1473***	
Interbank interest rate, change	-0.0170	-0.0194*	-0.0230***	
Dummy of housing cycle	-0.0661***	-0.0652***	-0.0635***	
Constant	-0.7315	-0.8016***	-0.8748***	-1.0282***
Year				
2008				-0.0701***
2009				-0.0918**
2010				-0.0897***
2011				-0.0916***
2012				-0.1548***
2013				-0.1071***
2014				-0.2207***
2015				-0.2289***
R-sq (overall)	0.2974	0.3086	0.3026	0.3928
Number of obs	418			
Number of groups	68			

***, **, * denote significance at the 1, 5, and 10 percent level, respectively.

REASSESSING THE PERIMETER OF GOVERNMENT AND IMPLICATIONS FOR FISCAL SPACE¹

- *Broader definitions of government continue to be relevant. While progress has been made in reducing existing avenues for off-budget fiscal spending, new avenues have emerged.*
- *China has some fiscal space for temporary fiscal expansions, but it is constrained.*
- *Further improvements to the fiscal framework are needed to bring all local government infrastructure spending on budget.*

A. Broader Definitions of Government Deficit/Debt Remain Relevant

1. Since 2014, the authorities took significant measures to expand on-budget deficits and debt (“open the front door”) while limiting off-budget activities (“close the back door”). The authorities issued several important documents, namely:

- New budget law (August 2014), effective in January 2015 sets out broad goals.²
- State Council document 43 (September 2014) operationalizes the new budget law.³
- State Council document 88 (November 2016) creates a resolution framework that categorizes Local Government (LG) units by risk level and sets corrective measures.
- Joint circular 50 (April 2017) tightens the ban on off-budget borrowing and urges local governments to inspect thoroughly financing activities and correct illegal behavior by July 2017.

2. The front door opened and on-budget LG deficits and debt expanded. LG on-budget net borrowing rose from 0.3 percent of GDP in 2014 to 2.4 percent in 2016,⁴ and, in the same period, LG bond issuance expanded from 0.5 to 1.2 percent of GDP. In 2014, the government brought on-budget a large stock of local government financing vehicle (LGFV) debt of around 22 percent of GDP, and initiated a swap for new LG bonds. The swap is progressing and is to be completed by 2018.

3. Despite the considerable efforts, a back door remains open through three main channels:

¹ Prepared by Rui C. Mano (APD) and Phil Stokoe (STA), Box 2 prepared by Paolo Dudine (FAD).

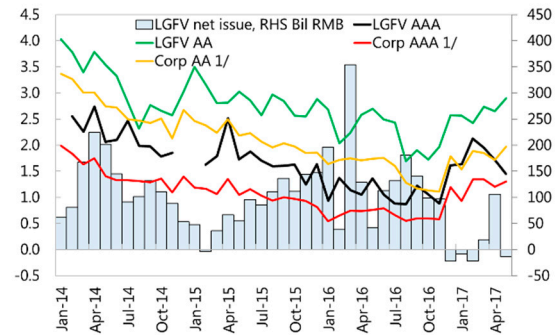
² See IMF (2017) for a thorough discussion of the budget law.

³ The initial thrust was somewhat scaled back when Document 43 was amended in May 2015.

⁴ After deducting central government transfers and land sales revenue but before bond/cash financing.

- First, LGFVs borrowed extensively in 2016 and market perceptions of their implicit guarantee do not seem to have changed substantially since the new budget law, though this could be changing with the recent tightening of financial conditions.** In the onshore market, LGFV bond spreads declined continuously up to Nov-2016, even after the new budget law was implemented. In the offshore market, international rating agencies continue to factor-in government support in LGFV ratings. However, since late 2016, financial conditions in onshore markets have tightened considerably. LGFVs have seen decreased issuance and higher spreads, particularly for lower-rated LGFVs. This could be an indication that perceptions are beginning to change, although LGFV yields receded slightly in April-May and thus it is still too early to judge.

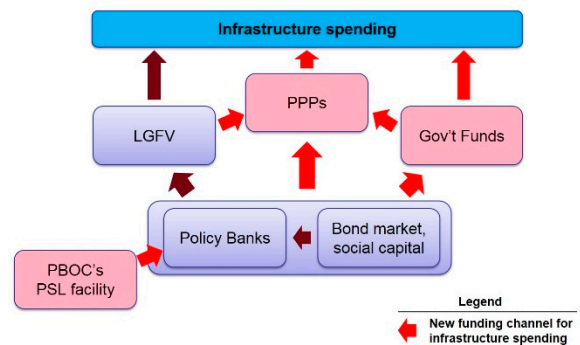
Bond spreads over treasury bonds at 5 year tenor
(percentage points)



1/ Secondary market. Sources: WIND, CEIC, staff estimates.

- Second, PPPs are meant to replace the LGFV model but the difference may be only superficial.** Although PPPs are meant to substitute the LGFV model by utilizing financing from and shifting risk to the private sector, most PPPs are concentrated in traditional public infrastructure areas (more than 80 percent) and the PPP partner is often state-controlled (solely private partners make up around 30 percent of investment). Partners can range from policy banks, government funds, private capital to other state-owned parties, like central and local SOEs and even LGFVs. The capital value of planned PPP projects is significant at 27 percent of GDP by end-2016, with 1/5 under implementation.

New ways to fund infrastructure



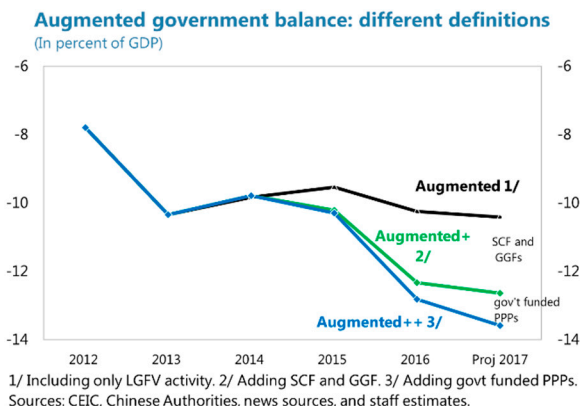
- Third, the authorities are increasingly setting up Government Guided Funds (GGFs) and Special Construction Funds (SCFs) to fund public infrastructure.** These new financing vehicles are akin to public venture capital funds which are unusual in an international context. GGFs are funded by a mixture of budgetary (a "junior tranche") and non-budgetary financing (a "senior tranche" delivering a steady return) called "social capital", which includes SOEs, LGFVs, banks or other financial institutions. SCFs are entirely funded by policy banks. GGFs and SCFs are still raising capital, with end-2016 assets of around 5 percent of GDP. Detailed information on their activities is not available, but these funds are likely investing in equity stakes of PPPs or firms, and also lending.

4. Given the quasi-fiscal nature of these three channels, the concept of augmented fiscal aggregates not only remains relevant but an expansion of its perimeter is warranted. In the past, a large part of fiscal stimulus occurred off-budget through LGFVs⁵, prompting the creation of the concept of “augmented” balance and “augmented” debt.⁶ Staff judges that LGFVs continue to mostly operate as quasi-fiscal units (in GFSM terms, “public non-market producers”, see Box 1) and thus their activities will continue to be included in estimates of augmented balance and debt. In addition:

- **There is a strong case for including government funds in augmented fiscal accounts.** Following the guidelines for sector classification in the Government Finance Statistics Manual GFSM 2014, staff concludes that these funds are likely to be general government units based on government control and non-market nature of their activities (Box 1).
- **While, some of China’s PPPs should in principle be recorded on-balance sheet⁷, estimates are highly uncertain.** Including government-funded PPPs expands the augmented balance (Augmented++) only marginally as most PPPs are yet to be implemented. These estimates are very uncertain due to insufficient granularity of published data on PPPs.

5. Considering the tradeoffs, staff included GGFs and SCFs in augmented aggregates (“augmented+”) and finds that China’s fiscal stance is more expansionary than previously thought.

China’s “augmented+” deficit reached 12.4 percent of GDP in 2016 from 9.8 in 2014. Under the previous definition of augmented balance (including only LGFVs), the deficit expanded only marginally to 10.3 in the same period (text chart). Given the uncertainties regarding PPPs, staff is not including those for now in its preferred definition of the augmented deficit/debt (“Augmented+”). PPPs may be included in the future depending on data availability.



6. Even after expanding the perimeter of augmented aggregates, all of the expansion of China’s fiscal stance in 2014-16 was on-budget. On-budget net borrowing expanded by 2¾ percent of GDP in 2014-2016, meaning off-budget activities are estimated to have remained broadly unchanged after expanding the perimeter of augmented aggregates.

⁵ See Bai and others (2016) for a comprehensive discussion of the off-budget stimulus undertaken in 2009-10.

⁶ See Zhang and Barnett (2014) for the original estimates and discussion.

⁷ See GFSM 2014 Appendix 4, paragraphs A4.58–65 and IPSAS 32 on “Service Concession Arrangements”.

Box 1. Treatment of Quasi-fiscal Units in Government Finance Statistics Manual (GFSM) 2014

GFSM 2014 classification. Chapter 2 of the IMF's GFSM 2014 classifies entities based on whether they are public or private sector units. Classification inside the public sector is based on the principle of control and GFSM 2014 Box 2.2 provides eight indicators to judge government control. Within the public sector, units can be classified as market or non-market based on the nature of their activities. Public non-market producers should be included in government whereas public market producers are classified outside government as public corporations. GFSM 2014 2.69-75 defines a test for classifying public units as market producers in which operating revenues must exceed 50 percent of production costs.¹ Even entities classified outside of government can have part of their activities reflected in government accounts, if acting on behalf of or under the instruction of government (under GFSM 2014 3.28 on rerouting).

Treatment of SCFs and GGFs. These funds should be regarded as public sector units since the government – National Development and Reform Commission, Ministry of Finance or local governments – retains control (even if the government is a minority shareholder²). These funds are akin to venture capital funds, but do not appear to make market-based decisions in exclusive pursuit of commercial returns. Thus, staff concludes they should be included in government. The treatment of social capital contributions as debt is based on GFSM 2014 7.143, 7.150 and 7.166.

Perimeter of government in IMF surveillance. IMF surveillance frequently extends the coverage of fiscal data to include parts of the wider public sector. Examples of this practice are: (i) Brazil (data includes the Central Bank and some public nonfinancial enterprises), (ii) Mexico (data covers state owned enterprises and development banks), and (iii) Mongolia (data covers the development bank). Moreover, many countries, particularly in the E.U., already use a definition of general government consistent with GFSM and thus the perimeter of general government goes well beyond budgetary units.

¹ Eurostat's Manual on Government Deficit and Debt section I.2.4.3 further elaborates on this test.

² Interim Measures for the administration of government investment funds (November 2015), Ministry of Finance.

B. China Has Some Fiscal Space, But Less Than Headline Debt Figures Suggest

7. Narrowly-defined government debt is moderate compared to other Emerging Market Economies (“EME”). Narrowly-defined government debt⁸ was 37 percent of GDP by end-2016, below the median EME of 48 percent of GDP. Broadly defined debt⁹ (Augmented+) is larger at around 62 percent of GDP.

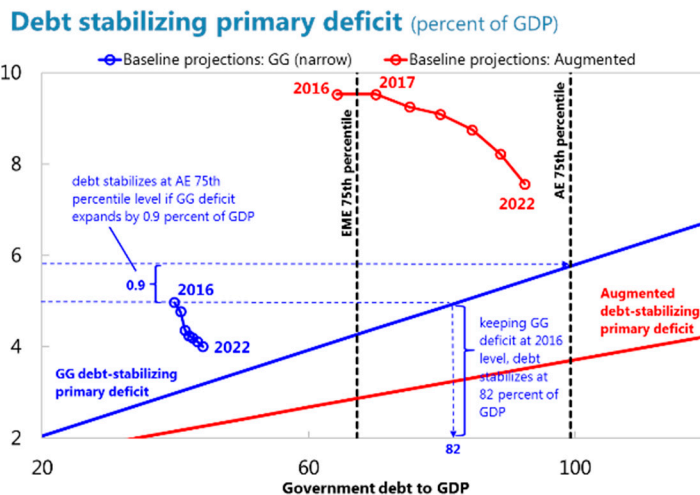
8. Other indicators for assessing fiscal space also look favorable except for elevated gross financing needs. Financing is readily available and at low cost, due to high domestic savings. Participation of foreigners in the domestic sovereign bond market is still limited and economy-wide external financing requirements are manageable at around 7 percent of GDP. Gross financing needs are projected to stay elevated at above 12 percent of GDP both in 2017 and 2018.

⁸ Official on-budget general government debt.

⁹ Adds remaining LGFV debt and SCF and GGF government liabilities to general government debt.

9. China has some fiscal space under the narrow definition of government, but less under the augmented definition

- Narrow definition of deficit/debt.* If fiscal space is defined as the ability to use fiscal policy temporarily to smoothen the cycle without losing market access, China certainly has space¹⁰, which could be used to support the reform process if limited in time to avoid even faster debt accumulation. But taking a broader view of fiscal space, permanent fiscal expansions can be accommodated only if higher levels of debt are tolerated: a permanent 0.9 p.p. of GDP expansion over the 2016 primary balance stabilizes debt at around 100 percent of GDP (75th percentile of AEs' debt-to-GDP). China could likely tolerate significantly higher levels of government debt than almost all EMs due to high savings, strong external position, capital controls, strong state control and confidence



Note: Calculations take into account non-debt creating financing from land sales.

- “Augmented” definition of deficit/debt.* Under the “augmented” definition of debt/deficit, China would only have very limited space for a temporary loosening, and negative space for a permanent expansion. Staff estimates broadly defined (“Augmented+”) government debt to be around 62 percent of GDP in 2016, rising to 92 percent of GDP in 2022, substantially above the current 75th percentile and closer to the 75th percentile of AEs. Indeed, under the augmented definition, the primary balance needs to be improved by 4 percentage points of GDP by 2022 to stabilize augmented debt at around 100 percent of GDP.

10. However, China’s debt dynamics look significantly worse after accounting for a higher structural balance due to ageing. Ageing could increase the yearly structural deficit by an average of 2.5 percent of GDP under current policies until 2050.¹¹ Applying this increase to China’s projected primary balance after 2017 leads to government debt under the narrow definition of 57 percent of GDP in 2022 compared to 42 percent without this adjustment. The 2022 primary balance is nearly 3 percentage points higher than its debt stabilizing level.

¹⁰ Analysis of fiscal space makes use of current fiscal indicators as well as stress tests from the IMF’s Debt Sustainability Analysis (DSA) and simulations using the IMF’s Flexible System of Global Models (FSGM).

¹¹ Calculated as the constant equivalent flow of additional health and pension expenditures under the UN medium-variant population projections against a baseline of constant population for the period of 2015-2050. This roughly corresponds to an additional liability of around 90 percent of 2015 GDP in present value terms.

11. Furthermore, fiscal space is also constrained by potential fiscal losses with implicit guarantees. Under the DSA's stylized contingent liability shock of 10 percent of bank claims against non-public entities, China's debt reaches 69 percent of GDP in 2022, compared to 42 percent of GDP (narrow definition) without this shock, and does not stabilize.

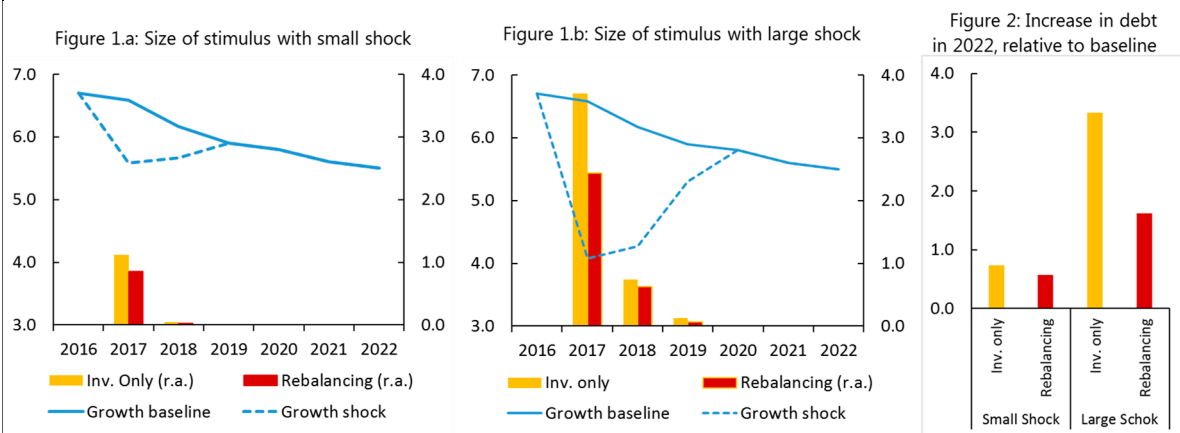
12. Finally, if the economy faces a negative shock and fiscal policy needs to be used, the required stimulus should promote rebalancing and not investment (Box 2).

Box 2. If Needed, Fiscal Stimulus Should Promote Rebalancing and Not Increase Investment¹

We estimate the size of the fiscal stimulus needed to bring growth back to baseline under a mild temporary shock, and a larger protracted shock. Because the GDP response depends on the fiscal stimulus composition, we consider two different packages:

- one based entirely on scaling up investment. We assume that the output multiplier decreases the more investment exceeds baseline levels (Maliszewski et al. 2016, and Bai et al. 2016).
- one based on rebalancing measures. As these measures cannot be scaled up indefinitely, we cap revenue and spending measures to 2 and 1 percent of GDP respectively, and assume that any additional stimulus needed to reach baseline growth would come from investment.

Under a temporary mild shock the two packages would roughly have the same size; but if the shock is large and protracted, a very large amount of investment would be needed to lift GDP back to baseline, owing to diminishing multiplier. Instead, a smaller package of rebalancing measures would be sufficient, and have a smaller impact on debt.



Source: IMF staff estimates. The rebalancing package assumes that only 30 percent of cost of revenue and spending measures is compensated in 2017, 70 percent in 2018, and 90 percent in 2019. The permanent cost is fully compensated in 2020.

¹ Prepared by Paolo Dudine.

C. Policy Implications

13. The authorities have taken important steps to stem off-budget borrowing in the last two years. They have intensified their efforts to control off-budget activities and have achieved some progress. Several laws and regulations have been issued and enforcement actions are being stepped up.

14. But having all LG infrastructure spending on-budget requires substantial further improvement of the fiscal framework. Key areas:

- Planning: Formulate a medium-term fiscal framework, including a medium-term integrated capital financing, that includes all LG infrastructure spending. Create an incentive system for LG units using a combination of carrots (higher bond quotas, expedited approval of infrastructure projects) and sticks (enforcement, legal actions)
- Monitoring: Increase capacity and resources at the provincial government level for effective monitoring of lower level units. Crucially, enlarge the perimeter of monitoring.
- Transparency: The authorities should publish detailed and easily accessible budget accounts and overall debt levels by province at least yearly, including contingent liabilities by type. Medium-term fiscal projections and an assessment of the riskiness of broadly defined public debt by province or even district could also be published regularly.

References

Bai, Chong-En, Chang-Tai Hsieh, and Zheng Michael Song, 2016, "The Long Shadow of a Fiscal Expansion", NBER Working Paper 22801.

IMF, 2017, "Modernizing China: Investing in soft infrastructure", edited by R. Lam, M. Rodlauer, and A. Schipke.

Maliszewski, Wojciech, Serkan Arslanalp, John Caparusso, José Garrido, Si Guo, Joong Shik Kang, W. Raphael Lam, T. Daniel Law, Wei Liao, Nadia Rendak, Philippe Wingender, Jiangyan Yu, and Longmei Zhang, 2016, "Resolving China's Corporate Debt Problem", IMF Working Paper 16/203.

Zhang and Barnett, 2014, IMF WP

INTERGOVERNMENTAL FISCAL REFORM IN CHINA¹

Main Findings

- *China has the largest share of local government spending in the world. Revenue autonomy at the local level is, however, very limited.*
- *Public service delivery is improving and more people are covered by the social safety net, but social spending on public education, health care and social assistance is low and regional disparities are growing.*
- *Large and growing unfunded mandates have caused local governments to accumulate around 40 percent of GDP in debt by 2015, of which 22 percent was transferred to the government's balance sheet.*
- *An intergovernmental fiscal reform plan was announced in 2016 to address the long-standing misalignment of revenue and spending across levels of government. A new budget law was also introduced in 2014 and efforts were stepped up to ensure all fiscal activities are conducted on-budget.*

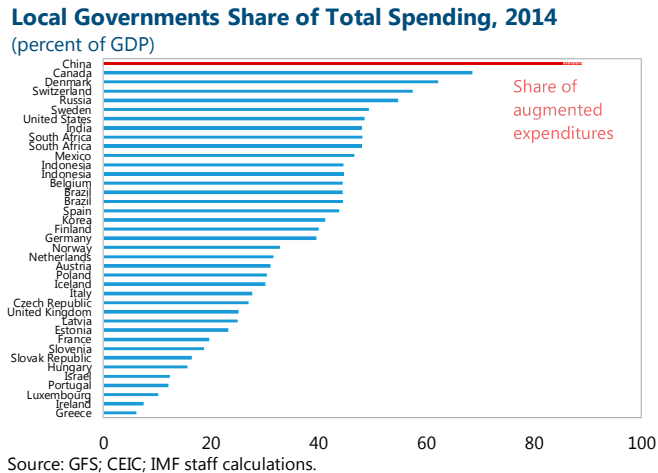
Policy Recommendations

- *Determining the appropriate level of decentralization for social spending will be crucial to ensure the continued development and rebalancing of the Chinese economy.*
- *Pensions and unemployment insurance policies and financing should be centralized, with some degree of local autonomy for administrative functions. This will reduce the cost of risk pooling, improve portability of benefits, and ensure equal benefits across regions.*
- *A recurrent market value-based property tax would be an ideal tax for local governments. China could also consider allowing provinces to impose a surcharge in addition to the national personal income tax.*
- *Rules-based general transfers could eventually replace both the revenue-sharing and tax rebate transfers programs. Fiscal disparities across areas could also be reduced further by increasing the size of the equalization grants.*
- *Borrowing quotas for local governments should be increased to ensure all off-budget fiscal spending can be brought on budget.*

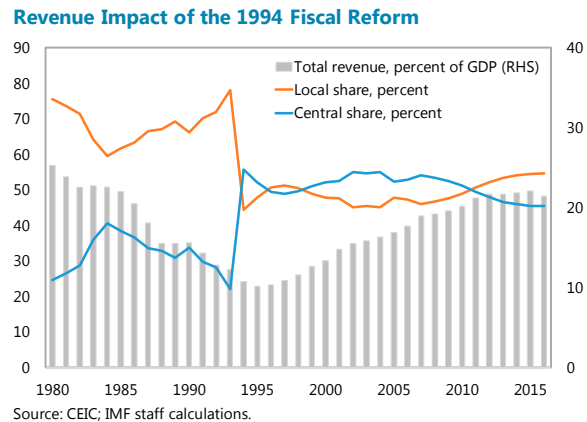
¹ Prepared by Philippe Wingender (FAD)

A. Background

1. China is a unitary state with a highly complex intergovernmental fiscal system. There are five levels of public administration. Local governments are responsible for 85 percent of government spending, but have limited revenue autonomy. A recent intergovernmental fiscal reform plan, announced by the State Council, to address the misallocation of fiscal responsibilities and the associated imbalances and risks. This paper assesses the current state of China's intergovernmental fiscal system, briefly describes the main elements of the authorities' recent reform plan and provides recommendations for further improvement, with an emphasis on reforms needed to improve the social safety net.



2. The current fiscal system was established following the major fiscal reform of 1994. The government introduced a value-added tax (VAT) and a large share of revenues was centralized. The previous intergovernmental fiscal system consisting of *ad hoc* and negotiated transfers was also replaced with rules-based revenue sharing and intergovernmental transfers (Wang and Herd 2013, Qiao and Liu 2013). While the reform was successful in increasing overall revenues from 12 percent of GDP in 1993 to 22 percent in 2016, it also caused local governments' budgetary surpluses to turn into sustained and growing deficits.



3. Local governments are largely responsible for public service delivery and managing and financing the social safety net. While many federal countries rely on a decentralized social insurance system, China is unique in having both its public pension system and unemployment insurance managed at the local level (Escolano and others 2015). Public service delivery is improving and more people are covered by the social safety net, but gaps remain for urban migrants without residency permits and individual benefit levels are low. Consequently, social spending in China still lags other large emerging markets and advanced economies. Social assistance spending is around 0.7 percent of GDP in China, compared to 1.6 percent of GDP on average for emerging markets and 2.1 percent in OECD countries. Government health and education spending similarly lags other emerging markets worldwide and in Asia, and is much lower than advanced economies.

4. Local governments collect 60 percent of total taxes, including own and shared taxes.

However, when considering only revenue sources over which they have authority to either set rates or define the base, their share becomes negligible (Wang and Herd 2013). This limits local governments' ability to set tax policy in accordance with local structural and cyclical priorities. It can also limit the accountability of local officials, which can lead to inefficient uses of fiscal resources (Eyraud and Lusinyan 2012).

5. Local governments rely on transfers from the central government to finance their budgets.

Transfers from the center can be classified in two broad types: general-purpose and specific-purpose or conditional transfers (Shah and Shen 2008). While redistribution through intergovernmental transfers is improving, it still does not fully compensate for the increase in regional inequality and public spending disparities. There are in addition over 200 conditional grant programs which amount to around 20 percent of local government revenues (World Bank and DRC 2014). These grants mainly target transportation, social housing, agriculture, forestry and water, and energy saving and pollution abatement (Wang and Herd 2013).

6. Transfers from the central government were supposed to fully finance local government deficits since they were forbidden from issuing debt. In practice, however, local governments were given increasingly large unfunded mandates. Because of the prohibition on issuing debt, they have in turn resorted to selling land and using off-budget special-purpose vehicles to borrow and spend on infrastructure and other priority sectors. With risks from off-budget activity mounting, the government revised the budget law in 2014 to allow provincial governments to issue bonds. A debt swap program amounting to 22 percent of GDP was rolled out to facilitate the transition by converting off-budget debt to local government bonds (see Mano and Stokoe forthcoming).

B. Recent Government Reforms

7. In August 2016, the State Council announced a reform to address the long-standing misalignment of revenue and spending across levels of government. The three overarching goals of the guidelines include (1) the clarification of expenditure responsibilities to minimize overlapping mandates, improve service delivery and increase accountability; (2) a recentralization of key functions that are currently under local government control such as the management of strategic natural resources, major national infrastructure projects, education, health and research and development; and (3) the consolidation and improvement of the transfer system, notably by increasing the fiscal resources of less-developed regions.

8. A new budget law was adopted in 2014 to improve the budgeting process as well as transparency and accountability of government operations. The new law requires the adoption of a multiyear budget and specifies the conditions for managing annual deficits and surpluses in a medium-term perspective. It also allows provincial governments to issue bonds for financing capital expenditure. Continued efforts have since focused on closing the "back-door" on off-budget activities of local governments by prohibiting guarantees and any source of financing other than through approved bonds.

C. Policy Recommendations

9. Determining the appropriate level of decentralization for social spending will be crucial.

In terms of economic principles, financing of the social safety net should be established at the highest level possible given administrative and political constraints since it embodies elements of insurance and redistribution (Escolano and others 2015). This would reduce the cost of risk pooling, facilitate the portability of benefits, and ensure benefits are equalized across regions. Some decentralization of administrative functions and implementation can also be appropriate, since this can improve accountability and leverage the informational advantage of local governments.

- *Pensions.* Public pension systems are centralized in virtually all federal countries. They are also usually financed from a national-level payroll tax, with benefit levels harmonized irrespective of where individuals live (Escolano and others 2015). For China, consolidating pension systems at the provincial level could achieve some efficiency gains in terms of risk pooling and portability. However, full centralization would eliminate the need for central government “gap-filling” transfers to local administrations running pension deficits.
- *Unemployment insurance.* Like pensions, unemployment insurance programs are generally centralized. Beyond the importance of pooling labor market risks, unemployment insurance also acts as an automatic stabilizer. Centralization of unemployment insurance would therefore enhance the macroeconomic stabilization function of the central government. Merging local unemployment insurance program into a single nationwide system would also broaden coverage and enhance equity by ensuring migrant workers can be covered regardless of their places of residency and work. Currently, only around 10 percent of migrant workers covered by unemployment insurance, compared to 40 percent for all urban workers (OECD 2017).
- *Healthcare.* Determining the optimal level of decentralization for healthcare is not as clear cut. In many cases, some decentralization of spending coupled with centralized coordination of policy is both desirable and feasible. While several models could be considered for healthcare reform in China, the large majority of migrant workers that are still outside the medical insurance system constitute a serious impediment to reform. For China to catch up with OECD and other large emerging countries in terms of public spending on health, it will need to overcome fragmentation and low coverage rates.

10. The broad principles for optimal assignment of revenues are the same as for spending.

On the one hand, decentralization of revenues allows for a better matching of the tax system to local preferences and promote more accountability for policy makers. On the other hand, economies of scale, risk-sharing, mobility of tax bases and externalities warrant more centralization of taxation (IMF 2009).

- *Personal Income Tax.* China could consider allowing provinces to impose a surcharge in addition to the national personal income tax (PIT). This would confer provinces with some degree of autonomy, which could be allowed within a centrally-approved upper limit (of say 5 to 10

percent). This would also be an efficient way to increase the revenue contribution of the PIT, which is low by international standards, while increasing the tax autonomy of provinces.

- *Value-Added Tax.* In principle, the VAT in China could be complemented by provincial level VATs. However, in practice there are significant difficulties in monitoring border flows between local jurisdictions and country experiences with subnational VATs have been mixed (Perry 2009). While the national scope of the VAT should be maintained, the revenue-sharing arrangements could be reviewed to reduce compliance costs for taxpayers with multiple business locations. Simple allocation rules such as population (Germany) or aggregate consumption (Japan) for example could be considered.
- *Property tax.* A recurrent market-value based property tax would be an ideal tax for local governments in China. Such a tax is closely tied to public service delivery through property values, its base is immobile and it's also a highly visible tax since it must be paid by households on a recurrent basis, which can improve accountability of local officials. Property taxes are also broadly viewed as progressive, because high-income households tend to also have higher property wealth (Norregaard 2013). While the tax base should be defined following national guidelines, local governments could set tax rates within bands set by the central government.

11. There is a need to review the current system of intergovernmental transfers. For instance, a rules-based general transfer as opposed to the revenue-sharing and tax rebate transfers programs currently in place could lead to more clarity and predictability and a reduction of the procyclicality of local government funding. Fiscal disparities across areas should also be reduced further. This could be achieved by increasing the size of the funding pool for equalization grants, which currently account for less than half of total transfers (World Bank and DRC 2014). Finally, targeted transfers should be rationalized and simplified. The current system, which has over 200 different transfers, is complex and costly to administer both at central and local levels (World Bank and DRC 2014). Establishing stronger conditionality on outputs or quality of services as opposed to inputs could promote more efficiency in public service delivery.

12. Borrowing quotas for local governments should be set high enough to ensure all fiscal spending can be brought onto the budget. Despite some important gains that have been made in the management of local government debt in recent years, there remains a need to improve transparency, resource allocation and medium-term fiscal planning. It is therefore important to ensure that all fiscal activities that might still be carried out by LGFVs and through government-guided funds are fully reflected in the budget. This will have the benefit of making explicit the fiscal and aggregate demand implications of current policies.

References

- Escolano, J., D. Benedek, H. Jin, C. Mulas Granados, M. Nozaki, J. Pereira, G. Rota Graziosi, L. Sinn, and J. Torres, 2015, "Distribution of Fiscal Responsibilities in Federations," in *Designing a European Fiscal Union: Lessons from the Experience of Fiscal Federations*, edited by Cottarelli, C. and M. Guerguil, Routledge.
- Eyraud, L., and L. Lusinyan, 2013, "Vertical Fiscal Imbalances and Fiscal Performance in Advanced Economies," *Journal of Monetary Economics*, 60(5), 571-587.
- International Monetary Fund, 2009, "Macro Policy Lessons for a Sound Design of Fiscal Decentralization," IMF Departmental Paper, International Monetary Fund, Washington, DC. Available at: <http://www.imf.org/external/np/pp/eng/2009/072709.pdf>
- Mano, R. and P. Stokoe, Forthcoming, "Reassessing the Perimeter of Government accounts in China," IMF Working Paper.
- Norregaard, J., 2013, "Taxing Immovable Property: Revenue Potential and Implementation Challenges," IMF Working Paper No. 13/129, International Monetary Fund, Washington, DC.
- OECD, 2017, *OECD Economic Surveys: China 2017*, OECD Publishing, Paris.
- Perry, V.J., 2009, "International Experience in Implementing VATs in Federal Jurisdictions: A Summary," *Tax Law Review*, 63, 623-38.
- Qiao, B., and L. Liu, 2013, *Intergovernmental Fiscal Relationship and Risk-Sharing Function*. Beijing: China Financial and Economic Publishing House.
- Shah, A., and C. Shen, 2008, "Fine-Tuning the Intergovernmental Transfer System to Create a Harmonious Society and a Level Playing Field for Regional Development," in *Public Finance in China: Reform and Growth for a Harmonious Society*, edited by Lou, J. and S. Wang, World Bank, Washington, DC.
- Wang, X. and R. Herd, 2013, "The System of Revenue Sharing and Fiscal Transfers in China," *OECD Economics Department Working Papers*, No. 1030, OECD Publishing.
- World Bank and the Development Research Center of the State Council, P. R. China, 2014, *Urban China: Toward Efficient, Inclusive, and Sustainable Urbanization*, World Bank, Washington, DC.

INEQUALITY IN CHINA – TRENDS, DRIVERS AND POLICY REMEDIES¹

- *China has grown rapidly and is on the brink of eradicating poverty. However, income inequality increased sharply from the early 1980s. While less equality is to be expected in the transition from central planning to a market-based economy, China is now among the most unequal countries in the world, despite a recent modest improvement.*
- *Inequality has been driven by structural factors (especially demographics, the urban/rural divide and education/skills), with little offset from fiscal policies. These structural factors are likely to drive inequality higher.*
- *This calls for more proactive use of fiscal policies to reduce inequality. On the revenue side: (1) increasing the progressivity of social security contributions and of personal and property taxes. On the spending side: (2) boosting social spending and promoting equal access across provinces and regardless of residency.*

A. Introduction

1. Over the past two decades, China has seen a sharp reduction of poverty, but also a substantial increase of inequality. China's rapid economic growth since 1990 had lifted an estimated 731 million people out of poverty by 2013 (based on povcalnet data). But at the same time, the benefits of growth have accrued disproportionately to higher-income groups, resulting in a large increase in income inequality (which appears to have peaked around 2008). This is of concern as there is growing evidence that elevated levels of inequality are harmful for the pace and sustainability of growth.

B. What Is the Current State of Inequality? How Has It Evolved Over Time?

2. China moved from being a moderately unequal country in 1990 to being one of the most unequal countries. Income inequality in China today, as measured by the Gini coefficient², is among the highest in the world. The Standardized World Income Inequality Database (SWIID) estimates the Net Gini³ coefficient for China at 50 points as of 2013, which is above various regional averages and the highest in Asia. Furthermore, the Gini coefficient has rapidly increased over the last two decades, by a total of about 10 to 15 Gini points since 1990. National data sources suggest that the increase in income inequality dates as far back as the beginning of the 1980s, with recent

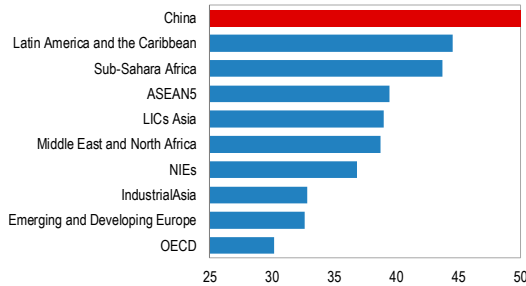
¹ Prepared by Sonali Jain-Chandra, Rui Mano, Johanna Schauer, Philippe Wingender (IMF), Juzhong Zhuang and Niny Khor (ADB), and is based on a forthcoming IMF Working Paper.

² The Gini coefficient is an inequality measure ranging from 0 to 100, where 0 signifies that everyone has the same income and 100 implies that the richest person has all the income.

³ The Net Gini coefficient is calculated based on post-tax and -transfer income.

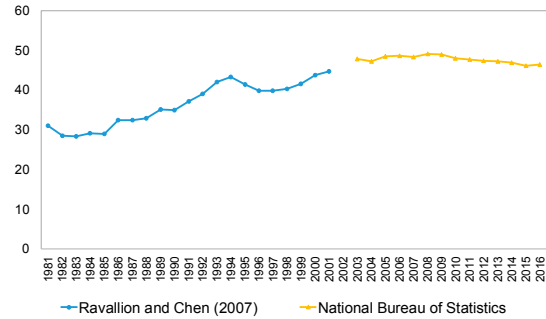
observations pointing toward a decline since 2008. The recent decline in inequality is welcome and policy efforts should be intensified to continue combating inequality.

Regional Comparison of Income Inequality Levels
(Net Gini Index; in Gini points; year of 2015 (or latest available); average across the region)



Sources: SWIID Version 5.1; IMF, and IMF staff calculations.
Note: ASEAN = Association of Southeast Asian nations; LIC = low-income country; NIE = newly industrialized economy; OECD = Organization for Economic Cooperation and Development

China's Gini Coefficient, 1981-2016

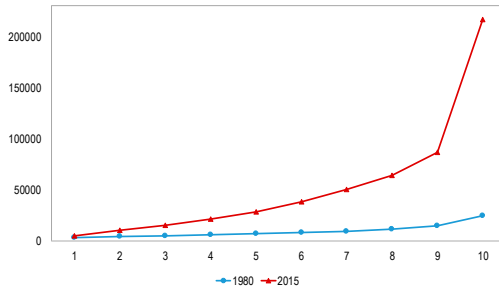


Sources: Zhuang and Shi (2016).

3. Despite the large increase in income inequality, much of China's population

experienced rising real incomes. While the largest gains accrued to the upper shares of the income distribution, even for the bottom 10 percent incomes rose by as much as 63 percent between 1980 and 2015. This has implied that China reduced the share of people living in poverty immensely. If measured by the headcount ratio⁴ the population in poverty decreased from 88 percent in 1981 to 2 percent in 2013.

Pre-Tax National Income by Decile
(Average, in constant 2015 PPP Chinese Yuan)



Sources: Piketty et al. (2016).

4. Despite significant progress, China also faces considerable inequality of opportunities.

Inequality of opportunities are of even greater concern than income inequality as it sows the seeds for wider income inequality in the future and delinks economic outcomes from an individual's efforts. While China managed to increase drastically secondary and tertiary enrollment ratios since the 1980s, data shows that in 2010 tertiary education enrollment was more unequally distributed than in other emerging and advanced economies, on various dimensions (e.g., regions and wealth). In addition, access to financial services lags that of major advanced economies, in particular with regards to borrowing and payment services. China did achieve high levels of health and pension coverage, but benefit levels remain low and there is room, in particular, to increase unemployment insurance coverage and the safety net for the elderly.

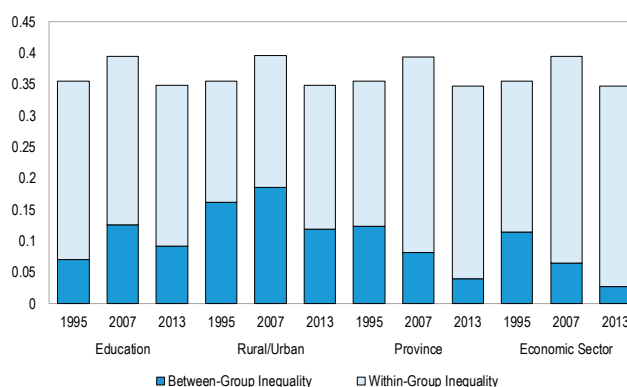
⁴ Headcount ratio refers to the percentage of the population living in households with consumption per person below the chosen poverty line (here \$1.90 a day at 2011 PPP).

C. What Are the Main Drivers that Explain Trends in Inequality?

5. The main drivers of the increase in inequality from 1980 to 2008 and the recent modest decline are analyzed using the Theil index⁵, which allows total inequality to be divided into inequality *within* certain groups (e.g., urban) and inequality *between* groups (e.g. the rural-urban income gap).

6. Differences in education and the skill premium are significant drivers of the increase and the subsequent modest decline in income inequality. China started its transition period with impressively high primary and middle school enrollment rates, while lagging in tertiary enrollment (Heckman and Yi, 2012). With rapid technological transformation and fast capital accumulation, the demand for high-skilled labor grew quickly and with it returns to education and wage inequality (Dollar, 2007; Zhang et al., 2005; Liu, 2009). More recent empirical evidence suggests an easing or even decrease in the skill premium. This could be driven by an increase in graduates and recent hikes in minimum wages.

Income Inequality Decomposition 1995, 2007, and 2013



Sources: CHIPS Household Surveys, authors' calculations.

7. The rural-urban gap explains a large share of inequality and its trends, but the contribution of regional disparities has been declining. Differences between rural and urban areas have been found to be a key driver of rising income inequality in China (Li et al., 2014; Lin et al., 2010). Low educational attainment and low returns to education in rural areas, and the *hukou* system constraining rural-urban migration, are the main explanations (Liu, 2005; Dollar, 2007). Factors driving the recent decline include rapid urbanization, causing a decline in rural surplus labor, (Zhuang and Li, 2016) and government policies, such as the *dibao* system, New Rural Cooperative Medicare and other poverty alleviation programs. Differences in income based on the sector of employment have declined sharply, contributing to the recent decline in inequality.⁶

D. Looking Ahead: What Will Be the Impact of Structural Trends and Policies on Inequality in the Future?

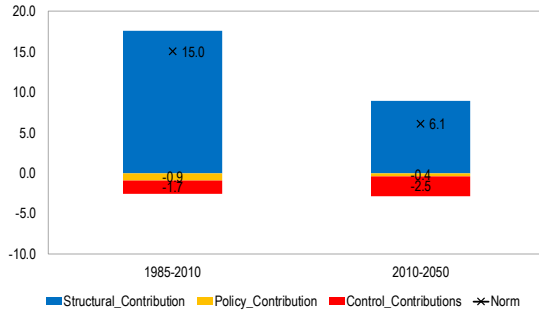
8. A cross-country panel regression is used to compare the historic trend in inequality in China to other countries, to quantify the impact of policies and structural factors, and to predict levels of inequality in the future based on projections of structural trends and active policy adjustments.

⁵ The Theil index, like the Gini coefficient, can be applied to measure inequality. Like the Gini it is 0 if everyone receives equal income and higher values imply higher inequality. Unlike the Gini coefficient it has the desirable property of decomposition.

⁶ The sectors included in the analysis are: without work, agriculture, secondary, and services.

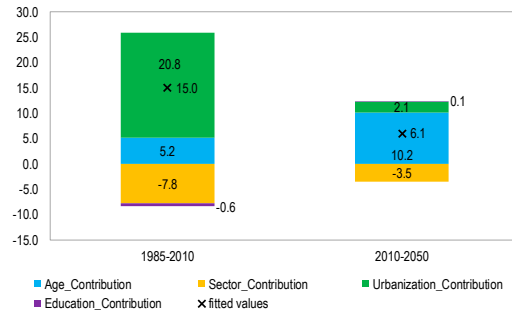
9. The regression captures well the past rapid increase in China's inequality and indicates that it can be attributed mainly to structural factors. In general, the regression's fitted values track China's actual net Gini index well for the period between 1990 and 2002. Before 1990, actual inequality was lower than implied by the regression, while after 2002 inequality has been above the fitted values. Structural factors explain most of the rise in inequality until 2010, driven by urbanization and demographic changes. The role of policies in containing the rise in inequality in this period was modest.

Contributions (with constant policies)



Sources: authors' calculations.

Contributions of structural trends



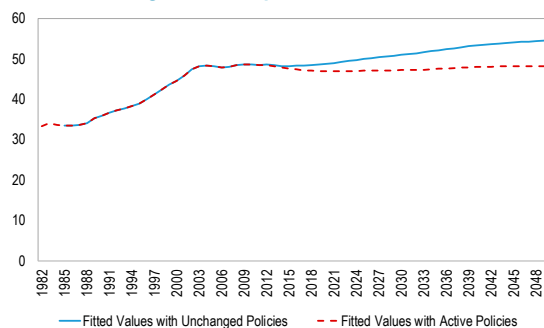
Sources: authors' calculations.

10. Inequality is predicted to rise further due to structural factors, but more proactive policies can meaningfully reduce inequality. Using projections of the structural variables and keeping all other variables (controls and policies) constant, inequality is predicted to rise further due to demographic changes⁷. For illustrative purposes, we assume a gradual adoption of fiscal policies that takes China from current levels to reach the levels of the most proactive countries of the G7 by 2050. Under this proactive policies scenario, inequality flattens out after 2010 rather than increasing as was the case under unchanged policies. Tax changes and increased redistribution have a potentially large dividend.⁸

E. What Role Can Fiscal Policy Play in Reducing Inequality?

Given the possibly large role of policies, several reforms could be envisaged to make fiscal policy more inclusive, both on the tax and expenditure side.

Norms (unchanged vs. active policies)



Sources: authors' calculations.

⁷ Demographics and urbanization from UN, education attainment from Barro and Lee (2013) and sectoral change derived from IMFs own projections.

⁸ Spending on social protection and health together decrease the Gini by 3 points compared to that observed in 2010, this even after controlling for redistribution. In addition, this cross-country analysis equates policies with levels of spending and does not capture their degree of inclusiveness, which would likely increase the role of inequality-reducing policies.

Tax reforms to boost inclusiveness**11. Increasing the reliance on personal income tax could allow China to improve redistribution through the tax system as it more easily accommodates a progressive structure.**

In addition, lowering the current high basic personal allowance, transforming it into a tax credit, and redesigning the tax brackets would ensure that middle and high income households with higher ability to pay contribute more to financing the national budget and the provision of public goods. Also, imputed minimum earnings for social security contributions have been found to be regressive and should be removed, as this would not only contribute to more equitable direct taxes, but would also improve incentives for workers to join the formal sector.

12. Property and wealth taxes remain limited in China. Such taxes are broadly viewed as progressive and are also considered to be a very efficient source of tax revenues, as they tend to be the least distortive to growth (Norregaard 2013). Consideration should therefore be given to adopting a recurrent market-value based property tax, which would have the added benefit of supporting ongoing urbanization and intergovernmental fiscal reforms.

Expenditure side reforms to boost inclusiveness**13. While important gains have been made in recent years, China still lags other emerging economies and OECD countries in public spending on education, health and social assistance.**

Beyond the negative impact on current levels of inequality, the rapidly aging population will further strain public health services budgets and pension funds.

14. In addition to the low level of social spending, another important dimension is the unequal provision of public services. This is particularly the case for the *hukou*—or household registration—system. Liberalizing the residency system, as some provinces have started doing, will allow more migrants to contribute to and benefit from the social safety net. This would reduce disparities and strengthen the redistributive effect of fiscal policy.

15. Provincial and regional inequalities in public service provision and access have also been growing in recent years, with richer provinces outpacing poorer areas. The recently announced reform plans by the State Council to address intergovernmental relations will reduce regional disparities by increasing transfers to poorer regions. This will require an increase in the pool of funds used to finance equalization grants and more reliance on a rules-based system, as opposed to the ad hoc process currently used in the annual budget preparation (Liu, Martinez-Vazquez and Qiao, 2014). Reforming the overly complex system of conditional transfers, with a stronger focus on outcomes as opposed to inputs, should also support improvement in public service delivery. A recentralization of social insurance would also improve equality, risk sharing and labor mobility.

References

- Barro, R. and Lee, J., 2013, "A New Data Set of Educational Attainment in the World, 1950-2010." *Journal of Development Economics*, vol 104, pp.184-198.
- Dollar, D., 2007, "Poverty, inequality and social disparities during China's economic reform," Policy Research Working Paper 4253, World Bank, Washington.
- Heckman, J., and Yi, J., 2012 "Human Capital, Economic Growth, and Inequality in China," NBER Working Paper 18100.
- Jain-Chandra, S., Khor, N., Mano R., Schauer, J., Wingender, P. and Zhuang, J., 2017, "Inequality in China – Trends, Drivers and Policy Remedies", IMF WP *forthcoming*
- Li, S., Wan, G., and Zhuang, J., 2014, "Income inequality and redistributive policy in the People's Republic of China," In: Kanbur, R., Rhee, C. and Zhuang, J. (eds), *Inequality in Asia and the Pacific: Trends, Drivers and Policy Implications*, Routledge: London.
- Lin, T., J. Zhuang, D. Yarcia, and F. Lin, 2010, "Decomposing Income Inequality: People's Republic of China, 1990–2005", In J. Zhuang, ed. *Poverty, Inequality, and Inclusive Growth in Asia: Measurement, Policy Issues, and Country Studies*. Manila: ADB and London: Anthem Press.
- Liu, L., 2009, "Skill Premium and Wage Differences: The Case of China", Conference paper for the Second International Symposium on Knowledge Acquisition and Modeling.
- Liu, Y., Martinez-Vazquez, J., and Qiao, B. (2014). "Falling Short: Intergovernmental Transfers in China," *Public Finance and Management*, 14 (4), 374-398.
- Liu, Z., 2005, "Institution and inequality: the hukou system in China," *Journal of Comparative Economics*, 33, pp.133–157.
- Norregaard, J., (2013), "Taxing Immovable Property: Revenue Potential and Implementation Challenges," IMF Working Paper No. 13/129 (Washington: International Monetary Fund).
- Zhang, X., and Kanbur, R., 2005, "Spatial inequality in education and health care in China," *China Economic Review*, 16, pp.189–204.
- Zhuang, J., P. Vandenberg, and Y. Huang. 2012. *Growing beyond the Low-Cost Advantage: How the People's Republic of China Can Avoid the Middle-Income Trap*. Manila: ADB.
- Zhuang, J., and Li, S. (2016), "Understanding Recent Trends in Income Inequality in the People's Republic of China", ADB Economics Working Paper Series.

Appendix I. Cross-Country Regression

The cross-country regression takes the following form:

$$Net\ Gini_{c,t} = \alpha + \beta \times S'_{c,t} + \gamma \times P'_{c,t} + \delta \times X_{c,t} + \mu_c + \varepsilon_{c,t},$$

where S is a vector containing the structural variables, P includes policy variables, X are the controls and μ the country-fixed effects. The sample includes Argentina, Australia, Brazil, Bulgaria, Canada, China, Denmark, Hungary, India, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Panama, Philippines, Poland, Portugal, Korea, Singapore, Spain, Sweden, Switzerland, Thailand, the United Kingdom, the United States of America, and Venezuela.

	Net Gini Coefficient	
Structural Variables	Share of Employment in Services	-0.356* (-2.42)
	Share of Employment in Services Squared	0.00228+ (1.76)
	Share of Employment in Industry	-1.842* (-11.11)
	Share of Employment in Industry Squared	0.0283* (9.37)
	Age Distribution D1 ¹	71.59* (7.80)
	Age Distribution D3 ¹	-9.693* (-8.12)
	Age Distribution D3 ¹	0.389* (8.43)
	Share of Population living in Urban Areas	1.756* (15.46)
	Share of Population living in Urban Areas squared	-0.0134* (-15.98)
	Share of Population without Education	0.0469 (1.04)
	Share of Population with some Primary Education	-0.0238 (-0.75)
	Share of Population with some Secondary Education	-0.00337 (-0.12)
	Policy Variables	Public Social Protection Expenditure as Share of GDP
Public Health Expenditure as Share of GDP		-0.670* (-3.22)
Public Health Expenditure as Share of GDP Squared		0.0808* (3.72)
Absolute Redistribution ²		-0.175* (-4.65)
Property Tax Revenue as a Share of GDP		-0.617* (-3.18)
Individual Income Tax Revenue as Share of GDP		-0.0426 (-0.58)
Top Personal Income Tax Rate		-0.0553* (-4.76)
Control Variables	Relative GDP per Capita ³	-9.715* (-3.30)
	Relative GDP per Capita squared	5.278* (3.52)
	Trade Openness	-0.0171* (-3.50)
Number of Observations		646
Adjusted R-squared		0.962
Country Fixed Effects		Yes
t statistics in parentheses		
+ p<0.1, *p<0.05		
¹ These variables are based on Higgins (1998) and allow to introduce the complete age distribution in a non-linear way.		
² This variables is from the SWIID dataset and represents the difference between the Market and Net Gini.		
³ Relative to weighted G7 Average		