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Resolving China's Corporate Debt Problem

by Wojciech Maliszewski, Serkan Arslanalp, John Caparusso, José Garrido, Si Guo,
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I N T E R N A T I O N A L M O N E T A R Y F U N D

IMF Working Paper

Asia and Pacific Department

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Abstract

Corporate credit growth in China has been excessive in recent years. This credit boom is related to the large increase in investment after the Global Financial Crisis. Investment efficiency has fallen and the financial performance of corporates has deteriorated steadily, affecting asset quality in financial institutions. The corporate debt problem should be addressed urgently with a comprehensive strategy. Key elements should include identifying companies in financial difficulties, proactively recognizing losses in the financial system, burden sharing, corporate restructuring and governance reform, hardening budget constraints, and facilitating market entry. A proactive strategy would trade off short-term economic pain for larger longer-term gain.

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I. INTRODUCTION

China is rebalancing, but high credit growth is a source of concern. Current account surpluses have shrunk and GDP growth relies less on external demand since the Global Financial Crisis (GFC). Domestic demand has become a new growth engine, but it is heavily dependent on credit, and the pace of credit growth has remained brisk. Some “China watchers” regard the fast credit growth as benign, arguing that this is a reflection of high and stable domestic savings channeled to investment. As investment generates growth and profits, they regard the current growth model as sustainable. They also note that rapid credit expansion mirrors desirable financial deepening in line with China’s stage of development. Others are skeptical, pointing to cross-country evidence of severe fallouts from similar credit booms, evidence of overcapacity in several industries, and deteriorating profitability in the corporate sector. This suggests that capital has been misallocated, the current growth model is not sustainable, and China will have to deal with the debt overhang problem.

Risks from the rapid credit growth are growing. Credit financed the large increase in corporate sector investment. Investment generally adds to productive capacity, but its efficiency is key for the sustainability of credit expansion. In China, credit financed a large construction boom, resulting in overstocking in the real estate and overcapacity in related upstream industries. At the macro level, investment and credit efficiency has fallen. At the micro level, corporate data show that the financial performance of corporates has deteriorated steadily. This translates to worsening asset quality of banks. Moreover, China’s credit expansion has been very fast by international comparisons. Cross-country experience suggests that this increases the risk of disruptive adjustment, either a banking crisis or sharply slower growth or both.

The authorities recognize the problem, but appear to be still searching for a fully-fledged strategy. The current approach tackles mostly the operational aspects of dealing with the overcapacity problem, with less discussion of financial implications. And both operational and financial restructuring appears to rely on mergers and acquisitions, which will likely be insufficient to promote financial discipline and operational gains in efficiency.

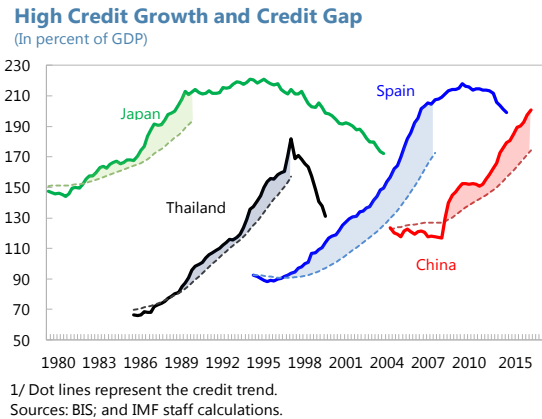
A comprehensive strategy is needed to deal with excessive corporate debt. International experience across advanced, transition, and emerging countries with corporate debt difficulties offers broad lessons. First, the government should act quickly before the problem becomes systemic. Second, the problems of both creditors and debtors should be tackled together. Just cleaning up the banks by moving bad loans off bank balance sheet and recapitalizing the banks, or allowing companies to go bankrupt without recapitalizing banks would not revitalize economic activity. Third, the governance problems in the corporate sector and the banks that gave rise to the problem should be addressed to prevent the re-emergence of a vicious credit cycle.

The remainder of the paper is structured as follows. Section II presents stylized facts and analysis about China’s credit growth and Section III discusses underlying causes of rapid credit boom, emphasizing the role of policy and market distortions. Section IV describes the strategy to deal with the problem. Section VI discusses supportive policies, including fiscal support to lessen

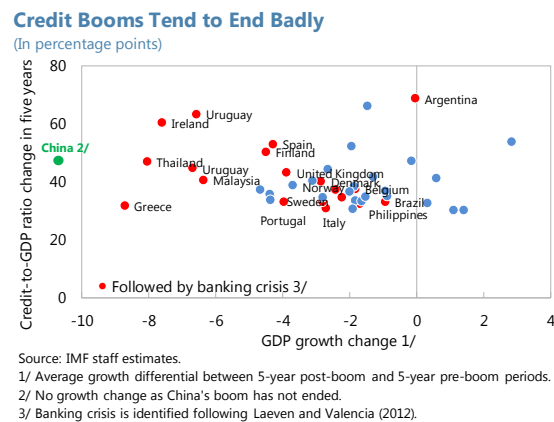
transition costs. Section VII presents illustrative macroeconomic scenarios under the unchanged growth model and a more sustainable adjustment scenario, and Section VIII concludes.

II. HOW SIGNIFICANT IS THE PROBLEM?

China's credit growth has been fast since the GFC, creating a high 'credit gap'. In response to the crisis and collapse in external trade, China has deployed policies to boost domestic demand. In addition to the large 2009 fiscal package (equivalent to 12 percent of GDP), activity since the crisis has been supported by high credit growth. Credit growth has been averaging around 20 percent per year between 2009 and 2015, much higher than nominal GDP growth and the previous trend. As a result, the nonfinancial private credit-to-GDP ratio, including credit to local government financing vehicles (LGFVs), rose from around 150 percent to over 200 percent over the same period, which is 20–25 percentage points above the level consistent with the historical trend at end-2015—very high 'credit gap' comparable to countries that experienced painful deleveraging, such as Spain, Thailand, or Japan.



This credit dynamic points to vulnerabilities. There is broad evidence that booms of this size are dangerous. Borio and Lowe (2002) and Borio and Drehmann (2009) found that a credit gap above a 4 percent is a good predictor of financial crisis. Similarly, most credit booms identified by Dell'Ariccia and others (2016) ended up in either a financial crisis or a significant growth slowdown, or both. We complement earlier studies by identifying credit booms that broadly match China's experience. Out of 43 economies where credit-to-GDP ratio increased by more than 30 percentage points within five years, 38 economies subsequently experienced severe disruptions, manifested in financial crises, growth slowdowns, or both. While the crisis is neither imminent nor unavoidable, econometric evidence in Dell'Ariccia and others (2016) show that a probability of bad outcome increases if a boom lasts longer than six years, starts at a higher level of financial depth, and develops faster. China meets all these criteria.



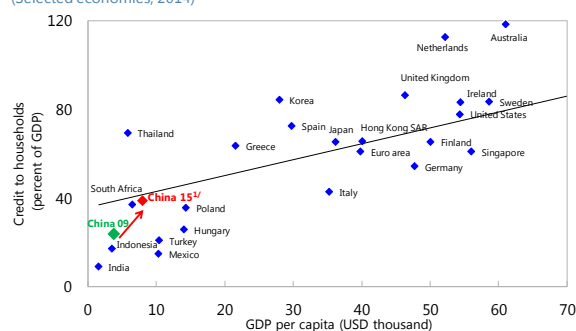
There is also evidence that credit level has exceeded 'optimal' financial deepening. The credit-to-GDP ratio is significantly higher in China than in countries at a similar level of development, indicating that credit growth has been faster than a normal path of financial deepening. A higher credit-to-GDP ratio can be sustained, and indeed be beneficial to economic

growth, in countries with sound institutions and regulation. However, Sahay and others (2015) found that China's financial deepening has been excessive relative to advancements in its institutions and regulations.

The corporate sector has been the main driver of the excessive credit creation. Credit to households is consistent with the ratio for countries at a similar level of development. In contrast, credit to the corporate sector is well above the level in emerging market peers (exceeding even the level typical for developed economies) and growing fast.²

Credit to Households in Line with Peers

(Selected economies, 2014)

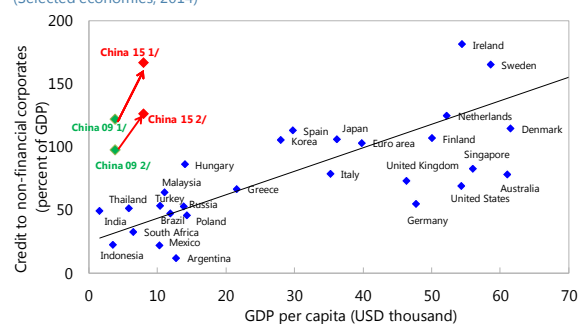


1/ Data is in 2015Q3.

Sources: Bank for International Settlements (BIS); IMF *World Economic Outlook*; and IMF staff calculations.

Credit to Nonfinancial Corporates much Higher

(Selected economies, 2014)



Sources: Bank for International Settlements (BIS); and IMF staff estimates.

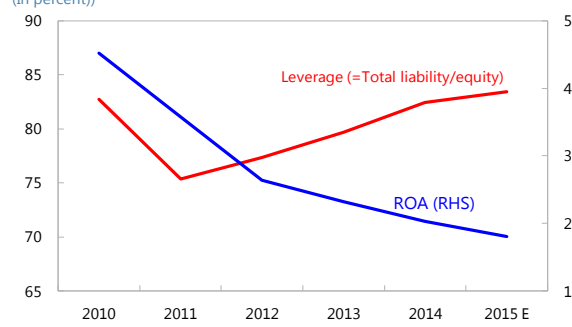
1/ Calculated as total social financing minus equity and household loans.

2/ Calculated as total social financing minus equity, LGFV borrowing and household loans.

The financial performance of the corporate sector has also been deteriorating. After the initial deleveraging phase, the leverage ratio has been rising while profitability has been steadily falling, suggesting deteriorating debt servicing capacity. This is further illustrated by the rising ratio of liabilities to earnings (EBIT) and the falling interest coverage ratio (ICR = EBIT / interest expenses).

Increasing Leverage and Falling Profits 1/

(In percent)

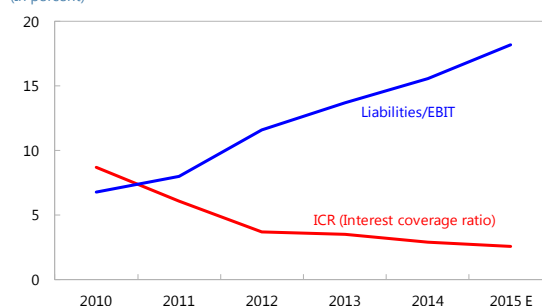


Sources: S&P Capital IQ; and IMF staff estimates.

1/ Listed non-financial companies.

Deterioration in Debt-servicing Capacity 1/

(In percent)



Sources: S&P Capital IQ; and IMF staff estimates.

1/ Listed non-financial companies.

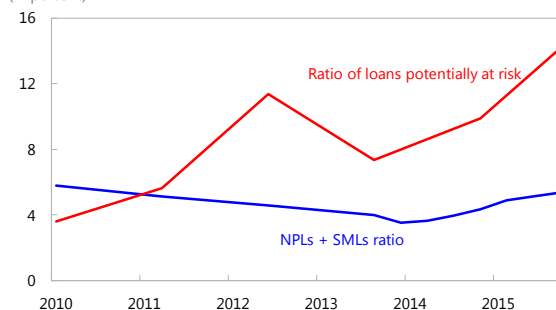
² Importantly, standard measures of credit in China classify credit extended to LGFVs as credit to the corporate sector. While formally classified as state-owned enterprises (SOEs) and not part of the public sector, many LGFVs perform fiscal functions and a sizeable part of this credit should be classified as public debt. However, even after stripping the effect of LGFV borrowing, credit to the corporate sector is still very high by the cross-country norm and rising fast.

The quality of bank assets has worsened as a result. Loan quality statistics show only a modest increase in nonperforming loans (NPLs) and special mention loans, but alternative estimates suggest more deterioration in asset quality:

- Reported NPLs and special mention loans have reached about 5½ percent of total loans as of end-2015.
- Bottom-up estimates from corporate data point to a sharper deterioration in repayment ability. ‘Loans potentially at risk’ are estimated at 15½ percent of total commercial bank loans to the corporate sector (they are defined as loans to borrowers that have an interest coverage ratio below one; estimated sector-wise based on individual corporate balance sheets). Assuming a 60 percent loss ratio suggests that potential bank losses on these loans could amount to 7 percent of GDP (IMF, 2016).
- Top-down estimates based on the credit gap is another indicator of brewing problems. The estimated relationship between the peak credit gap and subsequent NPLs (in a sample of crisis-stricken economies) yields relatively large projected loans potentially at risk (about 10½ percent of GDP) and write-offs (5 percent of GDP). It is smaller, but still in line with the bottom-up estimates.

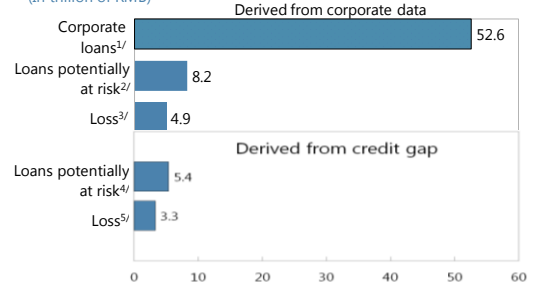
Low NPLs/ Special Mention Loans (SMLs), but Loans Potentially at Risk Much Higher

(In percent)



Bottom-up and Top-down Estimates Consistent

(In trillion of RMB)



^{1/} Excluding LGFVs and policy banks.

^{2/} Share of loans with ICR < 1.

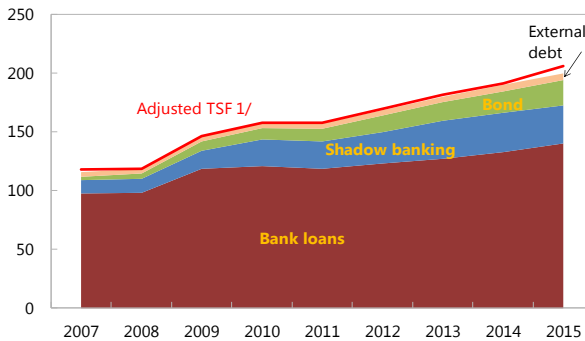
^{3/} Assuming 60 percent loss rate

^{4/} From the relationship between credit gap and subsequent NPLs.

^{5/} From the relationship between credit gap and subsequent write-offs.

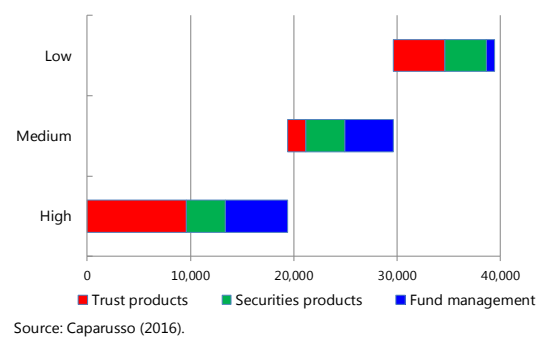
The quality of corporate debt could be even worse in ‘shadow’ credit products. These products comprise investment instruments structured by trust, securities or asset management companies, with mainly loans or other credit as underlying assets. They have been growing rapidly, by 48 percent in 2015 to reach RMB 40 trillion, which is equivalent to 58 percent of GDP or 40 percent of banks’ corporate loans (although the overlap with regular corporate credit is hard to estimate; Caparusso, 2016). The rapid growth has been stimulated by capital, liquidity and regulatory constraints after the GFC. Shadow products are generally higher-risk than loans, and losses associated with them could thus be sizeable.

High and Evolving Shadow Banking
(In percent of GDP)



Sources: Haver Analytics; and IMF staff calculations.
1/ Including external debt but excluding equity.

Shadow Products: by Risk Level and Product Type, 2015
(In billion of RMB)



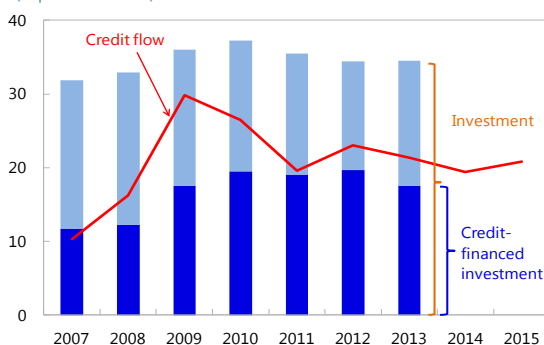
Source: Caparusso (2016).

III. WHAT IS BEHIND THE RAPID CREDIT GROWTH?

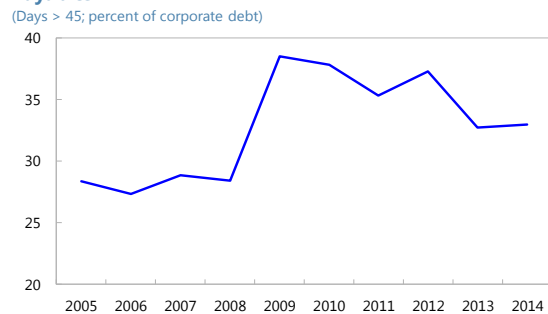
Flow of funds data allow identification of the main credit flows:

- Higher and less profitable corporate investment required credit financing. The rise in investment associated with the post-GFC stimulus was not matched by a commensurate increase in profits. In fact, profits have been steadily falling, limiting room to finance investment internally. China's high household saving provided room to finance the additional investment, but the increased flow of funds from households to corporations ('credit-financed investment' in the chart) required intermediation by the financial system. This has been reflected in the sharp and persistent increase in credit growth.
- Credit increased even by more than what was needed to finance investment. The additional financing (the difference between 'credit flow' and 'credit-financed investment' in the chart) has led to the expansion in corporate balance sheets, largely cash buffers. While more difficult to explain, the higher demand for cash appears to coincide with the concurrent sharp increase in long-term payables. Lengthening of credit chains—for example, the rise in entrusted loans—could have played a role too.

Corporate Credit and Investment
(In percent of GDP)



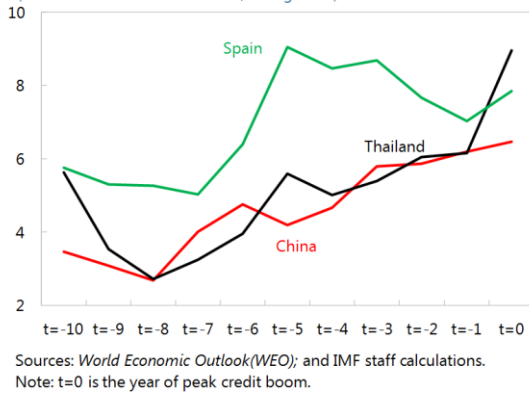
Borrowing Coincided with the Jump in Long-term Payables
(Days > 45; percent of corporate debt)



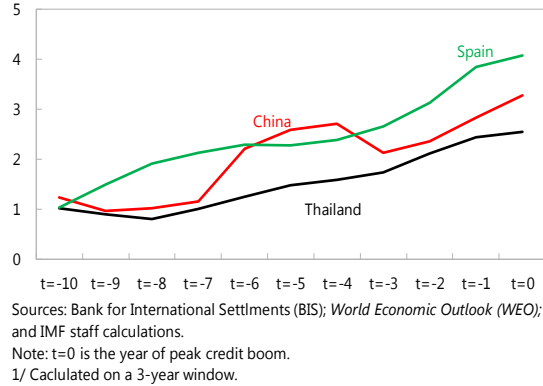
Sources: Standard & Poor's Capital IQ; and IMF staff estimates.

As a result, the use of credit has become less efficient at the macro level. The increase in investment could be growth-enhancing and could generate additional profits for corporates. This would ensure that the associated credit financing is sustainable. But the rapid scaling up in investment has reduced its efficiency, as reflected in lower profitability and, at the macro level, in the lower growth payoffs from additional capital spending (falling Incremental Capital to Output Ratio). Combined with additional borrowing to finance the expansion of corporate balance sheets, this reduced credit efficiency (or alternatively increased ‘credit intensity’—amount of new credit needed for additional GDP). Worryingly, these dynamics in credit and investment efficiency is similar to pre-crisis behavior in countries experiencing debt crises (e.g., Spain and Thailand).

Investment Efficiency Has Fallen
(ICOR=investment share in GDP/GDP growth)

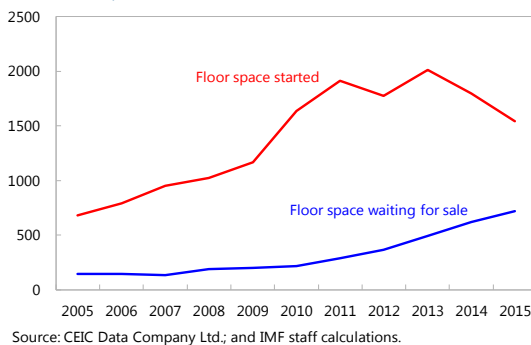


While Credit Intensity Has Increased 1/
(In percent, new credit per unit of additional GDP)

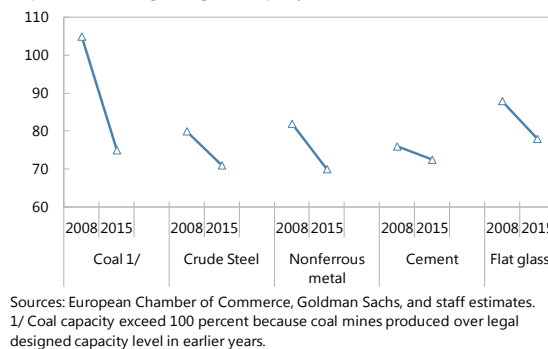


Inefficiencies in credit allocation stemmed from the structure of the post-crisis stimulus. Credit financed a broad-based scaling up of infrastructure spending and real estate investment. While real estate may appear more commercially oriented (and therefore more efficient) than infrastructure, nonmarket orientation of state or local government-linked corporates in this sector may have led to overbuilding and severe overhang of unsold properties. The stimulus-driven construction boom has also supported rapid development in upstream industries such as steel, cement and coal. They now face overcapacity problems as the construction activity has slowed.

Booming Construction Has Left Real Estate with Overhang
(In thousand of square meters)

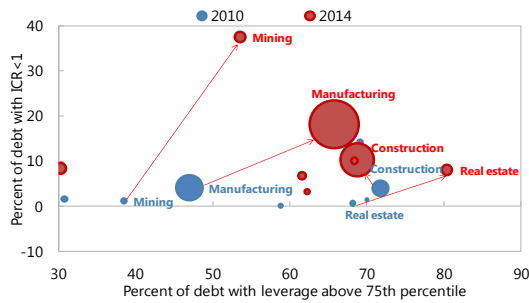


Capacity Utilization across Sectors
(In percent of total legal designated capacity)



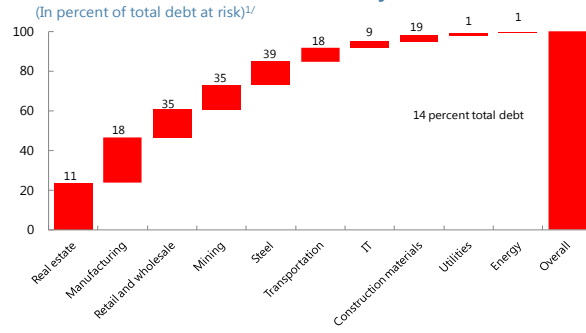
Heavy borrowing combined with falling profits have left corporates with a debt overhang. Corporates in real estate, construction and related upstream activities have rapidly increased leverage. As a result of the inefficient expansion, they are now suffering from an excessive debt burden, as reflected in the high share of companies with a low interest coverage ratio.

Deterioration of Financial Results in Manufacturing, Mining, Construction and Real Estate



Sources: WIND database; and IMF staff calculations.
Note: Dot size indicates the size of debt in the sector.

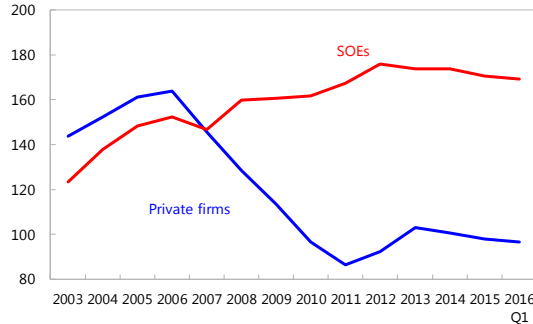
Contributed Most to Debt-at-Risk by Sector



Sources: Standard & Poor's Capital IQ; and IMF staff estimates.
1/ ICR < 1.

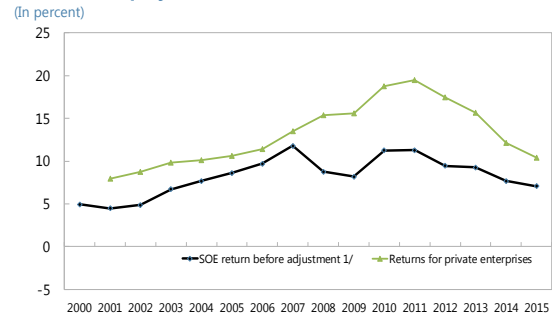
SOEs have been more leveraged and less profitable than private enterprises. SOEs have been the bulwark of government industrial policy, used to reach development and strategic goals. They have been the key policy instrument used by the central and local governments in the post-GFC response to mitigate growth slowdown (Baston, 2016). Acting partly as a conduit for policy-driven investment, mostly in resources-intensive industries, they have reported higher and rising leverage compared to the private enterprises, and significantly weaker profitability (Lam and Schipke, 2016).

Leverage Ratios (Average Mean)
(In percent)



Sources: WIND database; and IMF staff estimates.

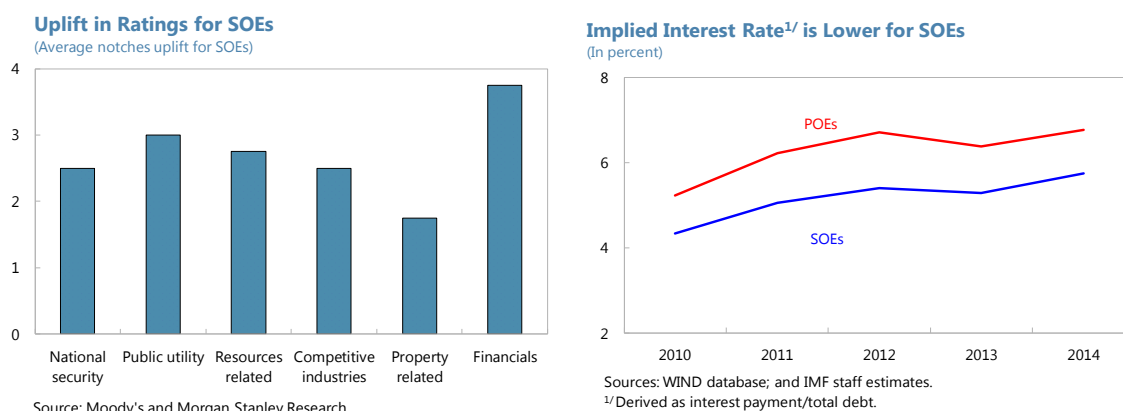
Returns on Equity



Sources: Statistical Yearbook (2015), Unirule Institute of Economics (2015), and staff estimates.
1/ Based on nominal profits of industrial SOEs.

Inefficiency has been linked to soft budget constraints. The policy role of SOEs is enhanced by preferential access to financing. This includes financing provided by state-owned banks, but extends to other forms of borrowing. The privileged access has been underpinned by substantial land endowment (that can be used as collateral) and implicit government guarantees. In addition to industrial policy objectives, social and financial stability objectives play a role in extending the guarantees (Baston, 2016; IMF, 2016). The central or local governments may therefore stand behind not only SOEs, but even private large strategically or socially important corporates. The preferential access to finance and implicit government guarantees translate to a 2–3 notches upgrade in credit ratings, and appear to lower borrowing costs by about ½–1 percentage points.

Borrowing costs not commensurate with returns and risks, together with easy access to financing, are key features distorting the allocation of resources and promoting inefficiency.



IV. CHARTING THE WAY OUT

A. Authorities' Plans

The authorities recognize the problem and are developing plans to tackle it. Several elements of the 13th Five Year Plan address corporate debt-related vulnerabilities and financial stability considerations, including:

- The authorities have announced capacity reduction targets in coal and steel sectors. The planned cuts (10–15 percent of existing capacity over the next 3–5 years) signal firm intent to reduce excess capacity, and an RMB 100 billion (0.1 percent of GDP) restructuring fund will absorb the welfare costs for an expected 1.8 million affected workers,
- A group of ‘zombie’ companies has been identified. The State-owned Assets Supervision and Administration Commission (SASAC) has identified 345 ‘zombie’ firms among central SOEs, which have run losses for three consecutive years and do not fit the priorities of the government’s industrial policy. The plan is to resolve them in three years. For local governments, coastal provinces have advanced faster, and in some cases, dealt with nearly half of the identified ‘zombies’, while progress has been slow in regions where SOEs play an outsized role in the local economy.
- The announced SOE reform aims to broaden ownership and improve efficiency. Ten pilot programs with a few selected SOEs have started in 2016, focusing on mixed-ownership reforms and professional management through recruitment, compensation, and board of directors. The State Council has recently announced plans to remove certain social functions of SOEs.

But the focus so far is too narrow:

- Selective operational restructuring is not sufficient. It focuses largely on coal and steel producers, does not cover associated losses in the financial system, and does not extend to other sectors in the economy.

Table 1. Resolving Zombie Companies across Selected Provinces

Province / Region	Provincial development	No. of identified 'zombies' (end 2015)	Type	Industry	Reform plan	Resolution methods			
						Mergers & acquisition	Capital consolidation	Others	Bankruptcy / liquidation
Central government		345	Central SOEs	Overcapacity industries					
Chongqing	High income municipality	200	Provincial SOEs		Plan to resolve all zombies by 2016				
Gansu	Western region	110	Provincial and lower level SOEs	Overcapacity industries					
Guangdong	High income province	3,385 of which 768 provincial SOEs	Provincial and lower level SOEs	All	Plan to resolve all zombies by 2018	A total of 16,000 employees to be redeployed (including retirees); debt outstanding about RMB 15 billion.			
Hubei	Overcapacity province	125	Provincial SOEs		Has resolved 58 SOEs, expect 35 in the H2 2016	3	4		3
Inner Mongolia	Overcapacity province	90		Overcapacity industries					
Liaoning	Overcapacity province	830							
Qinghai	Western region	31	Provincial and lower level SOEs	Cement, steel, coal	Has resolved 18 SOEs	8	1	4	[5?]
Shandong	High income province	321	Provincial SOEs		Plan to resolve 125 zombies by 2016; has resolved 36.				
Tianjin	High income municipality	113			Plan to resolve all zombies by 2016				
Yunnan	Western region	135	Provincial SOEs	Iron, steel, and coal					
Zhejiang	High income province	450		Iron and steel, coal	Plan to resolve all zombies by 2016				
Source: Provincial and municipal governments.									

Source: Provincial and municipal governments.

- The implementation of the SOE reform has been uneven. The reform of central SOEs has advanced slowly, in part because of their complex multi-layer subsidiary structure (Lam and Schipke, 2016). Moreover, it is not clear if the reform will substantially improve resource allocation as it envisions both greater market discipline and state leadership in major decisions—potentially inconsistent goals if the state pursues noneconomic objectives in its role as a manager.
- There is no comprehensive approach to promote financial discipline. “Mini” or “near” defaults among Chinese corporates have been rising, but corporate debt workouts are handled on a case-by-case basis and do not seem to promote corporate restructuring. State intervention in SOEs has been ad-hoc and does not provide an effective mechanism to harden budget constraints without clear guidance on the state’s role.

B. Comprehensive Strategy

China needs a more comprehensive and proactive strategy. China’s own episode in the 1990s and post-GFC international experience (Grigorian and Raei, 2016) suggest that tackling a systemic corporate debt problem requires a comprehensive approach. Key elements should include:

- *High-level decision.* It is important to address corporate debt problems quickly and effectively before the problem becomes systemic, which would then slow economic growth much more and possibly lead to a disruptive adjustment. So a high-level decision is needed to stop financing weak (especially State-owned) firms, strengthen corporate governance, mitigate social costs, and accept the likely lower growth in the near term. This decision should be reflected in the coordinated action of all involved public bodies, especially SOEs, local governments, and financial supervisors.

- *Identifying companies in financial difficulties (triage).* Firms facing difficulties servicing their debts should be triaged into the viable, which should be restructured, and the nonviable, which should be liquidated. This could be done through a market-based approach (driven by creditors) or by setting up a separate entity vested with sufficient legal and political powers (driven by government). A transparent and standardized process, including the engagement of external experts for valuations, would provide an independent basis for decision making.
- *Loss recognition and financial restructuring.* Regulatory and supervisory oversight should require banks proactively to recognize and manage impaired losses. Once losses are recognized, techniques such as debt-equity conversions, NPL securitization, and sales to asset management companies (AMCs), can be useful to work out impaired assets, but they need to be nested in a comprehensive strategy that addresses roots of the problem.
- *Burden sharing.* Recognizing the full extent of impaired assets will likely result in significant losses. A plan to allocate these losses, taking into account appropriate hierarchy of claims among banks, corporate, and investors, and, if necessary, backstop them with government funds, will be critical. This should consider moral hazard (by imposing costs on those whose actions caused losses), capacity to repay, and social consequences.
- *Corporate restructuring.* Corporate restructuring and governance reform—particularly in SOEs—should also be a part of the process to prevent the resumption of unsustainable corporate losses in the future.
- *Hardening budget constraints.* In addition to addressing corporate governance problems, additional measures are needed to harden budget constraints, which is critical to improving capital allocation. This includes regulatory reforms, particularly in the bond market, but primarily steps towards removing implicit government guarantees.

Additional supporting policies are needed for successful corporate restructuring. They include:

- *Enhancing the legal framework.* A long-term goal is to improve the legal system and the institutional framework to handle insolvencies. But large-scale and expedited restructuring requires out-of-court mechanisms to complement the existing framework.
- *Minimizing the hit to near-term growth and employment* (and helping those that are affected). Corporate restructuring will have short-term economic costs. They will ultimately be offset by activity and employment created in new sectors, but supportive mechanisms to facilitate this transition—such as a strengthening social safety net, retraining, and easing restrictions on migration—are needed.
- *Facilitating market entry.* Where possible, markets should be made more contestable by lowering barriers to entry for potential competitors and dismantling monopolies.

- *Improving local government fiscal discipline.* Boundaries between public and private debt are blurred. Local governments have been borrowing off-budget through local government financing vehicles, which are nominally part of the corporate sector, but in reality they are part of the public sector. Progress has been made in addressing this issue, but the Budget Law needs to be complemented by operational rules, and, in the longer-term, intergovernmental fiscal system needs to be revisited.

The enhanced debt restructuring strategy could be quickly deployed on a pilot basis. This would involve a small number of SOEs in a sector with clear overcapacity, and experiencing diverse degrees of distress (Appendix I). While still initially selective in the choice of entities subject to restructuring, this approach would be more comprehensive in dealing with underlying problems (including corporate restructuring and transfer of claims or ownership to better managers). A swift rollout of the pilot should follow.

C. Elements of the Comprehensive Strategy

Clarifying the role of the state

The degree of the state involvement depends on the overall approach to corporate restructuring:

- *An across-the-board approach is more prone to moral hazard than market-based restructuring.* In a market-based approach, private sector debtors and creditors determine the nature, scope and terms of the burden sharing on a case-by-case basis and relying on market solutions. Fiscal support (if any) is on an indirect basis through recapitalization of the financial sector. In an across-the-board approach, the government determines the method and distribution of burden sharing, which is applicable across the board to all economic agents in the pre-specified category. This may involve direct fiscal support to corporates and a mandated absorption of losses by creditors (Laryea, 2010), potentially creating moral hazard. The market-based approach, however, is less susceptible to moral hazard, promoting financial discipline.
- *But the market-based approach is more susceptible to coordination failure.* Debt workouts involve many interested parties including various creditors and stakeholders such as workers and central and local governments. Excessive negotiating power by either debtors or creditors, or a lack of incentives for banks or corporates (arising from poor supervision and governance) may inhibit workouts. This may instill heavy costs on the economy, as banks eventually cease lending and corporates stop borrowing and investing given uncertain losses.

In China, more active government intervention is warranted, starting from a high-level decision to initiate the process, but incorporating market forces:

- *The still dominant role of the state in China creates additional distortions.* The state controls most of the financial sector and SOEs which constitute the most leveraged part of the corporate sector. This unique structure may facilitate coordination and prevent acute symptoms of debt overhang. But it creates other costly distortions as further lending to troubled companies diverts resources from potentially more efficient and profitable ventures, limiting growth opportunities (similar to Japan experience in the 1990s).

- *The state has to be proactive, but allow market forces to operate.* The nexus between corporates, banks and the state in China makes the market-based approach to debt restructuring less reliable, as creditors and debtors do not operate purely based on market principles. At the same time, another across-the-board restructuring would further weaken financial discipline and promote moral hazard. An intermediate approach is needed, with an active role of the state, including the establishment of a well-staffed, high-level group with a clear mandate for policy formulation, decision making, and communication. However, market forces should be allowed to play an increasingly ‘decisive role’ by changing incentives for corporates and banks. In particular, hardening budget constraints and corporate restructuring (discussed below) are critical elements of the strategy.

Triage

Firms facing difficulties servicing their debts should be triaged into the viable, which should be restructured, and nonviable, which should be liquidated. But modalities need to be worked out:

- *Triage is difficult in China.* While the deteriorating financial performance of corporates points to growing stress, defaults are rare and banks report only a modest deterioration in asset quality. This is similar to the experience of countries with debt overhang, and reflects incentives to postpone the recognition of losses. But in China such incentives are amplified by implicit government guarantees and other forms of support to SOEs (and even strategically or socially important private companies). They distort efficient resource allocation by lowering borrowing costs and make banks more lenient in their lending policies.
- *Who should do it?* Normally, banks are in the best position to assess financial strength of companies they lend to. Properly incentivizing the banks to perform this function—including by clarifying modalities of state support—should be used to jump-start the process. But the circle of support linking state-owned financial institutions with SOEs may prevent banks from fully playing this role. An alternative way to identify weak companies could be setting up a separate entity—vested with sufficient political power—to perform the triage. Such an entity could include representatives of regulatory and supervisory institutions—People’s Bank of China (PBC), China Banking Regulatory Commission (CBRC), China Securities Regulatory Commission (CSRC), State-owned Assets Supervision and Administration Commission (SASAC)—and main creditors.
- *How to start?* A transparent and standardized process—ideally bringing external expertise—would lessen political constraints and provide an independent basis for decision making. Normally, firms with financial difficulties can be identified using profit simulations and balance sheet projections as well as best judgment (World Bank, 1999; Gray, 1999). The analysis of corporate-level data similar to the one undertaken in this study provides direction, but should be deepened, for example, by stress testing results with higher borrowing costs for SOEs (to account for implicit government guarantees), and excluding nonmarket obligations currently carried out by SOEs.

- *Next step.* After identifying financially stressed companies, distinguishing viable from nonviable (“zombie”) corporations should be next. Nonviable firms are those whose liquidation value is greater than their surplus value as a going concern, taking into account potential restructuring. Again, properly incentivized banks or other private sector entity (for example, AMCs) are best placed to perform this function, but state intervention may be needed given vested interests.
- *Transparency and access to information.* Important supportive policies include the reinforcement of accounting and auditing rules to provide accurate financial information about companies, raising the standards of independent appraisers for asset valuation, and the development of more efficient credit and property registers.

Loss recognition

Regulatory and supervisory oversight should force financial institutions to proactively recognize and manage impaired assets:

- *Banks.* Critical policies include loan classification and provisioning; bank capital; collateral valuation; prudential reporting; and a supervisory review approach fostering proactive NPL resolution (restructuring, write off, or sale). Asset quality recognition standards should be applied equally to loans and to securities whose underlying assets embody credit or market risk. It should encompass both banks and nonbanks.
- *Shadow banking activity.* Similar asset quality recognition should cover nonbank financial institutions. The proliferation of shadow credit products calls for a holistic approach to their supervision, including transferring off-book activities to the balance sheets of banks. The authorities have taken actions to close some regulatory arbitrage opportunities.
- *Debt restructuring.* Once losses are recognized, techniques such as debt-equity conversions, NPL securitization, and sales to AMCs, should be applied to workout impaired assets (Appendix II).

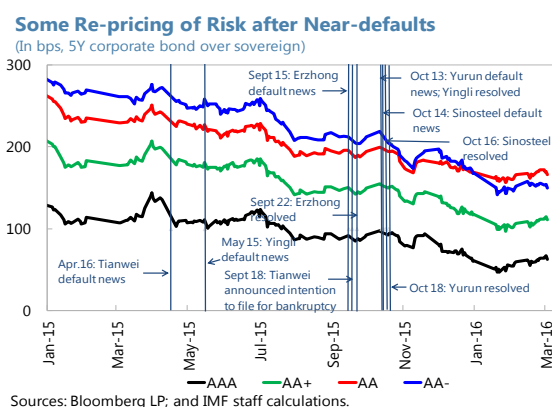
Burden sharing

Recognizing the full extent of impaired assets will likely result in significant losses. A plan to allocate them will be critical, but a gradual and instrument-by-instrument approach may be appropriate to safeguard the stability of the financial system:

- *Banks.* The April 2016 GFSR estimated the potential losses on corporate loans to be around 7 percent of GDP. In tackling potential losses during corporate restructuring, some banks may need to be recapitalized, most likely using public funds. The exact costs will depend on many factors, including the results of the triage of insolvent firms and the proportion of losses that will be borne by banks. Unlike the past recapitalization—largely done through transferring assets to AMCs at inflated prices (Appendix III)—public support should be transparent to promote financial discipline. However, this may involve a partial recognition of implicit

government guarantees covering selected SOEs (with the government taking responsibility for banks' lending to SOEs). Going forward, developing a functioning resolution framework for banks will improve financial discipline.

- *Corporates.* Similarly, the allocation of losses in the corporate sector should be transparent to avoid moral hazard, but also take into consideration the cost of social and policy functions performed by SOEs (netted against various forms of support, including implicit government guarantees). In some cases, this may justify limited fiscal support, conditional on participation in debt workout. Going forward, these functions should be terminated or separated from SOEs and implicit government guarantees removed (or fees charged for them, potentially rising over time). This would encourage more efficient use of resources by hardening budget constraints.
- *Financial products.* Implicit government guarantees should be removed, particularly on 'shadow' products. The process may have started. While several 'near' default cases in the bond market ended in ad hoc state interventions (Appendix IV) and spreads generally remain at historically low levels, the market appears reacting to the 'near' defaults by differentiating more. This is a positive development, and investors should not be bailed out in case of a default. But the process should be carefully managed to prevent fire sales and panic that could trigger financial distress. For instance, the removal of implicit government guarantees could start from newly issued products.



Corporate governance

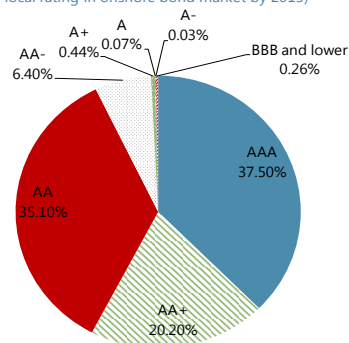
Corporate governance reform is essential. Corporate sector—particularly SOEs'—investment and financing behavior has been one of the major sources of vulnerabilities. Changes are necessary to prevent further misallocation of credit and a resumption of losses. While corporate governance reforms cover a broad spectrum of issues (ownership, disclosure, rules for internal management etc.), cross-country evidence suggests that hardening budget constraints is key to improve operational performance. In particular, neither privatization (e.g., Czech Republic; Appendix V) nor financial and operational restructuring (e.g., Korea; Appendix VI) is sufficient if it is not accompanied by the hardening of budget constraints.

Improving financial discipline

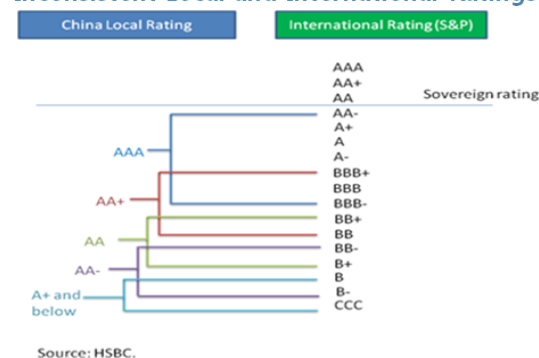
Improving financial discipline requires additional regulatory changes. The issuance of publicly traded products has surged over the past year. Despite some signs of greater differentiation among borrowers, dispersion in credit ratings has remained narrow. Going forward, the bond market has to function in a way that clearly distinguishes between firms on their respective financial health. This requires unified, transparent and effective regulation, enforcement of strict financial reporting and information disclosure, and more independent credit risk assessment.

- *Segmented regulation.* The CSRC is responsible for approving the listed corporate bonds mainly traded in Shanghai and Shenzhen Stock Exchanges; NDRC (National Development and Reform Commission) is responsible for approving SOE bonds; NAFMII (National Association of Financial Market Institutional Investors) managed by the PBC is responsible for short-term financing bonds, medium-term notes and other financial instruments of nonfinancial corporate debt, which are mainly traded in interbank bond market. Fragmentation makes the enforcement of effective regulation difficult, and information disclosure is insufficient, especially in the secondary market.
- *Credit rating.* Local rating agencies seem constrained in their ability to provide fully fair and reliable assessments of bond issuers' financial strength, partly because of state intervention. Over 90 percent of onshore bonds are rated AA to AAA by local rating agencies—according to the PBC's provisions, such ratings should be given only to firms with very low default risks. This universal high rating is rare compared to other markets—for example, less than 2 percent of firms enjoy such top-notch ratings in the U.S. market. Supervisory bodies have strong power to influence credit rating agencies.

Inflated Bond Ratings
(In percent, share of local rating in onshore bond market by 2015)



Inconsistent Local and International Ratings

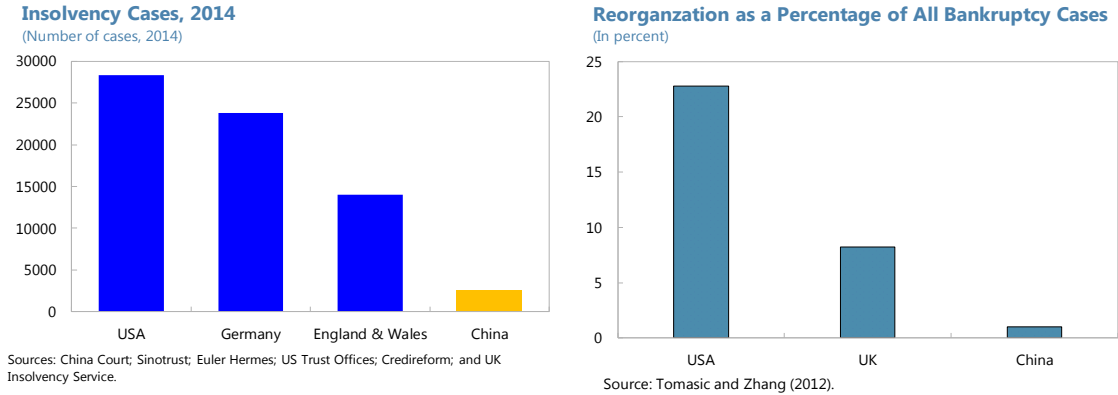


V. SUPPORTIVE MEASURES

A. Enhancing the Legal Framework

The legal framework for enterprise insolvency does not seem to deviate significantly from best international practices (Enterprise Bankruptcy Law, 2006). The law is at times too concise and difficult to interpret, but it generally follows best international practices. The insolvency process

leads to either liquidation or reorganization, and it relies on the intervention of the court, as well as on the insolvency administrator (or, alternatively, a “liquidation commission” composed of officials from different government departments). Creditors have a relatively minor role in the process, but the law states that creditors decide the outcome of the insolvency process.



However, the application of the enterprise bankruptcy law is very limited. The number of insolvency cases is extremely low for the size of the Chinese economy. It has even been falling since the law entered into force in 2007, despite worsening economic conditions. Corporate reorganizations have been even rarer. However, for each insolvency case accepted by the courts, another 100–250 enterprises are estimated to go out of business, many of them through deregistration and business license cancellation. The limited application of the insolvency process is due to multiple factors:

- *Disincentives for debtors.* An insolvency process may result in the liability of directors or officials. In addition, courts require that debtors present plans to provide solutions for the situation of all workers involved. To avoid this, debtors refuse to file for insolvency, or use connected creditors to initiate an insolvency process.
- *Hurdles for creditors.* Bankruptcy commencement criteria are loosely defined, and it can be extremely difficult to prove that an enterprise does not have enough assets to pay off its debts. The system is not predictable: despite the existence of rules protecting creditors and establishing the creditors’ hierarchy, the outcomes of insolvency process often yield divergent results, depending on the court’s interpretation. Even more importantly, creditors are discouraged from presenting bankruptcy petitions, especially against important enterprises.
- *Reluctant courts.* The practice of dismissing or ignoring bankruptcy petitions is frequent. The judiciary may lack the necessary independence to take action, especially in the face of petitions against state-owned enterprises. The Supreme People’s Court’s permission, the approval of the relevant provincial government and that of the CSRC are required to accept a bankruptcy case affecting a listed company.
- *Solutions not necessarily well aligned with the law.* Reorganization plans tend to be prepared and adopted quickly, and the negotiation of the plans frequently occurs outside the court process. Insiders are allowed to vote and determine the adoption of reorganization plans and compositions, often resulting in gains for inside creditors and shareholders.

- *Weak institutional capacity.* The role of the courts in the insolvency system is central, but the people's courts lack specialization, capacity and independence. Moreover, the insolvency profession has not been fully developed. There is considerable discretion in the appointment of insolvency administrators. Courts and insolvency administrators are often subject to external pressures over their decisions in the process.

A long-term goal is to improve the legal system and the institutional framework to handle insolvencies. But large-scale and expedited restructuring requires out-of-court mechanisms to complement the existing framework. To achieve this goal, systemic improvements are needed in following areas.

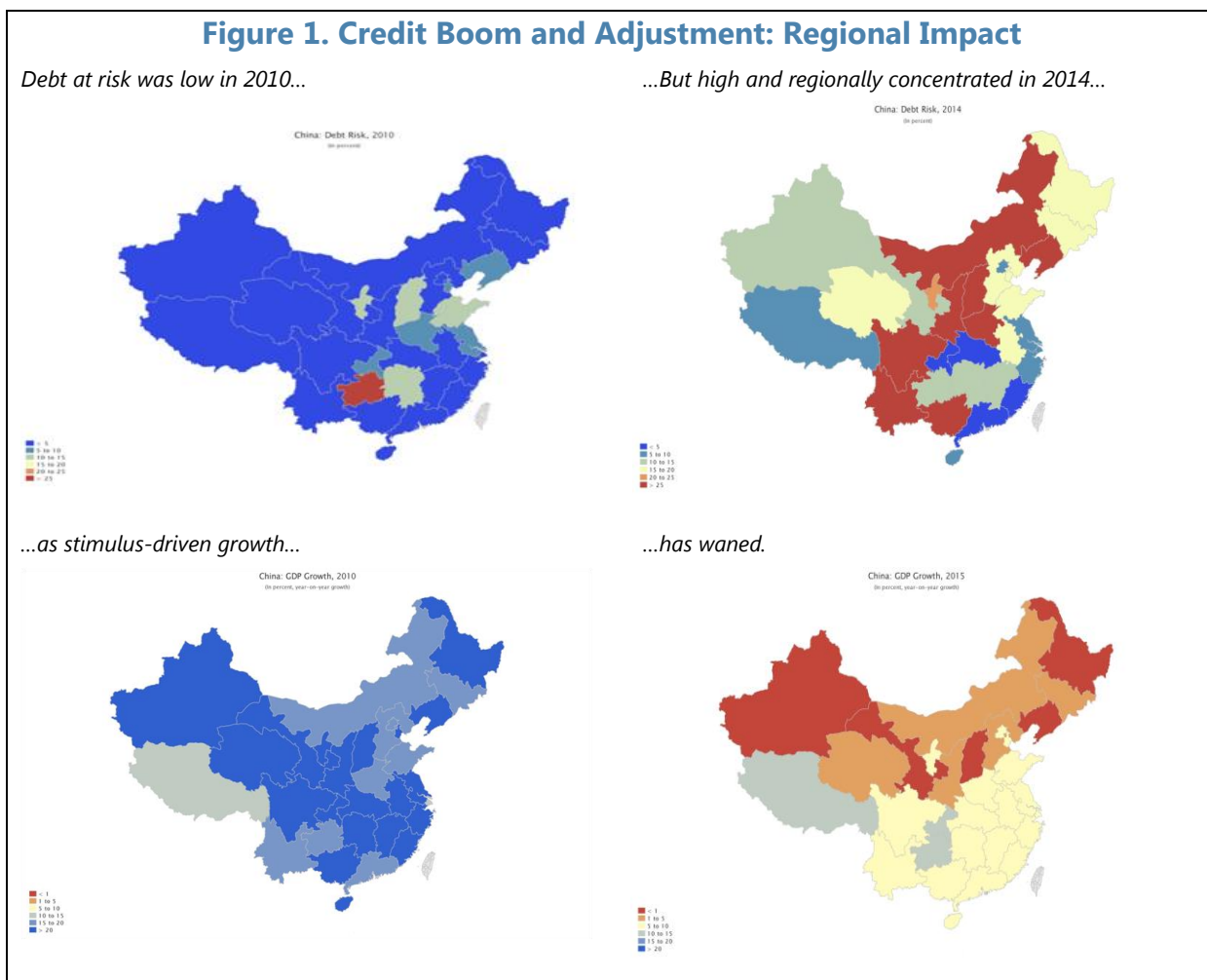
- *Further legal changes.* The law would benefit from more clarity and detail in many of its provisions, especially in the regulation of safeguards against insiders' influence. The law should recognize the possibility of obtaining a quick court confirmation of previously negotiated reorganization plans. A tax neutral treatment for insolvency and debt restructuring would contribute to a more efficient restructuring process.
- *Institutional reforms.* Developing a strong and independent judiciary, with specialization in commercial matters, would be the most important reform to strengthen the system. Insolvency administrators would need to develop as a stronger profession, with a clear set of rules and code of conduct.
- *Out-of-court debt restructuring should be connected with the judicial system to increase its effectiveness.* Restructuring agreements could be confirmed—or challenged for causes established in the law—by the courts. All confirmation cases could be assigned to a small number of courts, providing better opportunities for capacity building and specialization of the judges.

B. Easing the Transition

The government plans to restructure loss-making companies in overcapacity sectors. It is difficult to distinguish viable and nonviable companies in aggregate data. But highly leveraged companies are disproportionally located in overcapacity sectors, which suggests closures and layoffs may be needed as part of the comprehensive strategy. The authorities identified six such sectors (iron and steel, coal mining, cement, ship building, aluminum, and flat glass), with a share of loss-making firms ranging from 20–40 percent. Construction companies—with high leverage and demand shrinking as real estate market adjusts—are also at risk.

Overall costs of corporate restructuring appear significant, but manageable (Appendix VII). Exit of all loss-making firms from sectors at risk would result in the layoff of around 8 million workers (1 percent of aggregate employment), among which 2.8 million workers from the six overcapacity sectors and 5 million workers from the labor-intensive construction

sector.³ The direct output loss associated with firm exits is estimated to be 1.9 percent of GDP, but the overall output loss may increase to 2.5 percent of GDP considering inter-sector linkages and second-round effect on consumption. However, as the adjustment would likely take time, and displaced workers will also be gradually absorbed into new sectors, the annual net impact on the economy would be lower. With firms exiting in three years and with some workers re-employed, GDP losses are estimated to be 0.6 percent in 2016, 0.2 percent in 2017, and close to zero by 2018 as the majority of workers would be reabsorbed into higher-productivity sectors.

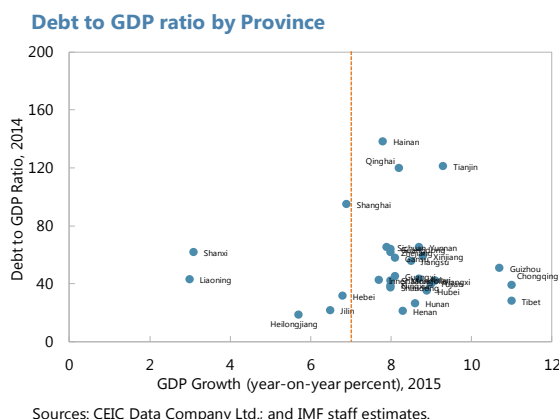


³ Loss-making firms may experience only temporary stress and still be viable in the long-run. However, given the structural excess capacity in these sectors and consistently high share of loss making firms in the past three years, we assume that these difficulties are not temporary and that these firms should exit, with resources reallocated to more productive sectors. While this assumption could overstate the transition costs, the bias may be offset by the narrow focus on selected overcapacity sectors (ignoring loss-makers in other sectors).

Economic costs would be particularly heavy for some regions. The output loss and labor layoff will be unevenly distributed across provinces, reflecting their industrial structure. For example, about two-thirds of coal industry layoffs would be in three provinces: Shanxi, Shaanxi, and Inner Mongolia. For Shanxi province, given the dominant role of both coal and steel industry, the output loss associated with restructuring will be 33 percent of the provincial GDP.

Other regions are relatively better off.

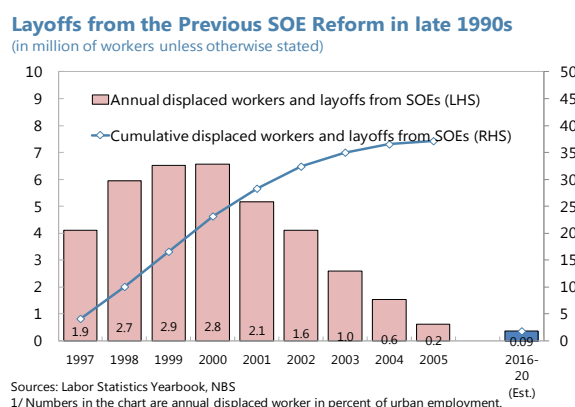
Although overall GDP growth has slowed to below 7 percent in 2015, many provinces are still growing strongly at 8 percent or higher, partly due to booming service sectors. More than a half of corporate debt are owed by companies in these fast growing regions. As it will be relatively less difficult to find other jobs in these fast-growing regions, they are better positioned to withstand the short-term costs of corporate restructuring, so should move more proactively address corporate debt problems.



All in all, the adjustment cost would be smaller than in the previous wave of restructuring (Appendix II). In the previous wave of restructuring and privatization in 1998–2002, 22 million workers were laid off, and 50 percent of bank loans were written off. Some policy buffers now appear to be larger (higher FX reserves) although the previous episode was followed by double-digit growth, which eased the pain of transition. This round of restructuring is in the context of a slowing economy.

Policy support to laid-off workers is warranted to alleviate social concerns and provide macro support:

- Addressing weakness in the existing social safety net.* The unemployment insurance system is managed by municipalities, and therefore fragmented and restricted in size. This limits its insurance function and impedes functioning of the labor market by restricting mobility. Migrant workers without a residency permit (275 million people, or roughly 20 percent of the country's population in 2014) are typically not covered. Consequently, the coverage rate among urban employees has remained low at around 45 percent.
- Labor redeployment funds (LRFs).* LRFs can provide transitional income support for displaced workers and facilitate their rapid return to employment through targeted labor

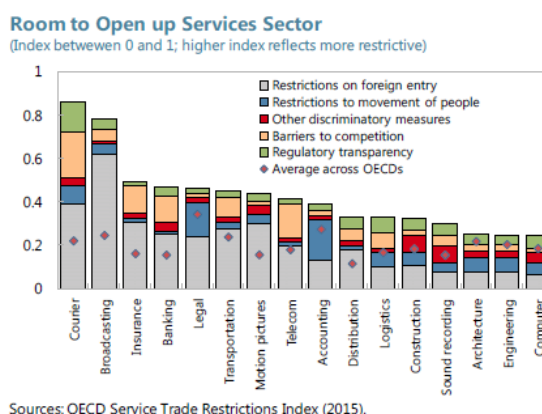


redeployment services. The government has recently announced plans to create LRFs for the coal and steel sectors. It is, however, important to be mindful of the potential need for support in other sectors, calling for a generic multi-sector approach to LRF design. This can ensure equality of treatment between sectors and regions and reduce costs.

- *Support for displaced workers* is costlier than for other types of unemployment. Not only are unemployment spells twice as long on average at around 17 months, but subsequent wage losses for these workers are also of the order of 20 percent (Ge and Lehmann, 2013). These results are used to estimate the potential fiscal cost of support to displaced workers: with an estimated number of displaced workers in overcapacity sectors of 2.8 million, the fiscal cost of support is of the order of RMB 300 billion. It rises to RMB 850 billion (1.2 percent of GDP) after including laid-off construction workers.⁴

C. Facilitating Market Entry

Successful restructuring requires the entry of new and more efficient firms. Market entry in the state-dominated services sector is currently more stringent than in OECD economies. Markets should be made more contestable by lowering these barriers and dismantling monopolies in services (especially telecommunications and healthcare) and utilities (electricity, gas, and water). Allowing breaking up administrative monopolies, and promoting the growth of dynamic small and medium-sized enterprises would foster competition and promote growth.



D. Strengthening Fiscal Discipline for Local Governments

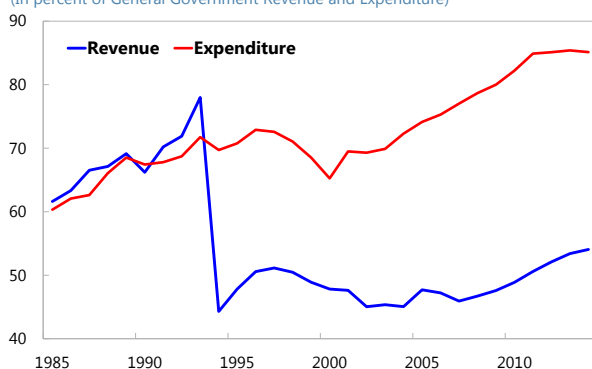
A significant part of corporate borrowing in reality financed off-budget fiscal spending. Off-budget local government borrowing has increased substantially since the GFC. It was undertaken by LGFVs; as local governments were not allowed to borrow explicitly. The loans typically financed infrastructure projects and repayment was covered by future disbursements from local governments (e.g., in a form of service fees). The ‘augmented’ deficit, which LGFV spending given the fiscal nature of such operations, thus jumped from the average of around 4 percent of GDP before 2008 to about 10 percent in 2015 (IMF, 2014).

Borrowing was driven by vertical fiscal imbalances and incentives for local governments. The fiscal reform in 1994 mainly reduced local government fiscal revenues without any

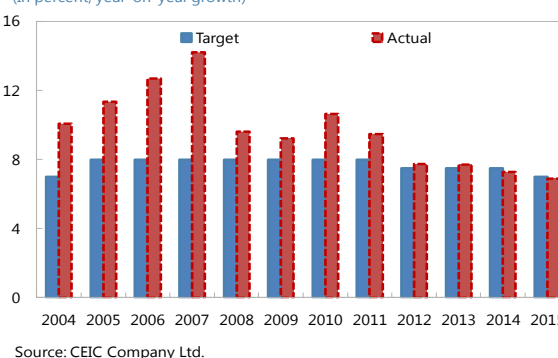
⁴ These estimates include unemployment benefits, severance pay, transfer payments to partially cover health and migration costs and the fiscal cost of providing labor redeployment services.

significant changes in expenditure responsibilities. Before the GFC, the resulting fiscal gap has been filled by transfers from the central government. But this has changed since the GFC. Delivering on growth targets have been one of the main assessment criteria for local government officials, and maintaining growth necessitated stimulus measures. Local spending has been running above transfers since the 2008–09 as a result. The funding-matching mechanism is additional incentive to borrow. A substantial share of central government transfers (over 40 percent in 2015) have been in the form of “special transfer payments” and provide partial financing under the condition that local governments provide matching funds. As matching funding is usually hard to mobilize, it is often financed by extra borrowings.

Local Government Revenue and Expenditure
(In percent of General Government Revenue and Expenditure)

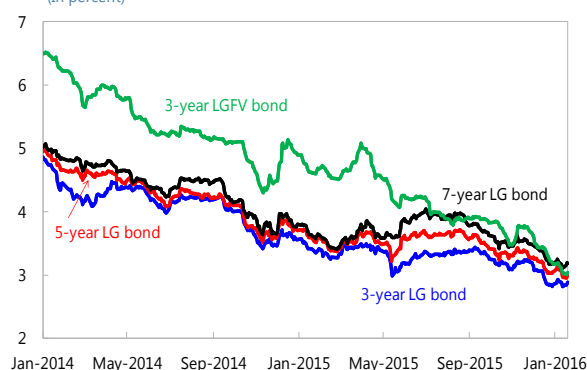


GDP Growth: Target vs. Actual
(In percent, year-on-year growth)



To address the ‘stock’ problem, the government initiated a bond swap program under the new budget law. Under the program, launched in 2015, various existing local government liabilities (mainly LGFV borrowings) will be swapped into local government bonds in 3–4 years. Around RMB 14 trillion of existing LGFV borrowing has been recognized as explicit local government debt, of which RMB 3.2 trillion was already swapped into local government bonds as of end-2015. This will reduce interest costs and improve transparency of local government obligations.

Bond Yield
(In percent)



The new budget law also improves oversight of local government finances. The 2015 budget law allows all provincial governments to issue local government bonds, subject to approval by the National People’s Congress. Borrowing must now also be included in the local fiscal budget, which must now be elaborated in the context of a medium fiscal plan. This will result in a more open, standardized and transparent financing system for local governments. It should also improve coordination among local governments. The new budget law also introduces an early warning system and mandatory credit rating for governments issuing bonds.

But it needs to be complemented by rules to deal with sub-national insolvency. Document 43 issued by the State Council in October 2014 is a step in the right direction. It calls for the clarification of local governments and creditors' responsibilities in the case of default. Clear and predictable rules would anchor expectations about the cost of local government insolvency, promoting hard budget constraints. It would minimize inefficiency and moral hazard in sub-national borrowing.

The current intergovernmental fiscal system also needs to be revisited (Canuto and Lio, 2013). In particular, China should ensure sub-national governments have sufficient taxing powers and own revenue sources to address their large spending responsibilities. This would reduce moral hazard and common pool problems. An ideal tax instrument would be a recurrent value-based property tax. Markets and public accountability—whereby residents and taxpayers have a say over the quality of service delivery—will do a better job of ensuring optimal resource utilization than top-down transfers from the center (Appendix VIII).

VI. ILLUSTRATIVE SCENARIOS

We consider two scenarios for the trajectory of China's nonfinancial private sector debt: an “old growth” model and a “proactive” scenario.

Old growth model scenario

Under the current model growth remains investment- and credit-heavy and inefficient. Soft budget constraints encourage further misallocation of resources. In this scenario growth continues to moderate over the medium term as investment continues to become less efficient. Inflation remains low, as reflected in negative producer price inflation, especially in overcapacity sectors. Credit growth remains high as growth relies on more credit while credit efficiency declines. Evergreening of loans is more likely than write-offs in an environment of soft budget constraints and implicit government guarantees. (Appendix IX).

This model is not sustainable, with vulnerabilities rising over time. Economic growth remains high in the near term as it is still supported by quasi-public sector investment and rapid credit growth. With a continued high investment ratio, output growth will be temporarily higher compared to the proactive scenario. But the same amount of credit will generate less and less output over time and TFP growth will slow further due to rising inefficiencies. Growth will slow down to close to 5 percent by 2021 and credit-to-GDP ratio will rise to more than 210 percent of GDP by 2021 from about 160 percent in 2015. Moreover, the probability of a financial crisis and disruptive adjustment in such scenario is elevated, and growth can dip to below 3 percent if adjusted by the probability of such a scenario (see a fan chart below).

Proactive scenario

A new growth model assumes comprehensive corporate debt restructuring and efficiency gains. It encourages restructuring, especially in overcapacity sectors. Debt write-offs

combined with the recapitalization of banks allow banks to redirect lending to more profitable sectors. Structural reforms in the form of corporate restructuring and hardening of budget constraints reduce financial resources transferred to sustain inefficient sectors. As a result, new credit becomes more efficient and credit intensity starts to decline making growth less dependent on credit.

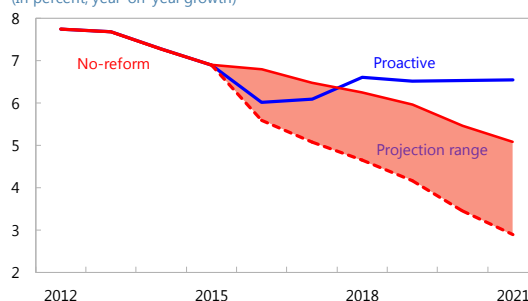
The proactive strategy would have short-term costs, but more than offset by longer-term gains. Both elements of proactive corporate deleveraging will have a negative impact on growth in the short term. Debt write-offs and associated corporate restructuring will inevitably give rise to labor layoffs and weigh on consumption, and the slowdown in investment to bring down credit intensity will also drag on growth. However, with cleaner bank balance sheets, more efficient allocation of investment, and redirection of laid-off workers to more productive sectors, TFP growth will rise after the transition period and potential growth will be boosted. The simulation shows that growth in the proactive scenario will temporarily dip to 6 percent by 2017 (which would be 5½ percent excluding some assumed high-quality fiscal stimulus), but pick up afterwards to 6½ percent in the medium term. In the meantime, the credit/GDP ratio will stabilize in the short-term while gradually declining to more sustainable levels in the medium term (Figure 2).

A policy cushion is needed to prevent disorderly adjustment. Bank recapitalization is needed to avoid disruption in credit supply due to weakened capital positions, and provision of social security to laid-off workers is needed to smooth their consumption during the transition period. Combined fiscal costs of these policies are still affordable given fiscal space, and this proactive strategy generates better debt dynamics than the continuation of the old growth model.

VII. CONCLUSION

Corporate credit growth in China has been excessive in recent years. International experiences suggest that credit booms of this size increase the risk of slower growth or a disruptive adjustment. The current credit boom in China is largely related to the large rise in corporate sector investment after the GFC. In particular, the credit-financed large construction boom has resulted in overstocking in the real estate and overcapacity in related upstream industries. Investment efficiency has fallen and the financial performance of corporate has deteriorated steadily, affecting asset quality in financial institutions. Potential “debt-at-risk” is estimated to be about 15½ percent of the total corporate loan portfolio as of end-2015, which could yield estimated potential losses of about 7 percent of GDP.

GDP Growth: Illustrative Scenarios
(In percent, year-on-year growth)



Sources: CEIC Data Company Ltd.; and IMF staff estimates.

Note: For the no-reform scenario, the upper bound refers to growth absent a crisis, while the lower bound refers to growth in the hard landing scenario adjusted by the probability of such a scenario.

The authorities recognize the problem, but appear to be still searching for a comprehensive, proactive, strategy. The current approach is selective in addressing the overcapacity problem, and in particular does not tackle financial implications. And both operational and financial restructuring appear to rely on mergers and acquisitions, which will likely be insufficient to promote financial discipline.

A comprehensive strategy is urgently needed. Risks appear high but manageable if the problem is addressed promptly, but the window is closing quickly. We argue for a proactive, comprehensive, approach, relying on several interrelated elements: identifying companies in financial difficulties, proactively recognizing losses in the financial system, burden sharing, corporate restructuring and governance reform, hardening budget constraints. Together with supporting policies—enhancing the legal and institutional framework, supporting displaced workers, facilitating market entry, and reforming local government finances—the strategy would allow China to reduce leverage, rein in vulnerabilities, and return to a strong and sustainable growth path over the medium term.

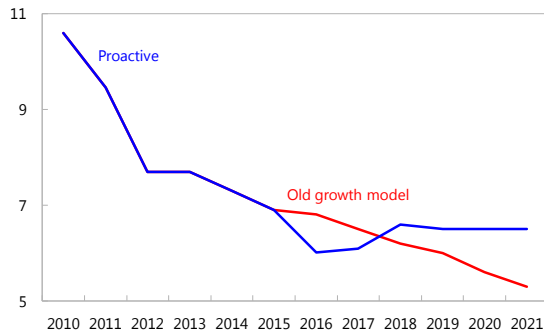
The proactive strategy would trade off short-term economic pain for larger long-term gain. The short-term growth slowdown is mainly driven by output and employment cuts in overleveraged and overcapacity industries. This, however, gradually gives way to higher production and employment as labor is reallocated to more productive sectors, partly to services. The reallocation produces higher and more sustainable growth in the future, with less investment and credit, but higher TFP growth. The proactive strategy has short-term fiscal costs from the recapitalization of banks and support to laid-off workers. But the old growth model still produces worse public debt dynamics because of inefficiencies driving GDP growth lower, and attempts to boost it through fiscal and quasi-fiscal support.

Figure 2. China Deleveraging Scenarios

Growth stabilizes at a strong pace in proactive scenario...

GDP Growth

(In percent, year-on-year growth)

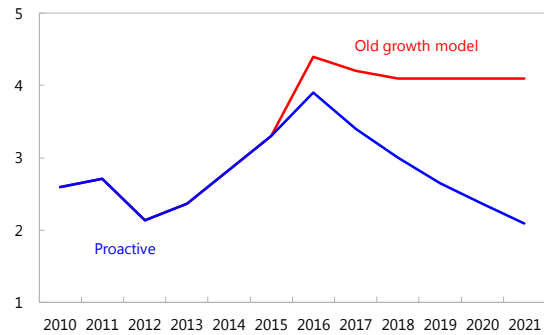


Sources: BIS, WEO; and IMF staff estimates.

...and less credit intensive...

Credit Intensity

(New credit per unit of additional GDP)

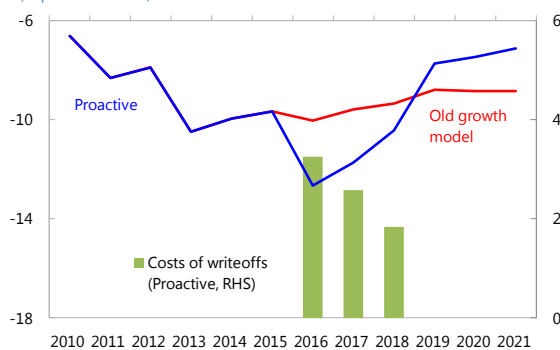


Sources: BIS, WEO; and IMF staff estimates.

Fiscal balance adjusts faster after one off cut...

Fiscal Balance

(In percent of GDP)

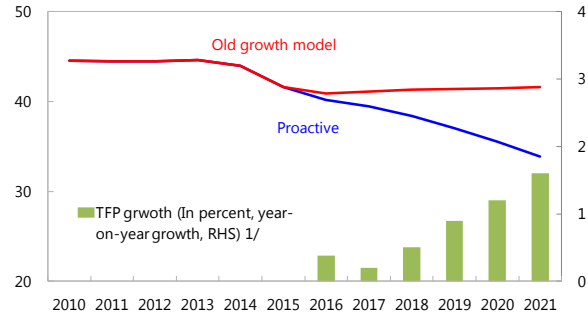


Sources: CEIC Data Company Ltd.; and IMF staff estimates.

...is less investment intensive...

Investment Ratio

(In percent of GDP)



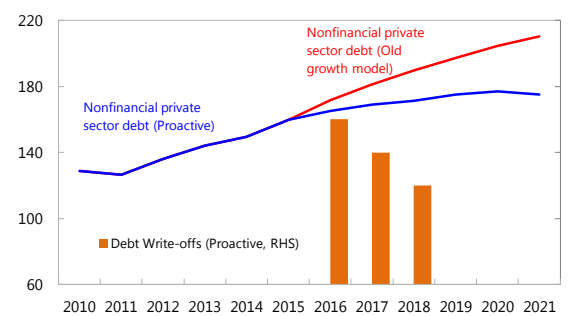
Sources: BIS, WEO; and IMF staff estimates.

1/ Difference between proactive and no-reform model.

...stabilizing debt dynamics...

Nonfinancial Private Sector Debt 1/

(In percent of GDP)



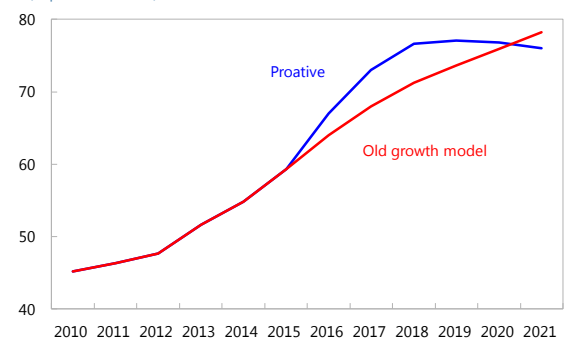
Sources: BIS, WEO and IMF staff estimates.

1/ Excluding LGFV borrowings.

...stabilizing public sector debt.

Public Sector Debt

(In percent of GDP)



Sources: CEIC Data Company Ltd.; and IMF staff estimates.

Appendix I. Using a Pilot Program to Restructure State-Owned Enterprises

Corporate debt restructuring should be implemented according to fundamental principles, namely, the rule of law, the observance of a market-based approach, the need to safeguard financial stability, and the avoidance of moral hazard. These principles could inform a pilot involving a small number of state-owned enterprises operating in a sector where there is clear evidence of overcapacity, and experiencing diverse degrees of distress. The pilot could be based on a predominantly out-of-court approach, conducted under the oversight of a SOE Restructuring Task Force consisting of the relevant institutions for corporate debt restructuring (such as the Ministry of Finance, PBC, CBRC, CRSC, NDRC and SASAC).

Once the target enterprises are selected, the pilot could proceed according to the following steps:

- Step 1: Determining fair value of claims held by major creditors of the Target Enterprises. The CBRC would assess the fair value of the loans extended by the major creditors to the target enterprises, reflecting the losses in the banks' books.
- Step 2: Two alternatives: (a) sale of the loans, at fair value, to a newly established asset management company (AMC); or (b) establishment of a creditor committee by the relevant Banks. Both approaches require important preconditions, such as "safe harbors" for bank officials for restructuring or selling the loans; an appropriate governance framework for the AMC; and the participation of independent restructuring professionals. In any case, both approaches should be guided by the principle of value maximization.
- Step 3: Restructuring/resolution of the Target Enterprises. The AMC/Creditor Committee would assess the viability of each target enterprise, comparing its going concern value and its liquidation value. For the non-viable enterprises, the most effective means of liquidation would be selected (including sale of business units). For enterprises that are viable, rehabilitation plans would be prepared by expert restructuring professionals. These plans should include both financial components (debt reduction, debt rescheduling and debt/equity conversions) and operational components (changes in business, sales of assets, change of management and layoffs). Creditors would have the ultimate decision on the plan, either through a vote under a master creditor agreement or by voting and obtaining the confirmation of the courts according to the insolvency law.
- Step 4: Transfer of claims/ownership. Upon approval of the rehabilitation plan, the AMC would arrange for the sale of the restructured claims and/or of the newly acquired equity. Under the creditor committee approach, the claims could be retained but any equity would be sold. Equity could be sold to private investors or to SOEs with the appropriate governance mechanisms.
- Step 5: Utilizing the restructuring fund. Given the shortcomings of the current unemployment insurance system, the restructuring fund would be used to assist laid off workers (transitional income support, targeted labor redeployment services and assistance in self-employment and other job creation programs).

Appendix II. Modalities of Debt Restructuring

Corporate debt workout could rely on various mechanisms and instruments:

- *In-court vs. out-of-court.* Recognizing losses, developing policies to allocate them, and tightening budget constraints would encourage market-based debt workouts. Extensive use of out-of-court debt restructuring is necessary in situations where the capacity of the courts is limited (Garrido, 2012). In such cases, several countries reacted by creating enhanced out-of-court restructuring mechanisms/frameworks (Korea, Thailand, Indonesia, and Malaysia), or by introducing procedures with minimal court intervention (Spain, Portugal, Ireland, Slovenia; see EC Recommendation, 2014). In China, the capacity of the courts is also constrained. An enhanced out-of-court mechanism would allow for flexibility, while ensuring a degree of consistency in restructuring practices. The out-of-court mechanism should be based on structured workout principles, regulatory suasion to require all banks to sign on to the principles (including, if appropriate, master creditor agreements and arbitration clauses), and incentives and disincentives to promote the active participation of debtors and creditor.
- *Banks vs. AMCs.* Banks may either keep distressed assets on their balance sheets and attempt recovery, or sell them to AMCs:
 - Bank-led restructuring. Banks generally do not have expertise to run or restructure a business, and state-owned banks are susceptible to political pressures. They also have incentives to hide impaired assets to avoid capital charges, and coordination among creditors can be difficult. Still, there are examples of a successful bank-led corporate restructuring. Conditional recapitalization with direct subsidies to restructuring departments of the banks has proved successful in the case of transition economies under similar governance and ownership structure as China (e.g., Poland in the 1990s).
 - AMCs. AMCs can help to dispose impaired assets and/or to expedite corporate restructuring. They can bring specific expertise unavailable in the banks, for instance by leveraging international technical expertise. But governance is key, as cross-country examples show that politically-motivated loans are difficult to dispose by a government agency susceptible to pressure. AMCs are even less successful in corporate restructuring in such cases (Klingebiel, 2000).
 - Are China's AMCs fit for the job? The existing AMCs appear commercially oriented and they have built expertise during the cleanup of the banking system in late 1990s. But their past financial and operational performance is hard to evaluate given heavy policy distortions, such as inflated prices for purchased assets combined with an implicit subsidy through low financing costs. More importantly, despite steady progress in reforming commercial transformation including corporate governance, the experience of the previous bailout suggests that a mechanism should be firmly put in

place to prevent political interference. The newly-established regional AMCs could potentially be more susceptible to such pressures. Ensuring independence and appropriate incentive structure is particularly important given the potential size and character of the new wave of impaired assets (Ingves, Seelig, and He, 2006).

- *Financial instruments.* Converting NPLs into equity or securitizing them are techniques that can play a role in addressing these problems and have been used successfully by some other countries.⁵
 - *Debt-equity conversion.* It can play a role in addressing both bank and corporate balance sheets, as well as provide a means to restructure indebted firm by changing ownership and incentives. But, as discussed above, banks may not have expertise and incentives to proactively restructure the firms, especially SOEs. The ownership creates additional conflict of interest, as banks may keep lending to a now-related party, causing renewed indebtedness and hampering efforts to dispose of equity. Both corporate and banks may be also tempted to convert the assets at an unrealistically high valuation to avoid realizing losses. Key conditions for success include: strict solvency and viability eligibility criteria for corporates; a proactive approach of banks in their role as new equity holders (to support restructuring); limits in scope and time to bank ownership of equity (to reduce conflict of interest and improve incentives); and conversion at fair value, with recognition of losses.
 - *NPL Securitization.* The mechanism moves NPLs to another entity, helping clean banks' balance sheets. The ownership structure of the debtor firm, however, is not directly affected. It does not directly help in corporate restructuring, although the restructuring powers are concentrated with an agent. Key disadvantages, particularly in China's context, are: the domestic institutional investor base lacks depth; it is difficult to create a viable securitization market (as it requires good supporting legislation and well-aligned market incentives); it may transfer risk outside regulated financial sector to entities less able to absorb losses.
- *Distressed debt market.* A more market-based system for resolving distressed debt would facilitate the disposal of NPLs. This may require greater involvement of specialist financial institutions and legal workout agencies, and would also benefit from better functioning collateral auctions to help increase recovery values. Existing AMCs can also play a role in jump-starting the market for distressed assets, provided they have the right incentives and independence.

⁵ See IMF Technical Notes and Manuals, 2016/05: <http://www.imf.org/external/pubs/cat/longres.aspx?sk=43876>.

Appendix III. China's 1998-2003 Previous Restructuring Experience

China undertook a substantial bank and corporate restructuring in late 1990s and early 2000s.

Banking Restructuring and Capitalization

On the banking sector, by 1997, about a quarter of loans at the large state-owned commercial banks were nonperforming, leaving potential losses greater than banks' net worth. The restructuring on banks began in 1998 through a series of measures, including capital injections, write-offs, and transfers of bad loans to asset management companies. The restructuring spanned for nearly a decade and required more than RMB 2.5 trillion of fiscal resources (equivalent to near one-third of 1998 GDP) (Ma, 2006).

The restructuring appeared costly and did not fully address the moral hazard problem. Four asset management companies (with each affiliated with one of the four largest state-owned banks 'Big Four') were established to dispose nonperforming loans in banks. This involved a transfer of RMB 1.4 trillion in bad assets (about 20 percent of total loans outstanding balance) at face value. The asset management companies had relatively little equity capital and had mostly financed through bond that were issued to the four large banks, paying an interest lower than market rates.

SOE Reforms

The 14th third-plenary meeting in 1993 set the reform agenda to modernize SOE corporate governance. Later in the fifth plenum in 1995, the strategy of "grasp the large, let go the small" concentrated these efforts in revitalizing large SOEs, while restructuring the small SOEs.

Efforts intensified in 1998, after SOE finances had deteriorated markedly. SOE restructuring policies were accelerated by former Premier Zhu Rongji's reform plan in 1998. Measures such as financial support, layoffs, buyouts, debt-equity swaps, and corporate insolvency were implemented. Unprofitable SOEs were rehabilitated, with some nonviable ones eventually going bankrupt. Millions of SOE workers were laid off—though subsidies were provided for some (Cao, Qian, and Weingast, 1999). Unemployment, by some estimates, rose to double-digit levels. Excess workers were absorbed by the private sector, driven by strong growth including from reform dividends and accession to the World Trade Organization in early 2000s. Meanwhile, a new government agency, State-Administration of State Assets Commission (SASAC), was established in 2003 to manage state assets and exercise ownership rights on behalf of the state.

Despite costs, the reform set China on a strong and sustained growth path for the next decade. The role of the SOEs was scaled back significantly following the reform, though they continued to take up a sizeable share of credit and total industrial corporate assets. For instance, SOEs accounted for 60 percent of urban employment in 1994, but only about one-third in 2000 to less than 15 percent in 2015. The number of SOEs also declined by more than half from 262,000 in 1997 to 116,000 a decade later, even though the number of central SOEs (around 100) was unchanged. As a result, the share of total industrial assets of SOEs dropped from 90 percent in 2000 to about 40 percent in 2015.

Appendix IV. Recent Near-Default Cases

Since mid-2014, there have been more than ten defaults or near defaults by SOEs and private bond issuers in the onshore corporate bond market. The recent episodes are mostly no surprise to the market given the sharp commodity price drop and severe overcapacity in certain sectors. On the contrary, some have been widely expected. Below is a brief review of a few cases as of May, 2016:

- Chaori Co., a private solar energy manufacturer, defaulted on its coupon payment of RMB 89.9 million in March 2014. This is the first default case in China's corporate bond market. Chaori later went through a debt restructuring, with outstanding payments on the bonds to be partly paid by the company and two guarantors including a national AMC.
- China Shanshui Cement Group, a major private cement producer, defaulted on a bond payment of RMB 2 billion in April 2015. The debtor subsequently filed for liquidation.
- Baoding Tianwei Group, a subsidiary of a central SOE and a manufacturer of electrical equipments, made the first case of SOE default in the onshore corporate bond market. The firm missed an interest payment of RMB 85.5 million due in April, 2015. Six months later, the company filed for restructuring, and eventually secured a bailout loan from a state bank. The investors started civil litigation.
- Cloud Live, a listed company transformed from a restaurant chain to an IT service provider, made the first case of default on principal payments in April 2015. According to the company's statement, it was short RMB 240.6 million (\$39.2 million) needed to pay back RMB 400 million in debt it sold three years ago. The investors have filed a lawsuit.
- Zhuhai Zhongfu, a major private producer of containers and packaging products, was unable to fully repay principal on its RMB 590 million corporate bonds maturing in May 2015. China Everbright Bank and the Bank of China limited its freedom to spend its capital.
- China National Erzhong Group, a central SOE making smelting and forging equipment for use in power generation and aviation, warned investors about a possible default in September 2015. Consequently, its parent company, China National Machinery Industry Corp (Sinomach), acquired all outstanding bonds from investors, effectively insulating them from losses.
- Sinosteel Co., a central SOE steelmaker, failed to pay interest due in October 2015 of RMB 2 billion (\$315 million). State regulators subsequently stepped in, asking bond holders not to exercise a redemption option and postponing the payment.
- Dongbei Special Steel Group, a local SOE steelmaker, failed to make a series of principal and interest payments on its commercial papers totaling around RMB 1.9 billion (\$292 million) in March and April, 2016.
- Shanxi Huayu Energy, a unit of a central SOE, defaulted on RMB 638 million (\$98 million) due in April, 2016. Another 1.5 billion RMB in bond payments would be

due later this year. The company, however, said that it would pay out on its overdue bonds after receiving a capital injection from its parent company.

- China Railway Material, a central SOE and the nation's largest supplier of railroad construction, requested to suspend trading of its debt instruments amounting to RMB 16.8 billion (\$2.6 billion). The company is seeking debt restructuring.

State intervention has largely been ad hoc. There seems no guideline defining the state's role in SOEs' defaults. NDRC's involvement in the case of Sinosteel is seen as a strong administrative intervention, while the state's role in Baoding Tianwei is more of a traditional financial support by state-controlled financial institutions.

The unprecedented bond defaults, however, have not systemically sparked market turbulence. Yields on five-year triple-A rated corporate bonds still stand close to the lowest level in history, and their spreads over sovereign yields remain narrow, largely reflecting the faith in government bailouts and loose liquidity conditions. Nevertheless, concerns on the rising number of defaults and on limited resources to bail out the troubled debt issuers have been gradually felt, as spreads began to widen, particularly for bonds issued by overcapacity sectors, and a few planned debt issuances were canceled.

Appendix V. Corporate Restructuring in Central and Eastern Europe

Hardening the budget constraint was critically important for successful transition to market economies. Several lessons emerged:

- Several channels for soft subsidies need to be addressed simultaneously: direct subsidies, soft taxation, nonperforming loans, the accumulation of trade arrears between firms, and the build-up of wage arrears (Toth and Semjen, 1998).
- Legislative changes to establish financial discipline are an important step. This includes bankruptcy laws to help enforce private contracts, accounting rules, and financial market regulations. Bankruptcies and liquidations were far less frequent in the Czech Republic than in Hungary or Poland, implying a softer budget constraint in the former.
- Privatization helps harden budget constraints. It is difficult to establish financial discipline with political power and the management of the SOEs tied into a single bureaucratic hierarchy. Empirical studies show that privatizing SOEs generally brought a hardening of the budget constraint (Pohl and others, 1997).
- But privatization per se is not sufficient. In the Czech Republic, Hungary and Poland, private sectors accounted for about three-quarters of production by the second half of the 1990s. However, the number of exits in Poland and Hungary were greater than in the Czech Republic, suggesting harder budget constraints:
- Fragmented ownership does not promote hard budget constraints. The Czech Republic's voucher privatization scheme resulted in fragmented ownership. Assets were concentrated in investment funds that were launched and managed by the still state-owned big banks. The close tie between the firms and the state was not severed, preserving the soft budget constraint (Kornai, 2001)
- Severing the link with state is key. In Hungary and Poland, the private sector expanded mainly through the establishment of new businesses. The privatization of SOEs was largely in the form of sales and there was only very limited free distribution. Assets tended to go to investors with fewer links with the state and fewer expectations of state assistance. Both countries also had higher proportions of outsider owners and lower proportions of insider owners than the Czech Republic. Li (1998) noted that privatization to insiders tends to soften budget constraints.

Appendix VI. Korea's Experience with Corporate and Debt Restructuring

Chaebols' debt-heavy expansion came to an abrupt stop. During the run-up to 1997, profitability and returns on investment declined, leverage grew and interest coverage remained very low. By end-1997, liability-to-equity ratio for the thirty largest chaebols was 509 percent. Simultaneous distress among so many large chaebols was the key concern as Korea's insolvency system was not capable of rapidly rehabilitating a large number of distressed chaebols, and neither Korean's financial system nor the Korean public was prepared for massive financial sector losses.

The government used a multi-pronged approach to facilitate corporate restructuring (Mako, 2002). It included:

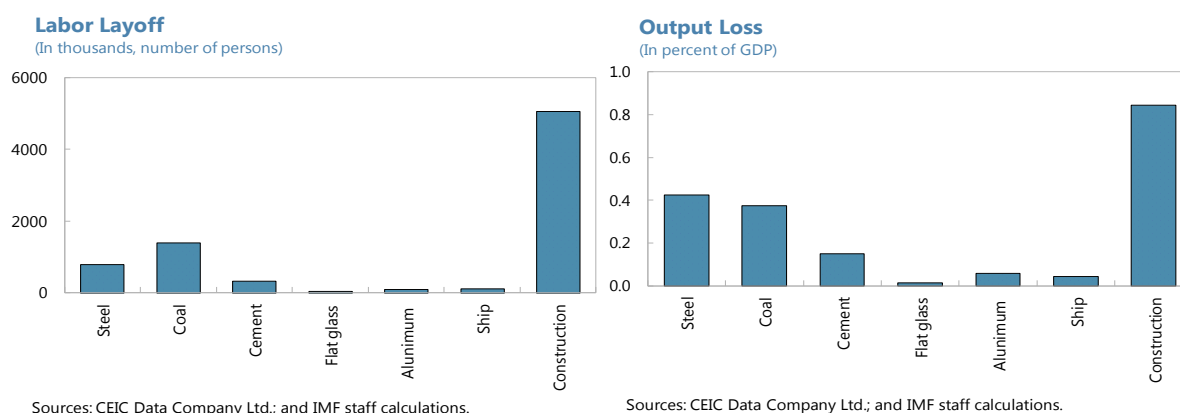
- Encouraging banks (by Financial Supervisory Commission; FSC) to announce a withdrawal of credit, or "exit", from 55 nonviable companies.
- Government support for eight "Big Deals" to consolidate through merger, acquisition, or joint venture businesses in eight sectors suffering from excess capacity.
- With encouragement from the FSC, 210 local financial institutions contractually bound themselves to the Corporate Restructuring Agreement (CRA) and embarked on workouts as an alternative to receivership and uncontrolled bankruptcy avoidance loans.
- A number of important initiatives to promote corporate reform: improvements in financial disclosure and accounting standards; stronger shareholder rights and enhanced corporate governance standards; relaxation of legal constraints on foreign investment; liberalization of merger and acquisition rules; greater latitude for employee layoffs; improved unemployment insurance benefits; more streamlined rules on court-supervised rehabilitation; elimination of domestic cross guarantees; requirements to shed noncore affiliates and reduce leverage; tighter exposure limits on financial institutions; and action against anti-competitive intra-chaebol transactions.
- Building several corporate restructuring vehicles.

Although modest progress has been made, the process did not fully address financial discipline. Oh and Rhee (2002) noted that the total amount of corporate debt remained virtually unchanged even though the liability-to-equity ratios have decreased (for example, from about 400 percent at end-1997 to about 210 percent at end-1999 for manufacturing sector) as corporations paid back the loans by issuing bonds with higher interest rates and rolled them over (debt-to-debt swap). Initially it created virtuous cycle as companies could avoid liquidity problem by issuing corporate bonds, contributing to the prompt recovery of the Korean economy after the crisis. However, the mechanism that produced the virtuous cycle had a critical inherent weakness in that it significantly reduced the chaebol's incentive to restructure. Some chaebol, especially Daewoo—then third largest chaebol—kept on pursuing expansionary strategies financed by bond issues.

Appendix VII. Estimating the Impact of Restructuring

Estimation of the growth and employment impact from exit of nonviable firms includes three parts: the first part considers the direct impact at the sector level; the second part calculates the broader impact including inter-sector linkages and the second-round effect; the third part discusses the phase-in of such adjustment and the net impact on the economy considering labor reallocation to more productive sectors.

- First-round effect.** We identify the share of nonviable firms in each industry as the number of loss making firms divided by total number of firms. This share is then applied to the sector's employment and industrial output to derive the first-round effect on output and employment. While the share in terms of number of firms may not be representative to the share of nonviable assets or employment due to the uncertainty in distribution, sector level capacity utilization rate is used as a cross-check. For the steel sector, given the large SOE dominance, output loss is assumed to be less than the employment cut, reflecting large surplus labor in the sector. For other sectors, output loss is assumed to be in line with the employment cut. The estimates show layoff of 2.8 million in the six overcapacity sectors, and 5 million in the construction sector. Associated output loss is 1.1 percent of GDP for the overcapacity sectors, and 0.8 percent for the construction sector.
- Second-round effect.** The six overcapacity sectors are mostly in the upstream sector, and spillover effect to other sectors are expected to be contained, a coefficient of 1.2 is applied to the first-round effect to mostly capture the impact on consumption from laid off workers (assumes 30 percent of wage cut and 0.6 propensity to consume). For construction sector, inter-sector linkages are stronger: a coefficient of 1.4 is applied to calculate the second-round effects. The estimates suggest output loss including second-round effect may rise to 2.5 percent of GDP.



- Phasing-in the adjustment.** The adjustment is assumed to be phased-in over three years, but front-loaded. The laid-off workers are expected to be gradually absorbed into service sectors, and the net output loss of the economy reflects the speed of labor reallocation and the productivity differential between the old and the new sector. The results show that net impact of overcapacity sector restructuring would be 0.6 percent of GDP loss in the first year, 0.2 percent in the second year, and close to zero in the third year. After the adjustment ends, GDP growth will be boosted by 0.2 percent in the fourth year.

Appendix VIII. Managing Local Government Debt—International Experiences and Principles

Principles: managing local government debt

Ex ante measures

These include fiscal targets for aggregates such as the deficit, debt level, revenue and spending. Balanced-budget rules for subnational governments for example have gained in popularity, especially in large federal countries. These measures can be an important tool for fiscal policy management, but setting targets at the proper level requires careful consideration. For example, there are important trade-offs when setting debt limits for local governments. If thresholds are set too low, the lack of borrowing can limit investment and affect growth prospects. On the other hand, when targets are set too high, excessive local government borrowing can lead to macroeconomic and financial instability. In addition to targets, some central governments also use direct controls to ensure subnational governments' fiscal management is in line with national principles. Examples include the centralization of all government borrowing with subsequent on-lending to subnational entities. Direct control measures can also take more benign forms such as having to request permission or having to justify borrowing from private markets. While direct control measures are not as widespread as fiscal targets, governments tend to rely on them more in times of fiscal strain.

Another set of ex ante tools consist of procedure-based systems that ensure transparency and consistency of local government policies and accountability of managers. Examples include guidelines for reporting and publishing of fiscal accounts and the use of multi-year budgeting to improve fiscal policy coordination and response to shocks and alternative scenarios. Independent auditing of subnational financial accounts is also an important component used in many countries. Several countries such as Mexico require subnational governments to subscribe to a credit rating system in order to access financial markets.

Ex post measures

In addition to ex ante measures, central governments also need ex post measures to deal with subnational government insolvency. Simply relying on ex ante regulations can limit the role of markets in monitoring subnational borrowing, enforcing hard budget constraints and ensuring efficient allocation of resources. There are three key elements to an insolvency procedure for local governments: 1) definition of a trigger for the procedure; 2) provisions to resolve local government debts collectively and to negotiate debt restructuring; and 3) plans for fiscal adjustment to bring expenditure into line with revenue. Ex post measures must also ensure that insolvent subnational governments remain able to deliver essential public services during a debt restructuring procedure. They should also enable subnational governments to eventually regain some level of creditworthiness. An insolvency mechanism must also protect creditor rights so as to reduce borrowing costs and encourage financial market development.

Country Experiences

- Brazil.* Despite having had fiscal targets on the total debt stock and new borrowing of subnational governments—expressed as percentages of revenue—Brazil experienced three subnational debt crises in the 1980s and 1990s. The last episode occurred in 1997, with a federal restructuring of states' debt equivalent to 11.5 percent of GDP. Unlike previous attempts at reducing moral hazard and hardening budget constraints, the central government's restructuring program this time was conditioned on states' fiscal and structural reforms. The Fiscal Responsibility Law which was adopted in 2000 now imposes constraints on the overall level of spending and on budget balances of all subnational governments. It also restrains systemically large categories of spending such as wage expenditure. The central government sets overall limits on the debt level of subnational governments—determined in percent of current revenue net of transfers—and is also in charge of monitoring compliance and enforcing sanctions for local officials and governments. The law also established harmonized rules for budget planning and reporting. Crucially, the reform was effective at increasing transparency and clarifying the costs associated with default, thereby improving the credibility of hard budget constraints on subnational governments.
- India.* In responses to rising debt levels among states, India embarked on a fiscal reform program in the early 2000s. The goal was to control the growth of current expenditures (such as wages and pension) and reform the taxation system (such as moving from a turnover tax to a value-added tax. Importantly, central government on-lending to states was also replaced by market-based financing. Oversight of states' fiscal policy now relies on a combination of imposed and coordinated fiscal rules as well as direct control measures by the central government. For example, the Indian constitution prohibits states from borrowing abroad. Other measures also include the provision under which states with a debt-service ratio in excess of 20 percent are classified as having debt stress, triggering the central government's close monitoring of additional borrowing by the state. Coordinated fiscal rules among states own legislation are now all based on the national Fiscal Responsibility Law, which recommends fiscal deficits below 3 percent of gross state domestic product. Most state laws also require governments to present a medium-term fiscal plan along with the annual budget. Several laws also have led to improvements in disclosure of fiscal risks such as contingent liabilities and other borrowing as well as reporting of any significant changes in accounting policies.
- France.* Unlike Brazil and India, France is a unitary state with a long tradition of centralization. However, two recent waves of decentralization have given more powers to local governments and since 2003, local governments have broad financial autonomy. The management framework of subnational governments' borrowing includes the use of fiscal targets such as a limit on annual debt service, including interest paid on guaranteed loans, of 50 percent of operating revenue. Direct control measures include a prohibition on borrowing for uses other than capital investment and the fact that debt payments are a compulsory expenditure item that must be fully budgeted. In addition, no single borrower

may receive a guarantee in excess of 5 percent of operating revenue; and total guarantees cannot exceed 50 percent of the debt of the entity receiving the guarantee. The central government has also retained a strong supervisory role of local government finances. Ex post measures include the stipulation that local governments cannot go bankrupt and public assets cannot be pledged as collateral. Moreover, if a subnational government becomes insolvent, the central government will enforce fiscal adjustment and facilitate debt negotiations with creditors. Importantly, the central government does not provide any guarantees for local government borrowing, though small exceptional assistance is available to ensure continued service delivery. Local governments can also be placed under central control if they fail to meet the mandated fiscal targets.

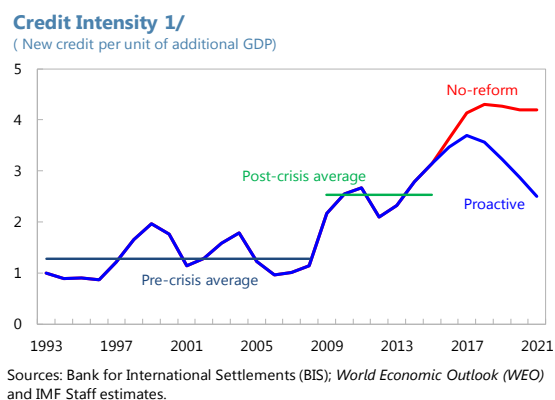
Appendix IX. Projecting Growth and Credit under Different Scenarios

We project growth under two scenarios:

- *Proactive reform path.* This scenario assumes a gradual corporate sector deleveraging coupled with full-implementation of structural reforms, which would lower near-term growth but boost medium-term growth to 6½ percent and stabilize nonfinancial private sector debt to GDP ratio (excluding LGFV borrowings) at 175 percent.
- *Old-growth model.* This scenario assumes continued build-up of investment and credit, and no progress on structural reforms, which would increase near-term growth, but drive down medium-term growth to 5.1 percent. As a result, nonfinancial private sector debt to GDP ratio (excluding LGFV borrowings) rises to more than 210 percent by 2021.

Credit growth in each scenario is projected using two approaches:

- *Credit intensity approach.* Credit intensity is measured as the amount of credit needed for one additional unit of output. Based on this definition, credit intensity in China has risen from a pre-crisis average of 1.1 to a post-crisis average of 2.7. This reflects both the surge in investment ratio and decline in investment efficiency, with large amounts of credit going to over-capacity sectors and loss-making enterprises. In the proactive scenario, with falling investment ratio and improved efficiency, credit intensity is expected to decline to 2.1, while in the old-growth model scenario, credit intensity will remain high with continued excess investment and lower efficiency. Indeed, before the Asian financial crisis, many countries in the region experienced a significant rise in credit intensity, including China (rising from 0.9 to 2). Nonetheless, after the large-scale debt restructuring, credit intensity fell on average to 1.2 for China and other countries in the region.



- *Flow of Funds approach.* This approach projects credit flows required to finance corporate investment (taking into account investment intensity and profitability of the corporate sector), as well as flows within the corporate and household sectors. This allows explicitly linking credit projections with rebalancing and corporate profitability. In the proactive scenario, with the falling investment ratio and improving corporate profitability (reflecting higher productivity growth), external financing needs of firms will gradually fall over time. In contrast, corporate profits will decline further in the no-reform scenario, and more external financing is needed to maintain the high investment ratio, which artificially boost growth in the short-term. The within sector credit flow, especially inter-company lending, is also expected to stabilize in percent of GDP in the reform scenario, but continued to rise if the old growth model continues.

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