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Fiscal Policy and the Government Balance Sheet in China

W. Raphael Lam and Marialuz Moreno-Badia

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Fiscal Policy and the Government Balance Sheet in China
Prepared by W. Raphael Lam and Marialuz Moreno-Badia

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ABSTRACT: In this paper, we present the most comprehensive estimates of China’s government balance sheet to date. Based on these estimates, we show how major shifts in fiscal policy over the last two decades have shaped the health of the public sector prior to the Covid-19 pandemic. We find that, at US\$12.5 trillion, China has the largest stock of financial assets in the world. However, its net financial worth as a percent of GDP—though still higher than the large majority of countries—has declined over the last decade. This trend can be traced back to the turn of the century when China undertook a major restructuring of its state-owned enterprises but left important shortcomings in the intergovernmental fiscal system unaddressed. Compounding these risks, reform momentum stalled in the aftermath of the global financial crisis leading to high leverage and falling profitability among state-owned enterprises.

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“上古結繩而治，後世聖人易之以書契，百官以治，萬民以察，蓋取諸《夬》” 易傳·繫辭下

“People tied knots in ancient times and later used a ledger to record; officials used those records to govern, while the public hold them accountable with such records—that reflects how policies are made.”

Commentaries to the Book of Changes, Confucius, ~500 B.C.

I. Introduction

Over the last quarter of a century, China has proactively used fiscal policy to weather economic shocks. The agile policy responses during this period have been credited with staving off contagion in the Asian financial crisis (World Bank 1999), preventing a sharp downturn from global spillovers during the Great Recession (Wong 2011; Fardoust, Lin, and Luo 2015), and mitigating the economic effects of the Covid-19 pandemic (IMF 2021). On average, China has posted an annual growth rate of 8.4 percent since 1997—the second highest in the world—reflecting economic fundamentals and structural reforms, including on the fiscal front (Wei, Xie, and Zhang 2017). Notwithstanding this remarkable performance, fiscal policy interventions have also created distortions that could have damaging long-term effects on China’s aggregate productivity (Bai, Hsieh, and Song 2016; Zilibotti 2017; Brandt et al. 2022; IMF 2023). Assessing the role of fiscal policy is however fraught with difficulties given the prominence of the broader public sector in the Chinese economy and the reliance on measures outside traditional budgetary envelopes. On the one hand, standard analysis based on flow variables such as the deficit of the budgetary government cannot capture the fiscal impulse nor the fiscal risks associated with the investment and social spending of state-owned enterprises (SOEs), credit extended by state-owned commercial and policy banks, and off-budget borrowing by local governments. On the other hand, solely focusing on stock variables such as debt to assess vulnerabilities ignores the accumulation of productive assets.

This paper provides new estimates of China’s government balance sheet to understand the evolution of fiscal policy over the two decades prior to the Covid-19 pandemic.² In doing so, our analysis offers a more comprehensive view of China’s fiscal vulnerabilities than previous studies that have focused on standard debt and deficit measures. Specifically, we ask four questions. *First*, what is the overall financial situation of China’s general government sector? *Second*, what are the main drivers behind the evolution of the government financial balance sheet? *Third*, are there major vulnerabilities? *Fourth*, to what extent are the trends in China different from other countries?

To answer these questions while ensuring cross-country comparability, we compile the financial balance sheet of the general government following the statistical principles set out in the IMF’s Government Finance Statistics Manual (GFSM 2014). Our analysis relies on official statistical sources and data from the IMF China Article IV consultations staff reports complemented with estimates based on academic research spanning the last two decades to fill data gaps. We also leverage the IMF’s database on public sector balance sheets (see, Alves, De Clerck, and Gamboa-Arbelaez 2020) to benchmark China against other countries. Based on these data, we conduct an event study to assess the impact of major reforms—in particular, the restructuring of public (financial and non-financial) corporations during 1997–2007—undertaken by China compared to similar episodes around the world.

² Data gaps prevent us from estimating the government balance sheet for 2020–22. Specifically, the data necessary to estimate the valuation of equity holdings in SOEs are not available for 2021–22 while data for 2020 is subject to revision. Data on state holding of financial institutions are not directly available either.

Overall, we find that the Chinese government has the highest financial assets in the world, amounting to \$12.5 trillion in 2019. Equity holdings of financial and nonfinancial public corporations account for the largest share and, at 68 percent of GDP, are about three times higher than the average country in our sample. The valuation of these assets is, however, subject to uncertainty because not all financial assets are liquid, and they are subject to revaluation risks such as in the context of rising interest rates. The net financial worth is estimated at 7¼ percent of GDP which is at the top 15 percentile of the distribution of countries for which data are available. The evolution over time, however, reveals increasing vulnerabilities as net financial worth has been on a steady decline since its peak in 2007 mainly driven by rising local government debt, weak SOE performance, and falling infrastructure returns. The bulk of the decline is explained by subnational governments though there is likely significant variation across provinces reflecting divergence in fiscal performance.

Our analysis suggests that the evolution of China's government financial balance sheet has been shaped by three major policy shifts. First, the restructuring of public corporations in the early 2000s resulted in a strong rebound in asset valuation and a sharp turnaround in the government's net financial worth. Our empirical results suggest that China's performance was unprecedented compared to similar episodes around the world. Whereas the net financial worth remains 10 percentage points of GDP below normal levels in the average country five years after the start of a restructuring, it was 20 percent above in the case of China. Second, the investment-led stimulus that started at the onset of the global financial crisis (GFC) and continued long thereafter has been associated with the gradual decline of the net financial worth despite rising financial assets. This largely reflects the proliferation of off-budget financing vehicles that allowed local governments to circumvent the budget constraints. Third, pre-pandemic efforts to deleverage and tighten off-budget borrowing failed to bring the deterioration of the net financial worth to a halt. Moreover, rapid expansion of SOEs without associated improvement in profitability represent an emerging vulnerability going forward.

Our study is closely related to the literature on government balance sheets. First compilation attempts started in the 1930s (Finanzministerium 1933, Dickinson and Eakin 1936), but insufficient data continued to be a major hurdle over several decades. By the late 1980s government balance sheets were available only for a handful of advanced economies—see, Goldsmith and Lipsey (1963) and Goldsmith (1982) for the United States; and Revell (1966) and Bryant (1987) for the United Kingdom. A new impetus to data collection efforts began in the aftermath of the emerging market crises of the 1990s as economists became increasingly aware of the importance of systematically assessing balance sheet vulnerabilities across sectors (Allen et al. 2002; Traa and Carare 2007). More recently, IMF (2018a) explore the central and general government balance sheets for a broad sample of advanced, emerging, and low-income countries. A few studies have also looked at the intertemporal public sector balance sheets, which include not just the actual stock of assets and liabilities but also the net present values of all future revenues and expenditures (Brede and Henn 2019; and Cabezon and Henn 2020).

Studies on China only started over a decade ago prompted by the need to assess sovereign risks at a time when local government debt was on the rise. In response to these concerns, the Chinese Academy of Social Sciences (CASS) established the national balance sheet research group in 2011, compiling China's sovereign balance sheet in parallel to two other domestic research groups. These efforts resulted in the publication of multiple studies (initially covering the period 2000–2010) which found that the financial position of the public sector was generally healthy (Yang et al. 2012; Ma, Zhang and Li 2012; Cao and Ma 2012; Li, Zhang, and Chang 2018). Xu and Zhang (2014) also

construct a public sector balance sheet for China based on a flow-based method for the period 1998–2012, concluding that government debt was manageable.

Our paper expands on these studies across several dimensions. First, we present the most comprehensive estimates of China’s government financial balance sheet to date. This allows us to capture earlier structural reforms as well as the period immediately before the Covid-19 pandemic which was ignored in earlier studies. Second, our methodology follows the GFSM 2014, estimating market values to the extent that data are available. This results in significant adjustments to the valuation of SOEs and general government debt relative to previous work. Finally, this is the first study to benchmark empirically China’s balance sheet against other countries undergoing SOE reforms.

The rest of the paper is organized as follows. Section II examines what is the relevant perimeter of government to understand fiscal policy in China. Section III discusses the main challenges—consolidation and valuation—to compile China’s government financial balance sheet and the methodological approach taken in this paper (Appendix 3 documents extensively the underlying assumptions). Section IV gives a snapshot of the composition of China’s general government balance sheet and makes cross-country comparisons. Section V analyzes the evolution of the net financial worth over time and its correlation with large scale fiscal operations. Section VI conducts an event study to compare the restructuring of public corporations in China with similar episodes around the world. Section VII provides some concluding thoughts.

II. What Is the Relevant Perimeter of Government?

Theoretically, the balance sheet can be compiled for any level of government. However, to provide useful information, it should ideally cover all entities that materially affect fiscal policy. In China, the relevant perimeter is the broader public sector as economic development and macroeconomic stabilization are often pursued by relying on entities that fall beyond the budget of the central and local governments. In what follows we review the role of these entities in recent years to understand their importance.

A. Economic development

- *Local government entities outside the budget.* The National People’s Congress sets out successive five-year plans for the government’s broad long-term agenda including goals or targets for growth, research and development, urbanization, poverty reduction, and environmental protection in addition to detailed reform priorities.³ Recent five-year plans have resulted in significant investment in public infrastructure (Sadeghian, White, and D’Arcy 2013). The implementation of those investment plans falls within the purview of the central and local governments, as well as public agencies or entities. While this reflects the necessary joint efforts to meet development goals, the responsibilities across entities are not always clear nor are they commensurate with the available fiscal resources. Given the highly decentralized nature of public investment and financial constraints faced by local governments, there has been an extensive

³ The 14th Five-Year Plan for the period 2021–25 does not include an explicit annual GDP growth target, but it lays out a 15-year goal to raise per-capita output levels to that of a moderately developed country by 2035. The overall objective is to focus on higher quality growth, strengthening employment, building a high-quality education system, and improving care for the elderly and the social security system (IMF 2021).

reliance on local government financial vehicles (LGFVs)—corporate entities outside the budget—to finance infrastructure investment.⁴

- *State-owned enterprises (SOEs)*. The massive restructuring of SOEs in the late 1990s and early 2000s aimed at reducing their footprint on the economy while improving their performance. Nonetheless, as China’s growth slowed in the aftermath of the GFC, SOEs were increasingly used to support investment and deliver public services, playing an important role in the overall development strategy (Batson 2016). Although direct fiscal subsidies to cover SOE losses have been largely phased out since 2007, few exemptions remain in the oil and fuel industries (Lam and Schipke 2017). A more common form of indirect support, however, has been through sectoral tax incentives (Zhang et. al 2016) and derogations from obligations such as local fees and permits by local governments (IMF 2020). More recently, SOEs have increasingly been involved in industrial policy including domestic and overseas investment projects, partly financed by government-guided funds (Lardy 2019).

B. Macroeconomic stabilization

As in many emerging market economies, China has proactively used fiscal policy for macroeconomic stabilization since the turn of the century. The counter-cyclical fiscal stimuli were partly financed with higher debt or other on-budget funding, including cash withdrawal, land proceeds from stabilization and government-managed funds, and profit transfers from public corporations to the budget.⁵ However, some policies were undertaken outside budgetary fiscal envelopes, including investment and social spending by SOEs, credit extended for policy purposes by state-owned commercial and policy banks, and off-budget borrowing by local governments. Therefore, a distinctive feature of macroeconomic stabilization in China is that headline fiscal deficits, which hovered in a narrow range of 0–3 percent of GDP during 1997–2019, do not fully capture the fiscal impulse through the business cycle. We review these issues in more detail in Section V.

III. Balance Sheet Estimation—Methodological Considerations

To capture the fiscal landscape, recent studies have partially adjusted China’s fiscal deficits and debt to go beyond the budgetary central and local governments and to cover off-budget borrowing (IMF 2014; Bai, Hsieh, and Song 2016; Lardy 2019; Lam, Rodlauer, and Schipke 2017). Partly reflecting data constraints, these studies do not consider the broader public sector (including the role of SOEs) and miss the asset side of the equation, which are important in assessing the sustainability of public finances. Estimates on public balance sheet are available, albeit subject to a large degree of uncertainty and data limitations (CASS 2019). In what follows, we discuss challenges in compiling the public sector balance sheet for China and describe the methodological approach in the paper.

⁴ According to Wong (2013), except for a small temporary spike in the late 1990s and in 2008–2010, the share of budgetary inputs has been less than 5 percent of total investment.

⁵ The headline fiscal deficit reported in the budget reflects the General Funds account on a cash accounting basis. The Ministry of Finance also maintains other on-budget accounts, including: (i) the stabilization fund within the general fund account; (ii) the government-managed fund primarily for land sale proceeds and acquisition cost; (iii) the SOE fund for budget transfers to and from SOEs under the Ministry of Finance’s supervision; and (iv) the social security account for the social security contributions and payments.

A. Challenges

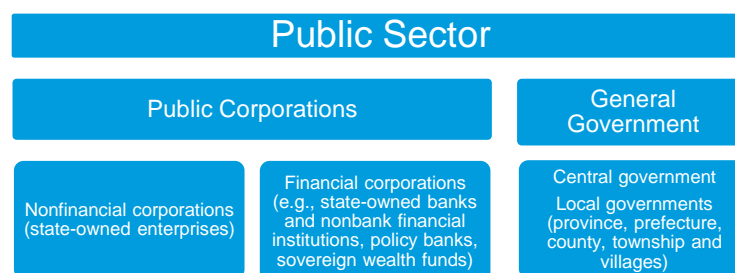
According to international statistical standards, the compilation of the public sector balance sheet requires measuring the assets and liabilities of the public sector at market or fair value and consolidated across government levels including public corporations (Figure 1 and Table 1). Previous attempts at compiling China's public sector balance sheet have been marred by the economy's administrative complexity. To get a sense of these difficulties, it is important to recall that China has an extraordinarily large number of public entities—over 700,000 public institutions and another 217,000 nonfinancial SOEs in 2019 (China Statistical Yearbook 2019; China Public Finance Statistical Yearbook 2020)—and multiple government layers with varying degrees of financial and policy autonomy (Appendix 1). But the most important challenge is the dearth of data:

- (1) **Consolidation.** A consolidated set of accounts for the public sector requires aggregating all flows and stock positions within the Government Finance Statistics (GFS) analytical framework, followed by the elimination of all flows and stock positions that represent relationships among the units or entities being consolidated (*Government Finance Statistics Manual* 2014, §3.152). Two types of consolidation are necessary: *intra-sectoral* (i.e., within a particular subsector, for example consolidation of accounts within the central government) and *intersectoral* (i.e., between subsectors, for example, consolidation of crossclaims between the general government and public corporations). The main challenge in the context of China arises from the sizable government's equity holdings of SOEs and financial institutions and the widespread use of off-budget LGFV borrowing—which has blurred the distinction between general government and the wider public sector (Mano and Stokoe 2017).⁶ As outlined below, the lack of data on cross-holdings makes it impossible to do any meaningful consolidation:
 - *Central and local governments.* The Chinese authorities publish information about central and local government debt (excluding LGFV liabilities) and the state equity holdings of nonfinancial SOEs on a regular frequency. They also provided a one-time release of government financial assets for 2017 (National People's Congress, 2018; State Council of People's Republic of China 2018a, 2018b).
 - *Public financial and non-financial corporations.* Official data include the assets and liabilities of nonfinancial SOEs on an intra-sectoral consolidation-basis but do not include public financial corporations. No data are available on the cross-holdings of claims between public financial and nonfinancial corporations and between public corporations and the government sector.

⁶ For SOEs, data sources are primarily from the Public Finance Yearbooks. While individual listed SOEs may publish financial statements and notes to the financial statements that contain details of cross holdings among entities, those details are not available for many large but nonlisted SOEs. A peculiar characteristic of the industrial conglomerates is the existence of significant cross-holdings. For example, in the automobile sector, state-owned auto companies are consolidated into six conglomerates, the largest of which is the Shanghai Automobile Industrial Group (SAIC). The group is owned by the Shanghai municipal government and has a controlling share of the equity of the original state-owned auto company (SAIC Motor Co. Ltd.), a listed company, and other companies. The listed company in turn owns 50 percent of the equity of the new joint venture companies with foreign automakers General Motors and Volkswagen. Such cross-holdings and private participation in SOEs also raise challenges in identifying state-owned firms in the industrial surveys released by the National Statistical Bureau (Hsieh and Song 2015).

- (2) **Valuation.** All flows and stock positions should be measured at market prices which refer to current exchange or marketable value—the value at which goods, services, labor, or assets are exchanged or else could be exchanged for cash whether currency or transferable deposits (*Government Finance Statistics Manual 2014*, §3.107). Market prices are readily available for some assets and liabilities that are traded in active markets, mainly certain financial assets, and their corresponding liabilities (for example, government cash deposits and debt securities). For assets and liabilities that are not marketable or are less frequently traded, it is necessary to estimate a valuation that approximates market prices. This includes the valuation of financial assets—such as the equity holdings of non-listed SOEs—but also of non-financial assets—such as land, infrastructure, and natural resources owned by the government. Estimating market values is particularly challenging for the physical nonfinancial assets because: (i) land owned by the general government changes across official data releases, depending on the land use classification; (ii) land prices vary significantly across regions and land use rights and the relevant data are scarce; (iii) there is no sound and verifiable valuation of infrastructure investment (partly reflecting the complex ownership structure—often owned jointly by the government, SOEs, or private corporates—and the lack of data on investment returns). Therefore, although sizable, it is not possible to obtain a fair and consistent valuation of nonfinancial assets over time in China (see Appendix 2 for a detailed discussion).

Figure 1. Scope of Public Sector in the GFSM Framework



Source: Government Finance Statistics Manual (GFSM) 2014.

Note: Central banks are classified as part of the public sector in the GFSM but are excluded here for the ease of presentation. Figure A.1.1 shows the number of SOEs at the central and local government levels.

Table 1. The Balance Sheet Framework: General Government and Public Sector

		General Government Balance Sheet		Public Sector Balance Sheet	
		Assets	Liabilities	Assets	Liabilities
Public sector	General government	Financial assets Nonfinancial assets	Debt Net financial worth Nondebt Net worth for general government	Financial assets Nonfinancial assets	Debt Net financial worth Nondebt Net worth for general government
	Public corporations			Public corporation assets • Public financial corporation assets • Public nonfinancial corporation assets	Public corporation liabilities • Public financial corporation liabilities • Public nonfinancial corporation liabilities Net worth of public sector

Source: Authors' illustration.

Note: The orange text indicates the net worth (differences of assets and liabilities) in each category.

B. Estimation Methodology

In light of the methodological challenges described above, this paper takes a pragmatic approach along two dimensions. First, we focus on the general government rather than the public sector. This limits the need for consolidation with (*intersectoral*) and within (*intra-sectoral*) the public corporate sector and related measurement errors arising from the lack of information about cross-holdings between SOEs and state-owned banks. Nonetheless, the focus on general government would not remove the need to consolidate between central and local governments, but the cross holdings are likely limited given most linkages are through annual intergovernmental transfers rather than through crossholdings of accounts receivables and payables. Second, we only cover the *financial* items in the government balance sheet, thereby sidestepping the issue of valuation of nonfinancial assets for which estimates can range widely depending on assumptions (Appendix 2).

Despite the narrower focus, the financial balance sheet of the general government is still a useful device to assess China's fiscal policy and potential vulnerabilities:

- (1) Our estimates account for the government's participation in SOEs and state-owned financial institutions (through equity holdings) and the off-budget borrowing of local governments through financing vehicles. By including the equity holdings, one can get a more accurate measurement of the fiscal impulse as well as the impact of the broader public sector in the government's balance sheet.
- (2) Data are more widely available for this narrower perimeter of government, which allow an analysis on the impact of large-scale fiscal operations over a longer time horizon (1997–2019) on the government's net worth.
- (3) Because of the narrower focus, we have more granular information and can disentangle the evolution of the government's balance sheet in both central and local governments over time.

In our estimation, we are guided by the statistical framework in the *Government Finance Statistics Manual* (2014) subject to data availability. Below we describe the main statistical principles we applied in our analysis (for a detailed description of data sources and assumptions, see Appendix 3).

Definition of General Government

The general government consists of resident institutional units that fulfill the functions of government as their primary activity (*Government Finance Statistics Manual* 2014, §2.76). As such, it should include the central and subnational governments (all administrative units and most public service institutions), social security funds, and nonfinancial public corporations and financial public corporations whose activities are not market-based (so-called "nonmarket producers"). The determination on whether a corporation is a nonmarket producer should be based on economic principles rather than the legislative status of the entity (see *Government Finance Statistics Manual* 2014, §2.64-2.75). A detailed assessment on a case-by-case basis is not feasible in China given the large number of corporations. Thus, for the purposes of our analysis, we do not include SOEs or public financial corporations within the general government. However, we do include most LGFVs as they are different from SOEs in that they are owned or controlled by the government and carry public policy objectives and are typically not run on a commercial basis (Appendix 4 illustrates the differences and the linkages between SOEs

and LGFVs). We also include various public funds, such as the Special Construction Fund (SCF), and government-guided funds (GGF).⁷

Estimation of Financial Assets and Liabilities

The main components of the general government financial balance sheet (classified by financial instruments) include currency and deposits, monetary gold and SDRs, debt securities, loans, equity and investment fund shares, insurance and pension (assets or entitlements in the liability side), financial derivatives, and other account receivables or payables. Data availability dictates the coverage of these financial assets and liabilities as follows (Table 2):

- *Financial assets.* We include the fiscal deposits of government departments and organizations, government’s equity holdings of the national security fund, SOEs, and state-owned banks and nonbank financial institutions. For the valuation of equity holdings, we use various sources (Garcia-Herrero, Gavila, and Santabarbara, 2006; Ma, 2006; Yang, Zhang, and Tang, 2017) to account for the implications of the bank recapitalization by the government on its balance sheet and adjust for nonperforming assets using data from China Public Finance Yearbooks (see Appendix 3). For example, the write-off of nonperforming assets results in a loss of government equity on public banks, while the recapitalization of public banks results in higher government liabilities (bond issuing) and raises the government holdings of the public bank.
- *Financial liabilities.* Our analysis includes official (central and local) government debt as well as estimated off-budget borrowings—debt of LGFVs and other leveraged-government funds classified within the perimeter of the general government (see IMF 2014 and Mano and Stokoe 2017).

The *net financial worth* is then calculated as the difference between financial assets and liabilities. As such, it shows the extent to which the general government’s liabilities are covered by financial assets and, therefore, is a measure of fiscal solvency.

Table 2. Main Components of China’s General Government Financial Balance Sheet

General Government Financial Balance Sheet	
Financial assets	Debt
Cash deposits	Official government debt
Equity holdings of public corporations	Augmented concept off-budget
- National social security funds	
- SOEs	
- state-owned banks and financial institutions	Net financial worth

Note: Net financial worth is a balancing item calculated as the difference between financial assets and liabilities. Due to data constraints, some instruments may not be available on both assets (debt securities, accounts receivables) and liabilities sides (accounts payable, pension liabilities).

IV. Composition of the Government Balance Sheet

Based on our newly assembled database, we can now sketch the composition of China’s general government balance sheet as of 2019 and make cross-country comparisons using as benchmark a

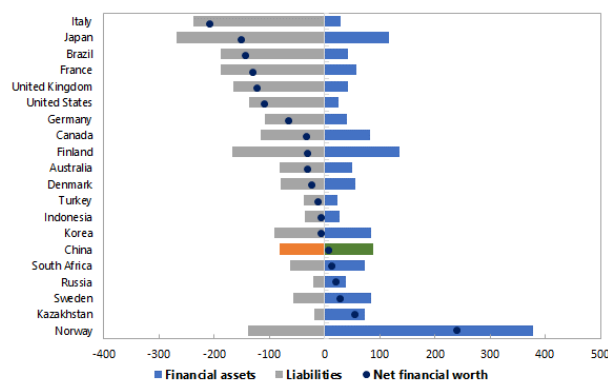
⁷ The government-guided funds are typically investment funds dedicated to supporting industrial-policy goals. By mid-2018, a total of 1,940 government guidance funds had been established. See details in Mano and Stokoe (2017).

sample of 50 countries drawn from the IMF’s database on public sector balance sheets (see, Alves, De Clerck, and Gamboa-Arbelaez 2020). A first insight of our analysis is that China had a relatively strong government balance sheet compared to peers prior to Covid-19. Several features stand out:

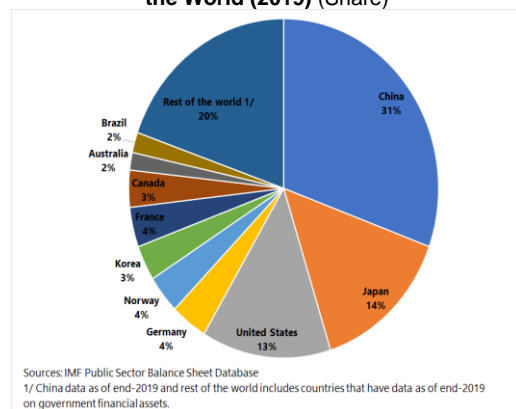
- At 7 percent of GDP in 2019, China’s net financial worth in percent of GDP is sizable compared to peers. Taking the latest available benchmark data, China is at the top 15th percentile of the distribution, surpassed by resource-rich countries such as Norway and Kazakhstan (Figure 2.1).
- The general government’s financial assets amounted to US\$12.5 trillion in 2019, the highest in the world (Figure 2.2). This reflects the government’s sizeable equity holdings of (both financial and nonfinancial) public corporations which is estimated at 68 percent of GDP and accounts for over three-quarters of the government’s financial assets. By comparison, the average size of the equity and investment funds shares of other countries in our sample is estimated at about 22 percent of GDP.
- Another important component of assets is the holdings of currency and deposits, which have more than doubled in percent of GDP over the last two decades (Li and Zhang 2017; and Li, Zhang, and Chang 2018), reaching a staggering 18 percent of GDP by 2019 (Figure 3.1). The sizable amounts under currency and deposits, which are on average over 10 percentage points of GDP higher than comparators, suggest room for improving cash management and better recording of related account payables.
- The remaining financial assets come from the national social security funds amounting to 2.4 percent of GDP in 2019. By comparison, financial assets from insurance, pension, and standardized guarantee schemes in the benchmark countries (for which data are available) amount to just 0.1 percent of GDP on average. Return on equity of the national social security funds has ranged from -2.3 to 14 percent over the last two decades (Figure 3.2). These large swings reflect the economic cycles in China and the global economy, with subdued returns during the restructuring of SOEs and in the immediate aftermath of the GFC.
- Financial liabilities—which include debt and off-budget borrowing and are estimated at 81 percent of GDP in 2019—are roughly the same as the average of the benchmark comparators.

Figure 2. General Government Net Financial Worth Across Selected Economies

1. General Government Financial Balance Sheet for Selected Countries (Percent of 2019 GDP)

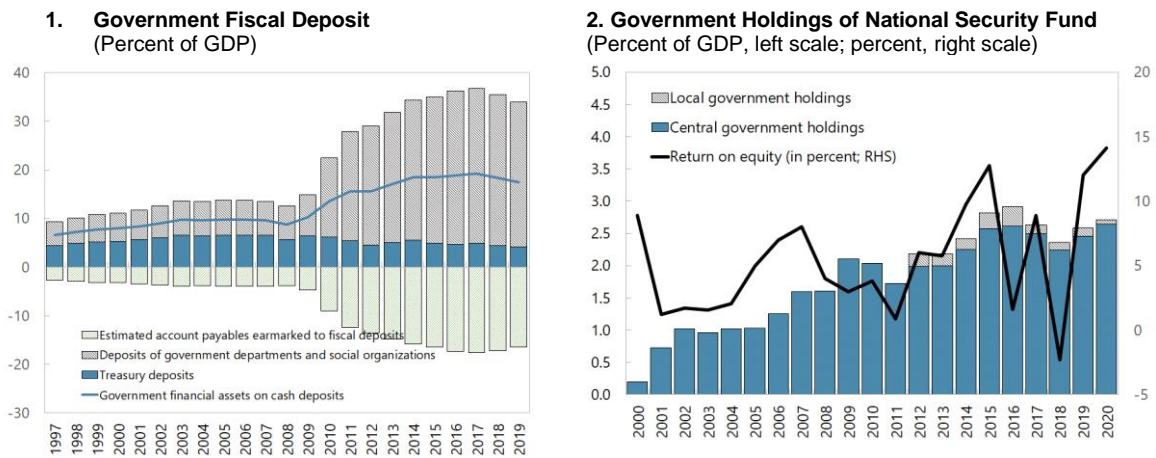


2. General Government Financial Assets across the World (2019) (Share)



Sources: Alves, De Clerck, and Gamboa (2020); IMF Public Sector Balance Sheet Database; and authors’ estimates. 1/ Data as of end 2019. The chart includes selected large economies and commodity exporters. A negative net financial worth means that the financial liabilities exceed the financial assets measured at market values (to the extent that data are available).

Figure 3. General Government Financial Assets



Sources: CEIC and authors' estimates.

Source: National Council for Social Security Fund.

It is not possible to make a one-to-one comparison between our estimates of net financial worth and those of other studies given differences in the institutional coverage, methodology, and data availability. Notably, official sources exclude off-budget LGFVs borrowing from government debt while other studies consider it a contingent liability to align the accounting with the “*de jure*” status. Focusing on financial assets (where coverage is comparable), our estimates are about 15 percent of GDP lower than those of the Ministry of Finance and the Chinese Academy of Social Sciences (Li, Zhang 2017; Li, Zhang, Chang 2018; and Yang, Zhang, and Tang 2017) (Table 3). An item-by-item comparison reveals the following:

- The valuation of SOEs is the main source of discrepancy. Our estimates are about 15 percent of GDP lower than other sources. This is because we consider: (i) the undistributed losses and nonperforming assets in the early 2000s; and (ii) the net present value of expected future profits, going beyond the book value of government equity holdings of SOEs (which is the metric used by official sources and other studies). The advantage of using net present value is that it is a better approximation of market valuation when equity holdings are not fully marketable and SOEs assets are not entirely liquid (see, Appendix 3).
- Differences for other financial assets are smaller. First, our estimates of the government’s equity holdings of financial institutions are aligned with the data released by the Ministry of Finance, which cover both bank and nonbank financial institutions.⁸ CASS valuation is smaller reflecting the exclusion of nonbank financial institutions. Also, financial assets of government administration units and social organizations (which comprise mostly currency and deposits) are very similar to the Ministry of Finance but lower than CASS as the latter includes the gross amount before accounting for potential account payables.

⁸ Given the dearth of publicly available data, we are unable to fully adjust the valuation of banks and nonbanks financial corporations to account for returns on their portfolio as well as nonperforming assets. Therefore, estimates of the equity holdings of financial institutions are very close to the book value reported in official statistics. These omissions may be important in light of recent research highlighting potential losses arising from underperforming loans and assets (Lardy 2019).

Table 3. Estimates of General Government Balance Sheet Components

(in percent of GDP as of end-2017 unless otherwise specified)	Ministry of Finance			Authors' estimates of government financial assets	CASS estimates of government financial assets (2017) 2/
	Total assets	Total liabilities	Government financial assets: equity holding of public corporations		
State-owned enterprises	221	142	60	46	61
Central government	92	62	19	15	23
Local government	129	80	41	31	38
State-owned financial institutions	290	261	19	20	11
Central government	179	n.a.	12	15	11
Local government	79	n.a.	4	5	0
Other unspecified 1/	32	n.a.	3	-	
Government administration and social organizations	36	11	25	22	37
Central government	5	1	4	3	23
Local government	31	10	21	19	14

Sources: Ministry of Finance; CASS; Yang and others (2019); and authors' estimates.

1/ The MOF published data for the central and local governments but they do not add up to the total. The latest year for which data are available from the Ministry of Finance is 2017. Numbers expressed in percent of 2017 GDP.

2/ The 2017 CASS estimates were expressed in percent of 2017 GDP.

V. Public Wealth over Time

The evolution of China's government financial balance sheet prior to the Covid-19 pandemic has been shaped by three major policy shifts, each demarcating a distinct period. The first one, spanning from 1997 to 2007, was marked by the restructuring of SOEs and state-owned banks. The second period covers 2008 to 2014 and is characterized by the scaling-up of public investment at the onset of the GFC, relying to a large extent on LGFVs. The last period started in 2015 and was defined by attempts to reigning in local government off-budget borrowing, while relying on them to meet policy objectives and growth targets. We review each of these periods and related policy interventions in turn and interpret their impact on China's public finances through the lens of the government's balance sheet.

A. The restructuring of public corporations (1997–2007)

Background

To understand the sweeping changes introduced by the Chinese authorities during this period, we need to step back in time to get a long-term perspective. When market reforms started in the late 1970s, SOEs accounted for 78 percent of total industrial output and 75 percent of urban employment (Cao, Qian, and Weingast 1999). Initially, reform efforts focused on granting more autonomy to SOEs while gradually lifting restrictions on the entry of nonstate enterprises (Bai, Liu, and Tao 2006). From 1985, state-owned commercial banks (SOCBs) also started offering loans to SOEs, limiting the need for the government to fund their operations (Ho and Young 2013). Despite improved productivity, the initial reforms did not lower subsidies or increase profits as the financial performance of SOEs suffered in the face of intense competition from the nonstate sector and the loss of monopolistic power (Groves et al 1994; Putterman and Dong 2000; Xu 2011). To avoid layoffs and the closure of factories, state-owned banks were asked to bail out loss-making SOEs (Zhu 2012), and inflation shoot up into the double digits as money supply expanded to finance that debt (Brandt and Zhu 2000). By the

second half of the 1990s, over two-third of SOEs were in losses with an average return on equity of -4 percent (see Appendix 3).

Faced with significant financial strain, some local governments started privatization of local SOEs without the explicit authorization of the central government (Garnaut, Song, and Yao 2006).⁹ However, reform progress was slow with very few bankruptcy cases moving forward, owing in part to scale, complexity, and vested interests. In 1994, there was a fundamental shift in reallocating fiscal revenues and expenditures responsibility between central and local governments. A new bankruptcy framework was also introduced with the aim to expedite the restructuring process. In 1995, the central government reformulated its reform strategy under the policy of “grasping the large, letting go of the small” (*zhuada fangxiao*). The two-pronged approach entailed: (1) the consolidation of the largest SOEs into large conglomerates in a few strategic industries that remained under state control;¹⁰ and (2) the privatization or closure of the smaller SOEs (Hsieh and Song 2015). With the endorsement of the Chinese Communist Party’s 15th Congress in 1997, the restructuring gained momentum and the number of SOEs went down sharply, from 262,000 in 1997 to 116,000 a decade later, though some new SOEs have been established in the interim. An important part of the reform was the establishment of the State-owned Assets Supervision and Administration Commissions (SASACs) in 2003 to improve the management of assets and governance of SOEs.

On the other side of the coin, sustained losses among SOEs crippled the banking sector and nonperforming loans (NPLs) reached unprecedented levels by the mid-1990s.¹¹ Compounding the NPL problem, banks had limited discretion to provision for bad loans and the allowed charges were small, leaving them with limited buffers to absorb losses (Mo 1999). As a first step to deal with weakness in the financial system, “policy banks” were created in 1994 to take over the financing of development projects, thereby freeing SOCBs from government mandates. Nonetheless, with limited government resources devoted to SOE restructuring, banks were initially compelled to continue supporting loss-making SOEs, hindering their ability to operate on a commercial basis and stifling their profitability (OECD 2002, Luo 2003). As for restructuring, the authorities took a phased-in approach to deal with the legacy bad loans, initially focusing efforts on the big four banks and only later covering the rest of the financial sector. As a result, the recapitalization and clean-up of NPLs proceeded in separate waves spanning for nearly a decade (OECD 2005). In addition, the banking sector was gradually liberalized—allowing private and foreign participation (e.g., IPO listings in the stock market)—and financial regulation and supervision strengthened (Garcia-Herrero, Gavila, and Santabarbara 2006).¹²

⁹ Zhucheng—a city in Shandong province where more than two-thirds of SOEs were in the red with losses equivalent to 18 months of local fiscal revenues—was among the first regional privatization cases.

¹⁰ As an example, five large industrial groups were created to consolidate many local state-owned steel manufacturers, of which three were owned by the central government and the remaining two are owned by local provincial governments.

¹¹ Information on NPLs is limited as most banks had their own system of classification before 1994 and there were ceilings set up by the central bank as to the maximum amounts that could be classified (Lardy 1998). The high degree of uncertainty is illustrated by the broad range of estimates from 20 to 45 percent of assets (see, Bank of International Settlements 1999; Lou 2000; and Brehm and Macht 2005).

¹² Among other measures, the China Banking Regulatory Commission was established in 2003 and tasked with banking supervision. In parallel, local provincial branches of the PBC were dismantled and replaced with nine

(continued...)

By 2007, the state-owned sector has undergone a structural transformation. The unprecedented scale of these reforms is illustrated by a few numbers:

- *SOEs*. Between 1998 and 2007, more than two-thirds of operating industrial SOEs were privatized or shut down (Berkowitz, Ma, and Nishioka 2017). The SOE share of industrial value-added declined by more than half and over 30 million workers were laid off (Naughton 2016) reducing the share of SOEs in urban employment to less than 15 percent of total employment. By some estimates, unemployment rose to double-digit levels (see, Giles, Park and Zhang 2005; Knight and Xue 2006; World Bank 2007) although the effect was dampened somewhat by job creation in the private sector (Wei, Xie, and Zhang 2017). Overall, labor productivity of surviving SOEs and privatized firms converged to that of private firms by 2007 (Li and Putterman 2008; and Hsieh and Song 2015) partly reflecting allocative efficiency gains (Deng et al 2007; Hsieh and Klenow 2009). Nonetheless, some argue that improvements in profitability among SOEs were partly due to the monopolistic power they enjoyed in capital intensive industries and their preferential access to credit from state banks (Song, Storesletten and Zilibotti 2011; Megginson, Ullh and Wei 2014; and Wei et al 2016).
- *SOBs*. Reforms implemented during this period significantly strengthened financial soundness and resulted in improved profitability (McGuinness and Keasey 2010). As of 1997, the estimated net worth of the four largest banks was only about 3 percent of assets (Lardy 1999). The capital ratio of the banking system was still a low 2.5 percent in 2005 but it had climbed up to 8.1 percent by 2007 (IMF 2011). Credit quality also experienced a sharp turnaround with the NPL ratio going steadily down to 1.1 percent by end-2010. The low levels of NPLs not only reflected the aggressive disposal of bad loans (through sales to Asset Management Companies) and some improvements in risk management but also strong credit growth. Following the public listing of the largest banks and the opening-up of the financial system, the government scaled down its equity stake in the financial system. Nonetheless, much of the banking sector remains partly state-owned, as is much of the banks' corporate client base (SOEs).

Fiscal impact and the government's balance sheet

The restructuring of public corporations was accompanied by a "proactive" fiscal policy stance, leading to an initial deterioration of the public finances.¹³ The fiscal stimulus started in 1998 against the backdrop of the Asian financial crisis. Over the next five years, the government continued its counter-cyclical fiscal policy to revitalize the financial sector and advance SOE reforms while mitigating the drag on output in the wake of the banking crisis. These operations often involved drawdowns of assets, transfers to asset-management companies at face value, and capital injections by the central bank outside the perimeter of the general government. As a result, headline deficits widened only marginally and debt remained broadly flat, underscoring the significant gap between the size of the impulse and what was recorded in budgetary accounts. To illustrate these differences,

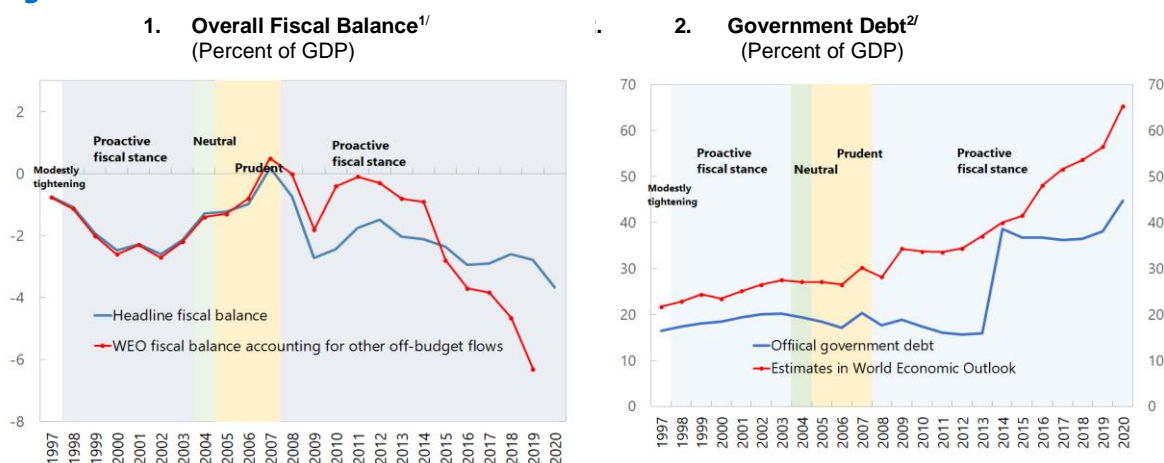
branches (each covering several provinces) and the appointment of local bank officers was centralized (Zhu 2012). In addition, the banking regulator prohibited local governments from providing guarantees on loans except those approved by the State council.

¹³ In their annual work report, the authorities characterize fiscal policies as prudent, proactive, or neutral, which may not directly map into a change in the cyclically-adjusted primary balance—the more conventional measure to assess the fiscal policy stance.

it is instructive to compare standard fiscal aggregates with the changes in the government balance sheet during this period:

- Fiscal aggregates.** Between 1997 and 2002, the general government expenditure increased by 5.7 percent of GDP though the primary deficit only widened by ½ percentage points aided by higher revenues (Figure 4, panel 1). Fiscal resources were partly used to mitigate the impact of reforms through the social safety net and the reemployment of laid off workers. The fiscal balance bottomed out at -2.4 percent of GDP in 2002, improving gradually and reaching a small surplus by 2007. All in all, the budgetary debt went up by just 4 percent of GDP in the decade since 1997 (Figure 4, panel 2). However, accounting for off-budget operations, the increase in debt topped 8½ percent of GDP. This reflects the RMB 660 billion cumulative tailored placements of government debt to banks for long-term projects during 1998–2003 (averaging 1 percent of GDP per year), which in turn mobilized bank credit and other social capital of a total scale of RMB 3.3 trillion (24 percent of 2003 GDP) (Lou 2019).¹⁴

Figure 4. China: General Government Overall Fiscal Balance and Debt



Sources: Chinese Ministry of Finance; and IMF *World Economic Outlook Database*.

1/ The overall fiscal balance and government debt refer to general government level (including both central and local governments). Headline fiscal deficits as reported in the budget refers to the General Funds account on a cash accounting basis. The shaded areas refer to the description of fiscal policy direction in the annual Government Work Reports announced in March each year.

2/ Explicit government debt refers to the official government debt reported by the Ministry of Finance. In 2014, the government recognized 22 percent of GDP stemming from LGFVs borrowing as part of the general government debt. The debt series in the World Economic Outlook includes the explicit government debt as well as staff estimates of part of the off-budget debt incurred by local governments (see IMF 2018b for details).

- Balance sheet.** Like the fiscal accounts, the government’s net financial worth went from a negative position in the late 1990s into positive territory by the mid-2000s although the orders of magnitude are much larger. Our estimates indicate that the net financial worth declined by over 20 percent of GDP before reaching a trough in 2001 (Figure 5.1). The turnaround was no less impressive, with net financial worth reaching a staggering 30 percent of GDP in 2007. Although fiscal deficits (and the associated accumulation of debt) did play a role, the biggest

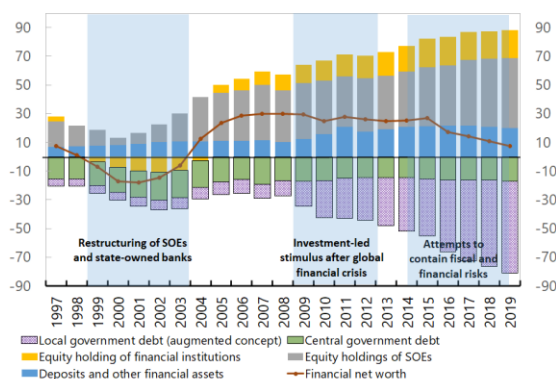
¹⁴ In 1998, the government issued RMB 270 bn special bonds, of which RMB100bn (1.2 percent of 1998 GDP) were government bonds directly placed to state-owned banks and another RMB 100 bn bank loans for infrastructure projects. Infrastructure projects included hydro-power infrastructure, national highways, environmental protection, railways, airports, warehouses, and electricity grids in rural regions.

impact on the government’s balance sheet came through changes in the valuation of equity holdings of SOEs and state-owned banks (Figure 5.2):

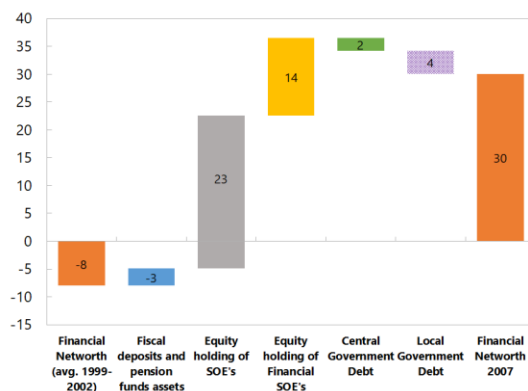
- (1) *SOEs*. By the late 1990s, non-performing assets accounted for about 30 percent of the nominal value of equity. As a result, the valuation of SOEs in 2000—at 11 percent of GDP—was about two-thirds that in 1997. Nonetheless, as the forceful restructuring of SOEs proceeded, nonperforming assets declined, and profitability improved. By 2007, despite the divestment of ownership, the government’s stake had risen in value to 39 percent of GDP.
- (2) *SOCBs*. At the early stages of restructuring, banks were compelled to continue supporting loss-making SOEs, resulting in the erosion of their capital base. Thus, the value of the government’s equity participation turned negative in 2000, reaching a trough in 2002 with the accumulated losses in net financial worth amounting to over 10 percent of GDP. Capital injection to the largest banks (six of the seven commercial banks) amounted to around RMB 4 trillion, split among the general government, the central bank, and private/foreign investors. The cost of restructuring to the general government (excluding the central bank) is estimated at 11 percent of 2005 GDP, largely from writing off its equity stake in the largest commercial banks and transferring nonperforming loans (amounting to RMB 1.4 trillion) to state-financed asset management companies (Table 4).¹⁵ This includes the RMB 270 billion special government bond direct issuance in 1998 (first item in Table 4) to recapitalize the four largest state-owned banks. Government bonds were issued to establish the China Investment Corporations (CIC) in September 2007. Despite the magnitude of these operations, official debt did not rise much partly because the central bank expanded its balance sheet and public agencies outside the general government issued bonds (Ma 2007).

Figure 5. Estimates of General Government Financial Balance Sheet

1. Financial Assets and Liabilities
(Percent of GDP)



2. Contributing Factors for Changes in Net Financial Worth 1999-2007
(Percent of GDP)



Sources: CEIC; China Public Finance Statistical Yearbooks; and authors’ estimates.

¹⁵ Part of the operation was also done through investment funds at the central bank (under SAFE).

Table 4. Bank Recapitalization Cost Estimates

Date	Measures	Financing	RMB billion	in percent of 2005 GDP	Estimates in the general government	Remarks:
1998	Special government bonds were issued (RMB 270 billion) for equity injection of the largest four state-owned commercial banks.	The central bank reduced reserve requirements (from 13 to 9 percent) to release bank liquidity for the purchase of the bonds.	270	1.4	270	
1999-2001	Transfer (at the book value) of RMB 1.4 trillion worth of nonperforming loans from banks to the asset management companies.	NPL purchase financed 55 percent by AMC bonds and 45 percent by PBC credit. Estimated AMC's net cash recovery of 20 percent	1,400	7.4	910	Assuming a 35 percent cash recovery rate and the total amount was spread across 3 years.
2000-05	Capital injection and the clean-up of balance sheet at rural credit cooperatives (RMB 440 billion) and city commercial banks (RMB 36 billion). In addition, private shareholders wrote off their equity.	The central bank issued RMB 168 billion special interest bills without taking equity stake. Remainder of the restructuring costs were covered by local governments.	476	2.5	308	The central bank bills were excluded in the coverage of general government. The remaining amount would enter the government balance sheet, assuming it was spread equally over the years.
2001-2006	Pre-provision of net earnings by banks based on forbearance measures.	Financed by banks themselves.	320	1.7	0	
2002-2006	Divestment of state share in commercial banks.	Foreign investors take equity stakes or purchase new shares at a premium estimated at RMB 30 billion.	30	0.2	0	Equity participation from investors and assuming the fiscal impact was reflected in the budget rather than below-the-line financing operations.
2003-2004	Equity injection of US\$60 billion into three of the largest four state-owned commercial banks.	Financed by foreign exchange reserves by the central bank. A state-owned investment vehicle (Huijin) was set up in 2003 to receive funding from the central bank.	496	2.6	0	Operations by the central bank outside the perimeter of general government.
2003-2004	Write off of equities in large state-owned banks (US\$22.5 billion each in China Construction Bank and Bank of China, and US\$15 billion in Industrial and Commercial Bank of China) amounting to a total of RMB 375 billion; a loan loss of RMB 246 billion of ICBC was recognized.	Financed by special purpose receivable accounts at commercial banks issued by MOF by installments, including through future dividends. MoF recognized as a loss all its equity in CCB and BOC but only 50 percent in ICBC.	616	3.3	616	assuming the total cost was spread evenly over the years.
2004	Recapitalization of Bank of Communications (RMB 35 billion)	Hybrid financing by MoF (RMB 7 billion), Huijin (RMB 3 billion), National Social Security Fund (RMB 10 billion), HSBC (RMB 15 billion).	35	0.2	17	Equity participation from private banks and central bank (Huijin Ltd) excluded.
2004-2005	Transfer (at a discount) of RMB 780 billion worth of NPLs from CCB, BOC and ICBC to their AMCs	Loss of RMB 400 billion from the transfer covered by the central bank. In addition, asset management companies funded their acquisitions through central bank credit.	400	2.1	0	
2008	Bank recapitalization of Agricultural Bank of China.	Financed by China Investment Corporation and Central Huijin Ltd.	130	0.7	0	
Total			4,173	22.1	2,121	

Sources: Sources: Ma (2006); Garcia-Herrero, Gavila, and Santabarbara (2006); and authors' calculations.

Notes: SOCB: state-owned commercial banks; AMC: asset management companies; PBC: People's Bank of China; MoF: Ministry of Finance; CCB: China Construction Bank; BOC: Bank of China; ICBC: Industrial and Commercial Bank of China; RCC: Rural Credit Cooperatives.

B. The scaling-up of domestic public investment (2008–2014)

Background

By the end-2007, state-banks have been partly privatized and listed in stock exchanges and the financial performance of SOEs improved, boosting the government's balance sheet. Against this backdrop, China announced a massive fiscal stimulus program in the wake of the GFC in November of 2008. The most important component was a fiscal package of RMB 4 trillion (amounting to about 11 percent of annual GDP), to be spent by 2010. The stimulus was perceived as playing a key role in avoiding the recession from getting worse by some (Krugman 2010, Wen and Wu 2019), while others saw it as a relaxation of budget constraints that had a lasting impact (Bai, Hsieh, and Song 2016). By some estimates, half of the stimulus was planned for public infrastructure projects and one-quarter on repairs and maintenance. The investment-to GDP increased substantially by 5 percentage points of GDP in 2009–10. Along with the fiscal stimulus, monetary policy was eased including though multiple reductions of required reserve ratios, and cuts in official benchmark interest rates resulting in a remarkable credit expansion aimed at increasing lending to the real economy. Credit growth, however, disproportionately favored state-owned firms and firms with lower average product of capital, reversing the process of capital reallocation toward private firms initiated in the previous decade (Cong et al 2019).

In practice, the stimulus involved only a modest cumulative fiscal expansion (as measured by the headline fiscal deficit) of 2 percent of GDP. The rest was mostly financed through the off-budget relaxation of local government financial constraints, which were encouraged implicitly through regulatory changes.¹⁶ Initially, Chinese local governments financed the additional spending through bank loans but when faced with big rollovers in 2012 they resorted to nonbank debt financing. The empirical literature has also found evidence that those provinces with greater bank loan growth experienced more municipal corporate bond issuance during 2012–2015, as well as more shadow banking activities including trust loans and wealth management products (Chen, He, and Liu 2020).

The relaxation of budget constraints on local governments was very effective in paving the way for the large-scale fiscal stimulus. While local governments were formally prohibited under the 1995 budget law to borrow, typical arrangements would be for a local government to transfer the ownership of land (government asset) to an LGFV, which would use the land as collateral to borrow from banks or capital markets (see Appendix 4, IMF 2014; State Council 2010).¹⁷ In this way, local governments were allowed to bypass the 1995 budget law while the central government did not have to show up an increase in debt in its own balance sheet (Bai, Hsieh, and song 2016). In many cases, local governments provided guarantees on LGFVs' debt and shared the responsibilities to service debt. The LGFVs expanded in numbers and more importantly in terms of their borrowing. The state

¹⁶ About 70 percent of the stimulus was financed off-budget (RMB2.8 trillion out of a total 4 trillion).

¹⁷ LGFVs are numerous in China but do not have unique consistent classification criteria. The National Audit Office identified 7,170 LGFVs in its 2014 report but did not disclose the names. Publications by the China Banking and Insurance Regulatory Commission indicated 11,566 LGFVs. The Ministry of Finance used the NAO list but has expanded the list in its 2018 investigation. Some consider these LGFVs as a special type of state-owned enterprise (Liang and Liu 2019).

involvement may have reduced market discipline and created soft budget constraints (IMF 2011). When accounting for off-budget borrowing, government debt rose by 21 percent of GDP during 2008–2013.

The sizable scaling up of infrastructure investment could have generated returns higher than the borrowing cost, thereby increasing the net financial worth if projects were commercially viable. However, emerging evidence from individual LGFVs suggest that the returns on investment declined steadily over time, and on average, were below the interest cost. The gap also widened during 2010–15, which suggested pressures on the government net financial worth unless those investments brought significant externalities on social returns (Figure 6, panel 1).

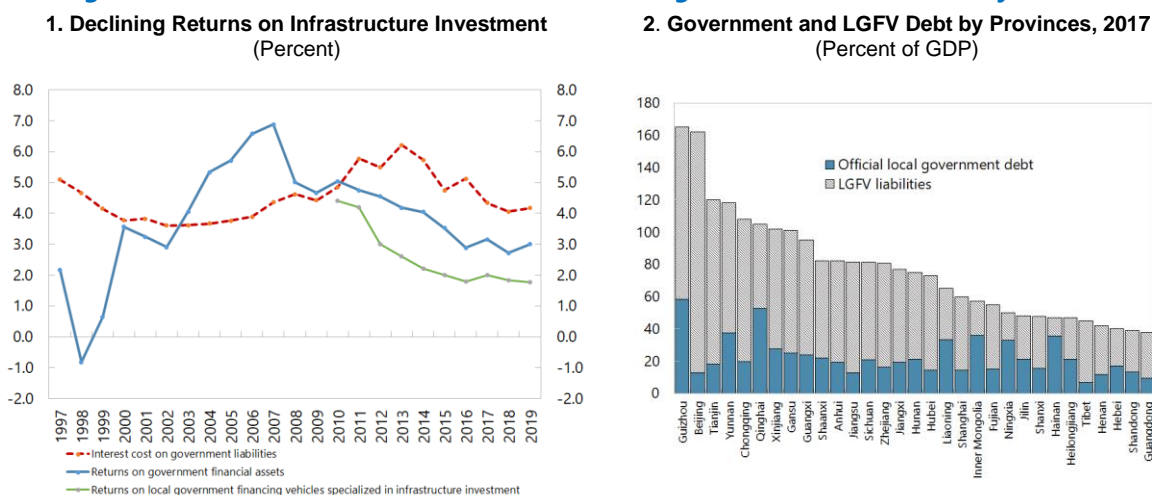
Inter-governmental fiscal imbalances are at the root of this increase as local governments faced persistent revenue shortfalls relative to their spending obligations. Given formal borrowing was prohibited until the new budget law was in place in 2015, many provinces resorted to alternative sources of funding including LGFVs (Bai, Hsieh, and Song 2016; Lam, Wei, and van Eden 2017). Nonetheless, there is wide disparity in debt levels across provinces, partly because of different levels of development and investment needs. Intergovernmental transfers are in general not sufficient, particularly for those less-developed regions that face more severe revenue shortfalls (Wang and Herd 2013). About a quarter of provinces had combined local government and LGFV debt exceeding 100 percent of their GDP, while one third of them—mainly in the coastal areas—had combined debt less than 50 percent of GDP (Figure 6.2).¹⁸ In general, provinces that relied heavily on public investment for growth and development have seen the highest debt share of GDP, particularly in the southwest and northeast regions.

In addition to the LGFVs, SOEs also expanded to support the economy during 2008–13 with the objective of: (1) meeting policy development goals—including domestic macroeconomic stabilization and financing the real estate sector and infrastructure investment (Deng et al 2015); and (2) supporting the development strategy abroad (NDRC 2016; Scissors 2019). As a result, asset levels expanded by 45 percentage points of GDP. While SOEs recorded positive net profits at the aggregate level, the returns on assets have stayed very low and somewhat on a declining trend. A large share of SOEs (over a third) have incurred losses, amounting to a total of 1½ percent of GDP per year. Profitability among provincial-level SOEs has been weaker than central SOEs. Provinces with less profitable SOEs also tended to have higher revenue-spending imbalances (Figure 6.2), underscoring the importance of SOEs as a source of fiscal revenues through taxes, fees, and dividend payoffs. The rapid expansion of SOEs may have also led to unintended consequences by crowding out some domestic private activity (Lardy 2019; Huang, Pagano, and Panizza 2020) and increasing overseas exposures (Horn, Reinhart, and Trebesch 2019; Scissors 2019), thereby raising vulnerabilities particularly after the pandemic outbreak. Notably, reforms of SOEs stalled after 2007, with less privatization and a slower growth in labor productivity of SOEs. Despite efforts to advance SOE reforms announced in the 2013 Third-Plenum reform agenda, the creation of new SOEs continued at roughly the same rate as pre-GFC. By end-2015, about 10 percent of SOEs were estimated to be nonviable zombie companies (Lam and others 2017). Typically, zombie firms pay fewer taxes, receive a

¹⁸ Some local governments may face a more than proportionate stress over time because of their high debt levels and continued revenue shortfalls. There is a considerable uncertainty concerning the default risks of LGFV bonds and local governments' debt servicing capacity.

greater number of subsidies, and have better access to financial markets, crowding out healthy firms and distorting resource allocation (Shen and Chen 2017).

Figure 6. Returns on Local Governments Financing Vehicles and Profitability of SOEs



Sources: CEIC; WIND database; China Public Finance Statistical Yearbooks; and authors' estimates.

Fiscal impact and the government's balance sheet

As in the previous period, the massive scale of the stimulus cannot be traced in the headline fiscal accounts, but its long-standing impact can be analyzed through the government's balance sheet.

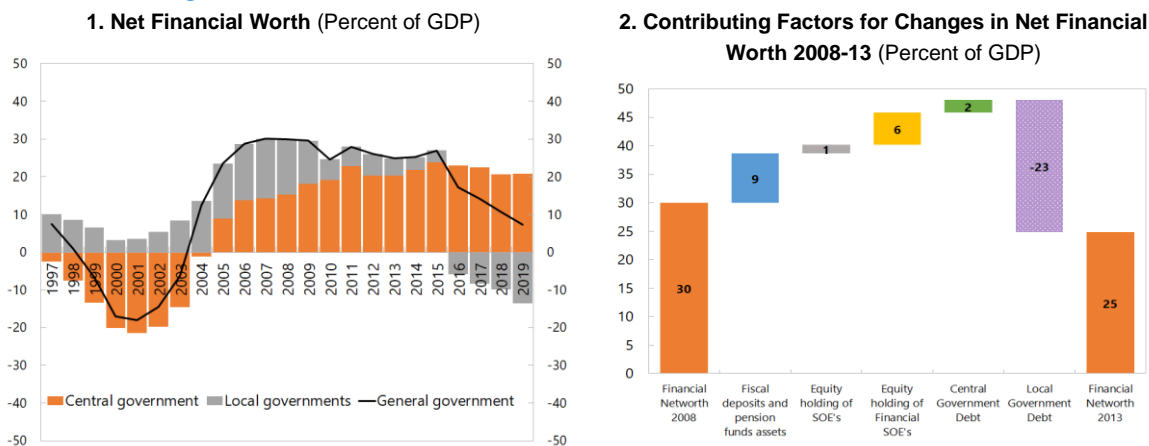
Fiscal aggregates. Headline deficits widened slightly during the GFC from -0.8 of GDP in 2008 to -2.1 percent in 2013. The largest deficit was recorded in 2009 but was just -2.7 percent of GDP as most of the fiscal easing did not come from the budget general funds but through LGFVs. Moreover, official government debt declined from 17.8 to 16 percent of GDP during 2008–13 despite the large fiscal expansion. However, estimates that incorporate off-budget activity by local governments, including LGFVs, paint a different picture with deficits widening from -3.2 percent to -7.6 percent of GDP during 2008–2013, reaching -11.1 percent of GDP at its peak in 2009.

Government balance sheet. During 2008–2013, the government's net financial worth registered a decline although it remained in positive territory. The deterioration was mostly driven by local governments. At the onset of the GFC, the government's net financial worth (estimated at 29 percent of GDP) was roughly equally split between the central and local governments (Figure 7.1). Since then, the net financial worth has taken diverging paths with the central government strengthening its position and local governments experiencing a steady decline. By components,

- The mirror image of the declining net financial worth has been the increase in financial *liabilities*, which is in large part explained by off-budget local government borrowing (Figure 7.2). While the official government debt has been stable at 17 percent of GDP during 2008–13, the broader measure of debt (including LGFVs) surged by 14 percentage points of GDP during the period, reaching 48 percent of GDP by 2013 (Figure 8.1).

- On the *asset* side, the equity holding of SOEs went up by 20 percentage points of GDP during 2008–13, even when government ownership of SOE holdings increased more modestly. Nonetheless, the gap between government asset returns—along with those on nonfinancial infrastructure assets—and the interest rate on debt widened, with an estimated shortfall of 1½-2 percentage points during 2013–15 partly driven by low profitability among SOEs. On the aggregate, this resulted in the worsening of the overall efficiency in the allocation of capital and lower aggregate growth rates.

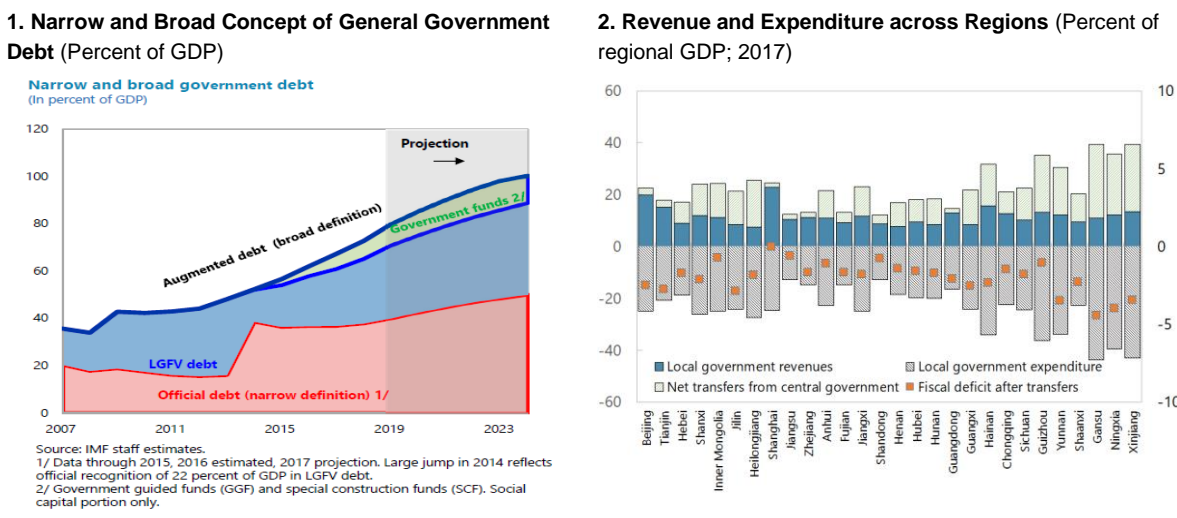
Figure 7. Estimates of General Government Financial Balance Sheet



Sources: CEIC, China Public Finance Statistical Yearbooks, and authors' estimates.

Note: The waterfall chart on the right illustrates the role of individual components in the changes of net financial worth between 2008-13. For example, a rise in local government debt (purple bar) has contributed to a decline of 23 percentage points of net financial worth.

Figure 8. Local Governments Debt and Fiscal Imbalances



Sources: CEIC; WIND database; national authorities; IMF (2019); and authors' estimates.

1/ The one-off increase in 2014 reflected official recognition of 22 percent of GDP in LGFV debt to local government debt.

2/ Estimates of government guided funds and special construction funds include only the social capital portion only.

C. Attempts to reign in LGFV debt while pursuing SOE expansion (2015–2019)

Background

In response to the widespread reliance on LGFVs and associated fiscal risks, China undertook audits on the LGFV activities and initiated measures to rein-in off budget activity, but with mixed results. The budget law was revised in 2014 to adopt a strategy of “*opening the front door and closing the back door*” to tighten off-budget activity, while allowing provincial governments to issue their own bonds subject to an annual cap.¹⁹ Following the audits of LGFV activity in local governments, the central government recognized about 22 percent of GDP of LGFV debt as general government debt in 2014–15. A bond-swap program (RMB 18 trillion or 25 percent of 2015 GDP) has gradually replaced high-interest and short-duration debt—in the form of bank loans, LGFV bonds, trusts and other nonstandard borrowing—with provincial government bonds of 2–20 years maturity (Table 5). The program has extended debt maturities, reduced interest cost, and standardized the local government debt instruments but could have crowded out private investment (Lam, Wei, and van Eden 2017).

Table 5. Government Debt and Bond Issuance

(RMB trillions, unless otherwise stated)	2013	2014	2015	2016	2017	2018	2019
Government Debt Outstanding	9.5	25.0	25.5	27.3	29.9	33.4	38.1
<i>(Percent of GDP)</i>	16.1	38.8	37.0	36.6	36.0	36.3	38.5
of which: central government	8.7	9.6	10.7	12.0	13.5	15.0	16.8
<i>(in percent of GDP)</i>	14.6	14.9	15.5	16.1	16.2	16.3	17.0
of which: local governments	0.9	15.4	14.8	15.3	16.5	18.4	21.3
<i>(Percent of GDP)</i>	1.5	23.9	21.5	20.5	19.8	20.0	21.5
<i>Debt-swap program (flow)</i> ^{1/}		-	3.2	4.9	2.8	2.0	1.3
New bond issuance ^{2/}	3.0	4.0	0.6	1.2	1.6	4.2	4.4
Local government bond outstanding	0.8	1.1	4.8	10.6	15.0	18.1	21.3
<i>(Share of official local government debt)</i>		7.1	32.6	69.3	89.5	98.3	100.0
Government Debt Ceiling (approved by National People's Congress)							
Central government	-	25.5	26.9	29.8	33.0	36.7	41.6
Local government	-	10.1	11.2	12.6	14.1	15.7	17.5
	-	15.4	15.7	17.2	18.8	21.0	24.1
<i>Memorandum items:</i>							
IMF Article IV estimates of general government debt	28.7	33.6	38.2	52.4	64.5	74.0	85.5
LGFV bonds outstanding	2.8	4.3	5.4	7.0	7.8	8.8	9.6

Sources: Ministry of Finance; and WIND database.

1/ The debt-swap program was launched in 2015.

2/ Numbers include the local government bond pilot program between 2009 and 2014.

In addition to these measures, a range of regulations were rolled out to constrain the supply of LGFVs bonds. Among these, the China Banking and Insurance Regulatory Commission, the China Securities Regulatory Commission, and the State Administration of Foreign Exchange jointly issued a new asset management regulation in 2018. The *New Regulation* aims to curb the shadow banking business in

¹⁹ The National People’s Congress authorized an issuance of RMB1.6 trillion in bonds in 2015, of which RMB600 billion was for new financing and another RMB1 trillion was for refinancing maturing LGFV debt deemed general government debt under a three-year debt-swap program.

the form of financing ‘non-standard’ assets that are not traded publicly with maturity mismatch and rigid repayment problems. By design, it was expected to affect the demand for LGFVs given that securities companies and fund companies are the two main service providers of LGFVs.

The authorities also embarked on initiatives to improve fiscal management and public accountability at all levels of government. These include standardize the accounting and financial reporting, and improve performance monitoring, which would enhance fiscal oversight. The Ministry of Finance has established an early-warning system and risk management guidelines to monitor subnational fiscal risks and allow for an early resolution of fiscal challenges, while limiting spillover to other subnational governments. Measures include: (i) a loss of fiscal authority of local administration, while ensuring the local populace retains minimum service levels; (ii) cross-agency oversight to rein in government guarantees; and (iii) regulations on local government bond financing against land development and income from toll roads.

Despite these reforms, progress in reining in off-budget borrowing during 2014–19 has been mixed as the structural revenue shortfall of local governments has not been resolved. Local governments still had strong incentive to circumvent constraints by financing through land sales and specialized financing vehicles. Since the debt recognition in 2014, LGFV debt continued to rise by 6 percentage points of GDP to reach an estimate of 34 percent of GDP as of end 2018, while their profitability and interest coverage deteriorated. Recent empirical evidence based on LGFV pricing also suggests that the implicit local government’s guarantee perceived by the market did not weaken in the aftermath of the *New Regulation* (Qiu et al. 2022).²⁰ Moreover, regulators have relaxed bond issuance rules and allowed policy banks to refinance local government debt in pilot cities.

Faced with high SOE leverage and underperformance, the government also announced several initiatives to reinvigorate SOE reforms. Overall, there was a recognition about the desirability of a diverse ownership structure, and the need to restructure nonviable enterprises while stressing ‘making SOEs bigger and stronger’. Initial reforms intended to:

- *Reposition the state as a capital investor rather than operator.* Mixed-ownership reforms envisage a spectrum of ownership structures (for example, cross-shareholdings and public listings), professional management, and a better alignment of respective rights and responsibilities between owners and the board, with checks and balances.
- *Classify SOEs into three broad categories and institutionalize the leadership role of the party.* Each type has specific ownership structures, reform plans, and assessment criteria: (a) strategic SOEs (such as defense, telecommunications, and major energy companies) will continue to be held by the state and to pursue national strategies; (b) commercial nonstrategic SOEs will compete directly in the market; and (c) SOEs with social functions will be tasked to improve public services.
- *Resolve nonviable SOEs.* The State Council committed to cutting aggregate SOE losses by 2017 and expediting the exit of nonviable SOEs, including resolving near 350 subsidiaries of central SOEs and near 4,000 local SOEs.

²⁰ Qiu et al. (2022) find that there is a strong negative correlation between the credit spread of LGFV bonds and the revenue of local governments. Also, credit spread of LGFV bonds at issuance is lower in provinces with higher income per capita and that relationship has strengthened after the introduction of the *New Regulation*.

The implementation has been uneven. A number of pilot programs were launched starting 2016 that focused on mixed-ownership reforms, including removing some social functions of SOEs (the provision of utilities and property management services for SOE employees). Reform of central SOEs advanced slowly, in part because of their complex multi-layer subsidiary structure. Meanwhile, the rapid growth of financial system has contributed to a surge in leverage and the expansion of shadow banking, which prompted authorities' regulatory tightening to contain financial risks. Despite SOE reforms, there had been a significant expansion of SOEs during 2015–19, with government equity rising by 7 percentage points to 49 percent of GDP in 2019, largely driven by a rapid expansion in local SOEs.

The government also introduced measures to contain financial risks (IMF 2017a, 2017b) that marked a decisive break. The banking regulator targeted complex and opaque financial shadow services and as mentioned above regulatory agencies proposed rules to curtail shadow banking. Despite these measures, credit to SOEs continued to pick up during 2015–19 in part to support growth and fulfill national development strategies accounting for two-thirds of bank credit and contributing to the overall rise in corporate leverage (Maliszewski and others 2016; Molnar and Lu 2019). Moreover, though the empirical evidence points to an overall improvement in the risk pricing of local SOE bonds, market perceptions have shifted after several waves of defaults, resulting into a more fragmented bond market with SOEs from certain provinces facing higher funding costs (Wang and Wu 2023).

Fiscal impact and the government's balance sheet

While headline fiscal deficits were contained during this period, the government balance sheet continued to deteriorate reflecting the underlying weakness of local governments.

Fiscal aggregates. Headline fiscal deficits remained stable within a narrow range of 2.1 to 2.8 percent of GDP during 2014–19 as the central government maintained a “proactive” stance while aiming to control local government borrowings. As a result, official government debt remained flat during the period at just below 40 percent of GDP. Attempts to rein in local government borrowings were not effective leading to an increase in the broader fiscal deficit (including off-budget borrowing) from 7 percent of GDP in 2014 to 12.4 percent in 2019.

Government balance sheet. During 2014–19, the government's net financial worth has been on a downward trend, although it remains positive at the aggregate level. More striking, estimates for 2019 put the net financial worth at less than a quarter of the peak-level reached in 2007. This is by no means exceptional as many other countries experienced similar declines in the aftermath of the GFC (Alves, De Clerck, and Gamboa, 2020). Nonetheless, several factors are worth noting:

- Since 2008, the net financial worth has taken diverging paths with the central government strengthening its position and local governments experiencing a steady decline entering for the first time into negative territory in 2016.
- The decline of net financial worth has been driven by continued off-budget local government borrowing (Figure 9). Following the recognition of 22 percent of GDP in LGFV borrowing to government debt, the off-budget local government borrowings continued to rise by 25 percentage of GDP during 2015–19 (Figure 10). During this period, local governments ramped up their borrowings relying not only on LGFVs (as that activity was being tightened under the new

budget law) but also on newly created government guided funds and special construction funds (Mano and Stokoe 2017).

Figure 9. Contributing Factors for Changes in Net Financial Worth 2013-19
(Percent of GDP)

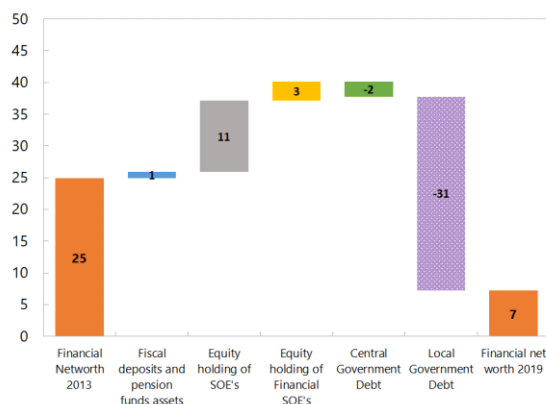


Figure 10. SOE Performance and Fiscal Balances
(Percent and percent of regional GDP, 2019)



Sources: CEIC, IMF World Economic Outlook database, China Public Finance Statistic Yearbooks, and authors' estimates.

VI. Benchmarking China

As discussed in the previous section, reforms undertaken during 1997–2007 helped bolstering the government's financial position. Since then, the net financial worth has been on a steady decline largely driven by increasing local government debt. While the equity holdings of public corporations are still an important government's asset, the productivity of SOEs has been falling behind since the GFC and could potentially put a further dent on the government's wealth. In this section, we analyze to what extent China's experience with the restructuring of public corporations at the turn of the century was unique relative to peers and ask whether that experience can shed some light about trends going forward. To answer this question, we run an event study looking at episodes of banking crises and SOE reforms across the sample of advanced, emerging and developing economies for which we have balance sheet data. The objective is to benchmark China against those episodes by examining the behavior of some key fiscal and macroeconomic variables.

Our empirical model is a modified version of the framework developed by Gourinchas and Obstfeld (2012). In particular, we consider a variable of interest y_{it} , where subscript i refers to the country and subscript t to the period. We then estimate the conditional expectation of y_{it} as a function of the distance from the start of the event episode (banking crisis and/or SOE reform) relative to a common baseline as follows:

$$y_{it} = \alpha_i + \sum_k \beta_{t+k} T_{ik} + \sum_k \gamma_{t+k} T_{Chinak} + \varepsilon_{it} \quad (1).$$

In equation (1), T_{ik} is a dummy equal to 1 when the country i is k years away from the start of the event episode in year t , and 0 otherwise; α_i denotes country-fixed effects; and ε_{it} is the error term which captures all the remaining variation in the realization of our variable of interest. A separate dummy for China (T_{Chinak}) is included to determine whether the dynamics of y_{it} differ from the average episode. Given the relatively short length of the time series data, we restrict our analysis to 8-year windows (3 years before and 5 years after the event episode). Each parameter, β_{t+k} and γ_{t+k}

captures the average change in y , at time $t + k$, relative to observations outside the 8-year window, which we interpret as “normal times”. A caveat of this approach is that it does not account for the fact that SOE reforms happen in different periods depending on the country—the so-called staggered treatment effects (Dube et al. 2022). Therefore, we refrain from drawing conclusions on causality and simply use this exercise to show how different variables evolve around SOE reforms.

Dates on banking crises come from Laeven and Valencia (2018) while those on SOE reform come from IMF (2020). On the latter, our focus is on the non-financial SOEs as the banking crisis measure already captures the banking policy intervention—including restructuring and nationalization—in response to significant losses in the banking system. The SOE metric is based on reforms with the status of either quantitative performance criteria or structural benchmarks as part of an IMF program and comprises four categories: (1) governance; (2) public enterprise pricing (such as tariffs and automatic fuel price mechanisms); (3) arrears clearance; and (4) the achievement of specific financial targets.

Overall, our sample includes 47 episodes (26 banking crises and 21 SOE reforms) for 35 countries inclusive of China. In 12 of these countries, the banking crisis and the SOE reforms overlap (at least partially). In those instances, we take the earliest date as the start of the episode. Our variables of interest are net financial worth, public debt, overall fiscal balance, and growth. Figure 6 plots the coefficients β_{t+k} and γ_{t+k} for each of these variables where period 0 denotes the start of the event episode and dotted lines the 90 percent confidence interval.

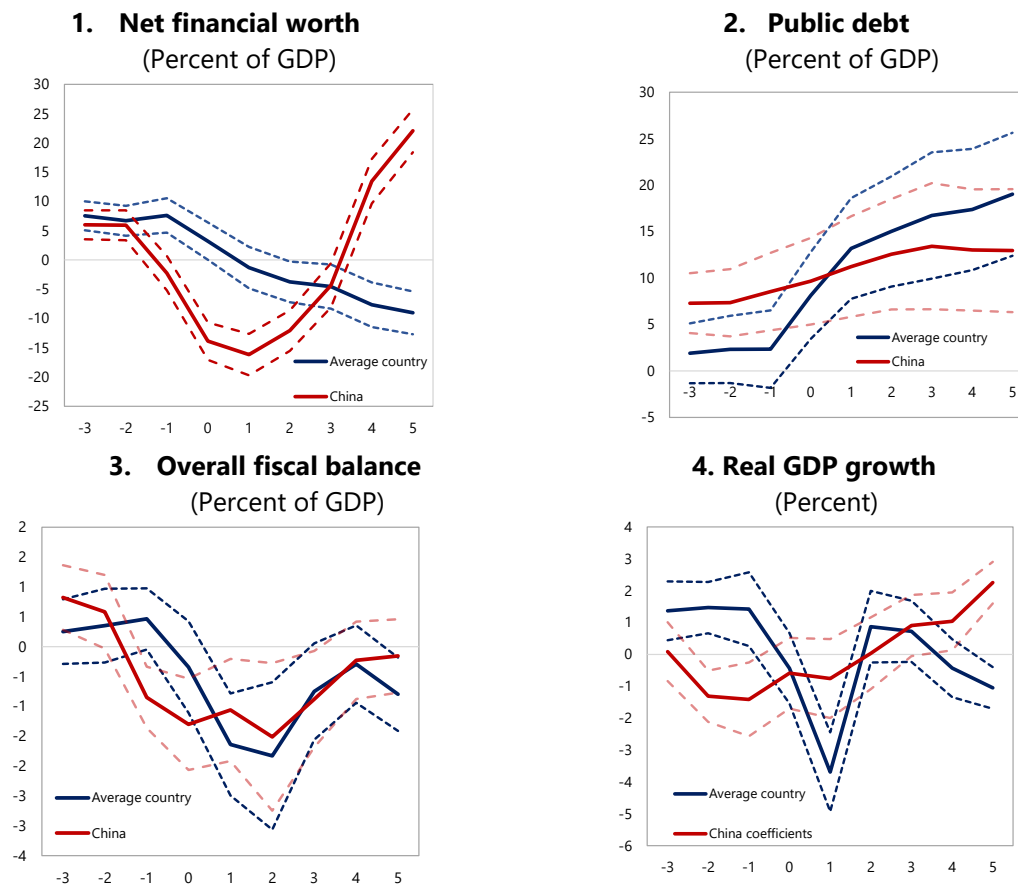
Starting first with the dynamics of the government’s balance sheet, Figure 11 (panel 1) shows a similar pattern for the average country and China prior to the event episode: in both cases, net financial worth is more than 5 percentage points of GDP above levels in normal times. However, China’s balance sheet deteriorates rapidly reaching a trough one year after the start of the event when net financial worth is more than 15 percentage points of GDP below normal times. The turnaround is also swift and five years after the start of the event, China’s position is more than 20 percentage points above normal times. In contrast, the balance sheet in the average country deteriorates gradually but steadily and five years after the start of the event, the government’s net financial worth is still below normal levels.

We next explore whether the liability side of the equation may be a factor explaining these differences. Not surprisingly, China’s public debt is already above normal levels prior to the start of the event while the average country does not show statistically significant differences (Figure 11, panel 2). However, debt increases for the average country are steeper and more protracted than in China. Thus, five years after the start of the episode, public debt levels for the average country are significantly above normal levels (more so than in China) and still increasing. Part of these dynamics reflects the fiscal deficits which widened a bit earlier in China (Figure 11, panel 3). However, the orders of magnitude at the trough are similar to the average country.

To understand what is behind the divergent trends between China and other countries in the sample, we look at the real GDP growth. Here the differences are even more staggering. Across the board, growth starts falling relative to trend before the start of the episode although China bottoms out two years earlier than the average country (Figure 11, panel 4). But what sets China apart is the shallower depth of the downturn and the steady pace of recovery. Five years after the start of the episode China is registering growth rates more than 2 percentage points above trend, while the average country is still about 1 percentage point below. The strength of the recovery may partly explain why the fiscal

position and, ultimately, the government's balance sheet is much stronger in China compared to other cases.

Figure 11. Macroeconomic Dynamics during Banking Crises and SOE Reforms



Notes: Estimation of equation (1) on annual data, between 1997 and 2019. The estimates of conditional means of each variable, relative to "normal times" are reported on the vertical axis. The horizontal axes represent the number of years before (negative sign) and after the start of the event episode. The dotted lines denote a 90 percent confidence interval for each conditional mean. Data on government debt is based on IMF World Economic Outlook database, which excludes a portion of the off-budget borrowings.

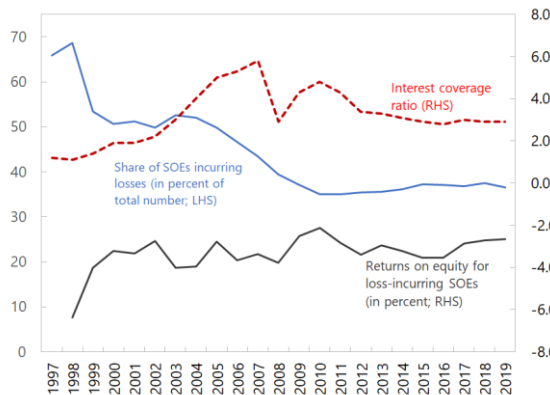
Given these results, a key question is whether the more favorable outcome in China was solely explained by the reform and restructuring of public enterprises or other factors were also present. Undoubtedly, the tailwinds coming from the WTO accession may have played a role in the strong growth performance. For example, Ching et al. (2011) estimates that joining the WTO raised Chinese economic growth by 2.4 percent of GDP between 2002 and 2007. However, the cross-country empirical evidence shows that WTO/GATT accessions have been associated with significant increases in growth and investment only in those countries undertaking substantial reforms (Tang and Wei 2009). This underscores the complementarity of internal and external reforms. In the case of China, tariff reduction was accompanied by domestic reforms to reduce the size of the state-owned sector, relax restrictions on private firm entry, and improve institutions that resulted in significant productivity gains (Khandelwal, Schott, and Wei 2013; Brandt et al. 2017; Tombe and Zhu 2019).

Going forward, further reforms efforts are a priority though the scope for similar gains may be more limited. Recent empirical evidence suggests that China's productivity decelerated sharply after the

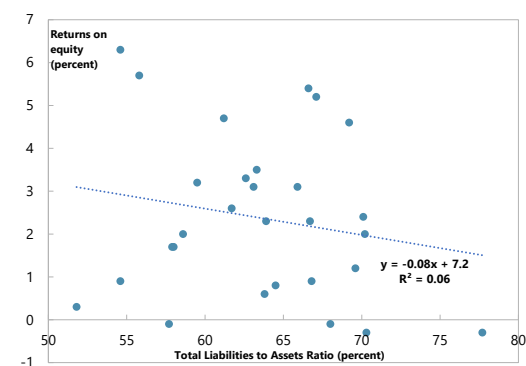
GFC as the earlier reforms that led to the convergence between SOEs and private manufacturing firms stalled (Brandt et al. 2022). Over this period, not only have SOEs displayed lower productivity than private firms but also business dynamism has been weaker in provinces where SOEs account for a larger share of the capital stock (Cerdeiro and Ruane 2022). Overall, more than 40 percent of SOEs incur losses every year, amounting to about 2½ percent of GDP per year (Figure 12.1). Also, highly leveraged SOEs tend to have lower profitability (Figure 12.2) despite enjoying preferential access to credit and lower interest costs than private firms (Poncet, Steingress and Vandebussche, 2010; Wu, Firth, and Rui, 2014; Bai, Lu and Tian, 2018; Harrison, et al. 2019; Chen, Li, and Tillmann 2019). This suggests the implicit government guarantees on SOEs have resulted in over-investment and may have contributed to a large productivity gap (Jurzyk and Ruane 2021). The poor performance of SOEs could potentially spillover into the financial sector (IMF 2017a), further putting pressure on the government’s balance sheet. These findings underscore how the strength of the fiscal accounts going forward will be highly dependent on renewed efforts to implement a comprehensive SOE reform.

Figure 12. Financial Performance of SOEs

1. Financial Performance SOEs (Percent)



2. Financial Performance and Leverage of SOEs^{1/} (Percent)



Sources: China Public Finance Statistics Yearbook; and authors’ estimates.

1/ Each data point corresponds to the average for a given province.

VII. Conclusions

This paper offers a detailed quantitative overview of fiscal policy in China through the lenses of the government’s balance sheet. Our principal aim is to give an insight into the implications of the large-scale fiscal operations over the last two decades. We show that China had a relatively strong government balance sheet compared to peers prior to the Covid-19 pandemic. To a large extent this reflects the sizable payoffs from the restructuring of SOEs in the early 2000s. Compared to similar restructuring episodes around the world, China’s net financial worth as a ratio of GDP experienced a much deeper decline but also a swifter recovery. These dividends, however, have eroded since the onset of the GFC as the SOE reform momentum slowed and budget constraints became less binding for local governments.

Our findings suggests that like yesteryears, the Achilles heel for China lies with local governments and SOEs, underscoring the urgency of a comprehensive restructuring agenda and institutional fiscal reforms. Efforts to contain LFGV’s leverage should be complemented with action to phase out implicit guarantees and to strengthen the corporate and banking restructuring frameworks (IMF 2022). At the same time, managing state-owned capital should refocus to keep state shareholders at arm’s length from SOE management, increase dividend payments to the budget, and phase out SOE social

functions. In parallel, SOE budget constraints should be hardened by ending the implicit guarantees and preferential access to credit and carefully allocating losses to owners and creditors.

Our study also foreshadows the importance of improving fiscal data and disclosures. China's public-sector balance sheet data should be made more readily available (both in details and timing), building on the last release of government balance sheet data in 2018. As new avenues of off-budget fiscal spending emerge, exposures abroad increase, and long data lags prevail, it is difficult to assess vulnerabilities in real time underscoring the need to strengthen fiscal reporting. This includes publishing the government's equity holdings of public corporations (financial and non-financial), ideally with further breakdown of sub-components and disclose the methodology of valuation and consolidation. Significant cross-holdings and credit linkages between general government and SOEs as well as prevalent use of quasi-fiscal public entities make it more challenging to compile the balance sheet without such official data.

Appendix 1. The Public Sector in China

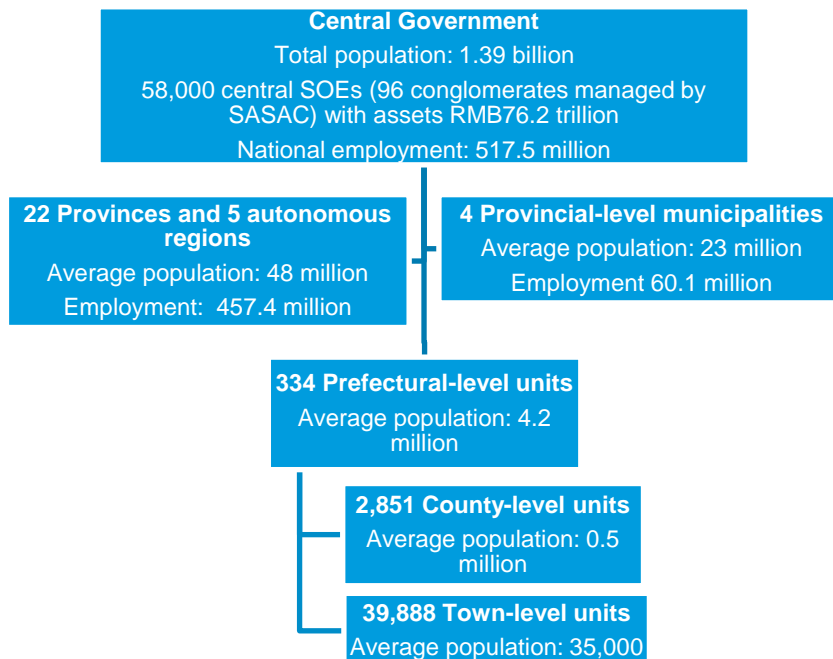
The public sector comprises the central government, local (subnational) governments, and public corporations. China's central and local governments include two main types of entities: (i) administrative units, including legislature and judicial entities; and (ii) government agencies and social organizations (i.e., the so-called *shiyue danwei* (事业单位) such as public schools, hospitals, and research institutes) that are the service delivery arm of the government and in some instances generate and retain own revenues (for example, public universities). Public corporations include nonfinancial SOEs and state-owned banks (commercial and policy banks) as well as nonbank financial institutions (securities firms, insurance companies, and investment funds), and national social security funds. The main economic functions of these institutional units are as follows:

- The *central government* has relatively limited spending responsibilities accounting for less than a quarter of the national budget. This reflects the changing composition of the budget expenditures over the last number of decades which has aimed at giving higher weight to the provision of public services at the local level. However, the 1994 tax reform resulted in the recentralization of revenues with the central government de facto controlling over half of the budget. To address the resulting fiscal gaps of local governments, central transfers have steadily increased since the early 2000s.
- There are four levels of *subnational government*: provincial, prefectural, county, and township, with an informal village government below the township level (Figure A1.1). China's fiscal system is highly decentralized, with most government functions carried out by subnational governments (World Bank 2002; Xu 2011). This includes not only the provision of basic public services (such as education, health care, and social security) but also sizeable public infrastructure investment. Very often expenditure mandates are assigned to the lower tiers of governments: for example, counties account for most of the national expenditure on education and health (Wong 2013). Subnational governments control land development such as land leasing and (re)assigning land usage rights, which are important sources of income. While some studies have attributed the competition among prefectural local governments as a factor in China's growth success (Song, Storesletten, and Zilibotti 2011), local governments face structural revenue shortfalls relative to their spending obligations (they account for about half of general government's revenue while spending is more than two-thirds) and central transfers are insufficient to cover the gap (Wang and Herd 2013; Wingender 2018).²¹
- There are 217,000 *non-financial SOEs* in China. Of these, 96 are central, state-owned conglomerates supervised by the State-Owned Assets Supervision and Administration Commission of the State Council (SASAC). Each of these conglomerates has layers of subsidiaries (sometimes over six levels), resulting in about 62,000 central SOEs. In addition, there are more than 155,000 local SOEs (without accounting for the LGFVs). SOEs are key in the China's overall

²¹ Tax revenue broadly consists of three types: (1) central taxes exclusively to finance central government spending, which mostly include taxes related to foreign trade such as duties, trade-related value-added tax, luxury taxes, and export rebates; (2) local government taxes under the control of local governments, such as property-related taxes and business operation taxes; and (3) taxes shared between the central and local governments, including personal and corporate income taxes and the value-added tax (excluding the trade-related component). The revenue shortfall varies across regions, with coastal regions having a stronger fiscal position than inner regions.

development strategy and have also contributed to macroeconomic stabilization (Deng et al 2015). SOEs also take up social functions, including to stabilize employment and provide social services (Holz 2019).

Figure A1.1. China: Intergovernmental Structure



Sources: China Statistical Yearbook (2018); and China's Public Finance Yearbook (2018).

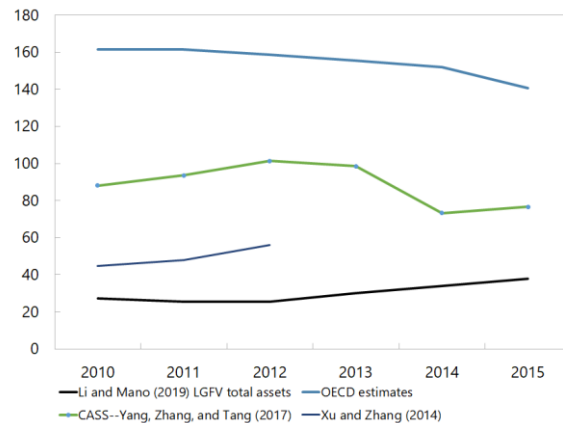
Note: Employment refers to total urban employment. In addition to the listed provincial-level governments, the administration also includes Taiwan Province of China and two special administrative regions: Hong Kong SAR and Macao SAR. The average number of provincial level firms (which include local SOEs, collectives, joint, private, foreign, and others) is around 600,000 based on registration status. For a discussion on the difficulties distinguishing state ownership, see Hsiao and Song (2015).

- *Financial public corporations* dominate China's financial system. The Big Four banks are majority state-owned, while China Development Bank and two policy banks are fully state-owned providing loans to rural and urban areas on development-related projects. Local governments have important ownership stakes (and in many cases control) in lower tier banks (Griffin and Walsh 2017; Wright and Rosen 2018). Local government-affiliated entities also own nonbank subsidiaries and other intermediaries. The state also controls a large share of insurance companies, trusts, and securities companies. There is some evidence that the pervasive nature of state control unavoidably influences credit allocation (Firth et al 2009; IMF 2017a).

Appendix 2. Methodological Challenges in Estimating Non-Financial Assets

As in other countries, estimating the value of China’s nonfinancial assets is beset by data constraints. The Ministry of Finance publishes occasionally the government holdings of nonfinancial assets in volume terms—including land area of 500.5 million acres, sovereign water and marine area of 0.38 square kilometer, and natural gas reserves of 550 million cubic meter. On the other hand, valuation estimates from various studies range widely from 40 to 140 percent of GDP (Figure A2.1), underscoring the high degree of uncertainty stemming from differences across methodologies and parameter assumptions—such as asset prices, expected future returns, or replacement costs (Dan 2016). We highlight some of these methodological challenges below.

Figure A2.1. Literature Estimates of Nonfinancial Assets



Sources: CASS; Xu and Zhang (2014); OECD; and WIND database.

Land

There are two main difficulties in estimating the value of land. The first one is to determine to what extent the government has exclusive rights to extract income from land as some of these assets are already leased out for residential, commercial, or industrial use for the next 20 to 70 years. The second difficulty is how to assess the value of the land. While some areas may have little economic use (e.g., deserts and highlands), others can fluctuate largely in value depending on the real estate prices, potential externalities, and the value-added from developing the land—which will be a function of the related infrastructure such as sewage, public transport, and urban development.

To illustrate these difficulties, it is useful to compare estimates based on two alternative valuation methodologies:

1. *Transactions prices.* The Chinese Academy of Social Sciences (Yang, Zhang, and Tang 2017) estimates the value of land based on the total acres of usable construction and land prices. The latter are obtained from average transaction prices in a given year, while the data on urban land area (netting out the land already developed) are published in the China Land and Resources Statistics Yearbooks. Based on these data, the aggregate value of land was around 56 percent of GDP in 2015.
2. *Net present value of future use rights.* This method only includes those areas that can be repurposed for urban construction, computing the net present value of net use right fees for the next 25 years, considering the urbanization and demographic trends. Using the historical net proceeds from land sales (about 2-4 percent of GDP per year), the estimated net present value of future land leases is about 68 percent of GDP in 2017.

Infrastructure

The lack of market transaction data, backloading and nonpecuniary nature of returns, limited information on depreciation rates, and the mix of private and public investment make it very difficult to assess the value of infrastructure assets owned by the government. Accounting principles using the historic cost or fair value approach tend to give rise to a wide range of estimates. An alternative approach for infrastructure assets such as toll roads or railways is to calculate the net present value of expected future tolls or ticket sales. However, this approach is not feasible for other infrastructure assets (for example, sewage, urban development) that do not have specific revenue streams.

Two examples show the wide range of estimates and shortcomings of alternative methodologies:

1. According to the China's Accounting Statistics Yearbook, the value of infrastructure and work-in-progress was about 22 percent of GDP in 2017. Audits by the Ministry of Finance showed that about 85 percent of nonfinancial assets were owned by local governments. This estimate of the value of infrastructure assets appears on the low side because it is based on a historical cost assessment. Another shortcoming is that it does not fully account for the sizable off-budget infrastructure investment undertaken at the local government level.
2. To address some of these shortcomings, Mano and Stoke (2017) estimate the total assets of nonmarket producing LGFVs at about 40 percent of GDP in 2015. These estimates are still subject to several limitations as information on the criteria required for the classification of LGFVs into nonmarket producers is limited and there is limited data on certain items (e.g., work in progress, which is treated as current assets).

Natural resources

The inclusion of natural resources into non-financial assets should consider if the asset has a meaningful and measurable economic value. Available estimates (Yang, Zhang, and Tang 2017) are based on a royalty approach but only of the largest reserves of key commodities, including petroleum, natural gas, and coal. The estimates use the official data on the reserve levels of these commodities and apply an effective tax rate of 5 percent and estimate a value averaging 3½ percent of GDP over 2010–15.

Appendix 3. Data Sources and Estimation Methodology

The analysis in this paper relies on publicly available data from the Ministry of Finance and National Bureau of Statistics, complemented with estimates by academic research papers when key data are missing.

Government level. Our analysis focus on the general government’s financial balance sheet, comprising the central and local governments. Official statistics do not specify if the data for the local government are presented on a consolidated basis but, even if unconsolidated, cross-holdings across local governments are likely to be small and do not affect the key findings in the paper. There is also no detailed information about the valuation method used across levels of government, though it is expected to be typically reported at book values.

Time horizon. The data spans from 1997 to 2019. Because of methodological changes in the source data, there are breaks in some series as follows: (1) local government debt was revised after the first National Audit Office conducted in 2011, but consistent data only goes back to 2010; (2) there was a major change in the classification of assets labelled as “deposits” starting in 2010; and (3) data were discontinued on undistributed losses and nonperforming assets of SOEs after the mid-2000s.

Methodological assumptions. Subject to data availability, adjustments have been made to align the presentation with the principles established in the *Government Finance Statistics Manual* (2014). Below we describe sources and the assumptions used in estimating each item in the balance sheet noting the constraints faced in the data compilation.

A. Financial assets

1. Fiscal deposits and currency holdings

Data are obtained from the annual monetary survey published by the central bank—in the table titled “Sources and Uses of Credit Funds of Depository Financial Institutions”. The survey breaks down government deposits into fiscal deposits held by the central and local governments and deposits held by various government departments and social organizations (事业单位 in Chinese) such as public universities, media, and hospitals.

The fiscal deposits (about 41 percent of GDP in 2019) are the balances under the budgetary operations of the general government. We assume that the share of local government’s fiscal deposits and currency holdings is 85 percent (central government accounting for the remaining 15 percent). This assumption is based on the periodic reviews and audits on national public entities published by the Ministry of Finance, which show that local governments account for about 85 percent of national fiscal spending.

The remaining bank deposits belong to public entities under the supervision of government departments and social organizations. A significant portion is earmarked for the delivery of public services (often in the form of account payables under current liabilities). For example, a government-owned hospital collects fees to cover medical services and the payroll for its staff. The fees collected are recorded as government deposits on the asset side, but the accrued liabilities (e.g., payroll) are difficult to assess and sometimes not fully recorded on a cash-accounting basis. In principle, those deposit holdings should be netted out with the account payables, but data on the latter are not

publicly available. Nonetheless, a recent study suggests that between half and two-thirds of those deposits are tied to the payment of accrued liabilities (Liang 2015). We assume that half of the deposits of public entities are earmarked and present estimates net of those amounts under the financial assets of the general government.

2. National and local social security funds

The National Council for Social Security Fund publishes the annual financial statements of the national social security funds, including information on the government's equity and the annual returns on equity (<http://www.ssf.gov.cn/cwsj/ndbg/>). A potential shortcoming of these estimates is that they may include items already captured in the valuation of government holdings of SOEs. This is because recent reforms entail the transfer of part of the SOEs' equity into these funds to compensate for the legacy issues related to unfunded pension liabilities of SOE retirees beginning in 2015 (Lam, Rodlauer, and Schipke 2017; Yang, Zhang, and Tang 2017). Although there is no detailed information on the amounts, the magnitude is likely to be small given the limited transfers to date.

3. Equity holdings of public corporations

• State-owned enterprises in the nonfinancial sector

Annual aggregate data on SOEs are available from two main sources: (i) China's Public Finance Yearbooks published by the Ministry of Finance; and (ii) the National Industrial Survey published by the National Bureau of Statistics (NBS). The Ministry of Finance's data includes aggregate assets, liabilities, and equity of nonfinancial SOEs (for both the industrial and services sectors) by provinces and by government levels (central and local government). We did not use data on SOEs published by NBS because the data cover only SOEs in the industrial sector (mining and manufacturing), although it includes details on investment, employment, and output by industries and regions. Some scattered data are also available from various news articles and official releases by the State Council and SASAC (e.g., dividend payment of SOE equity to budget and the restructuring of nonviable SOE zombie firms). We cross check our estimates with these sources to ensure our estimates are within a reasonable range.

Estimating the value of equity holdings in SOEs require making some assumptions on the government ownership (accounting for the effect of restructuring and privatization) and the valuation of SOEs. Our approach is as follows:

- *Government share of SOE equity.* Data on the total state holdings (国有资产总额) from the Finance Yearbooks of China suggest that the government holdings stayed at near 100 percent from 1999–2006 (that is, almost fully owned by the state), before declining sharply to 78 percent in 2007 (Figure A3.1, panel 1). An alternative estimate based on the difference of total owners' equity and minority shareholdings from the Finance Yearbooks of China showed a more gradual decline of government holdings of SOEs from 100 to 78 percent during 1997–2007. Our analysis uses the latter approach as it better reflects the gradual decline of government holdings of SOEs during this period. From 2007 onwards, the two estimates converge as the government equity holdings of SOEs stayed flat at around 80 percent.
- *Valuation of SOE equity.* Data on SOE's equity from official statistics in the annual Statistical Yearbooks suggest a decline from 60 percent of GDP in 1999 to about 45 percent of GDP in 2007,

before gradually recovering back to 1999 levels. This means that the equity holdings of the government were valued at around 50 percent of GDP based on the ownership share of 78 percent as discussed above (Figure A3.1, panel 2). These statistics, however, are not fully aligned with the previous findings, which identified significant SOE losses during 1997–2002 and a strong rebound once the restructuring took hold (Hsieh and Song 2015; Lardy 2014; Maliszewski and others 2016). To correct for these shortcomings while accounting for data constraints we follow a two-pronged approach:

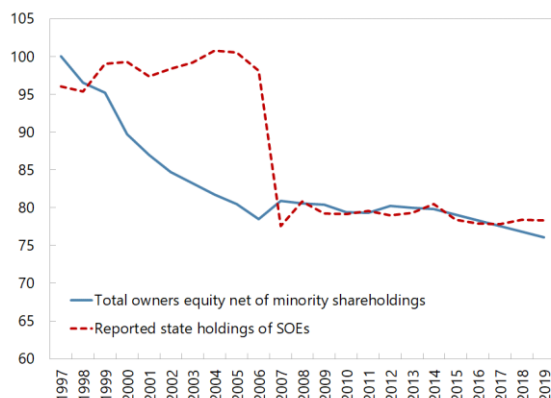
- *1997–2007.* The valuation of SOEs during this period is based on the equity value reported in Finance Yearbooks of China adjusted for undistributed losses and nonperforming assets (about 23–31 percent of equity during 1997–2003. Based on this assumption, the equity value of SOEs is estimated at below 10 percent of GDP before rebounding to about 40 percent of GDP by the mid-2000s (Figure A3.1, panel 3).
- *2008–2019.* Data on SOE nonperforming assets are not available after 2007 despite reported losses from nonperforming assets. Adjustments to official data may therefore be necessary. First, many SOEs are not listed or traded, and official data likely reflect only the book value of assets and liabilities, which do not account for valuation changes and potential unrealized gains/losses. The gap between market value and book value has likely diverged in periods when SOEs faced severe losses or restructuring and when nonviable SOEs (zombie firms) were on the rise. Second, over 40 percent of SOEs incur losses every year, amounting to about 2½ percent of GDP per year (Figure A3.1, panel 4) but aggregate net profits in the official data are positive throughout pointing to some measurement problems in the valuation of SOEs. Therefore, in our estimates we use the net present value (NPV) of SOEs' expected future net profits computed over a 30-year horizon (i.e., $T=30$) based on the flows of net profit x (a moving average of the last 3 years of profit at time t), discounted by discount rate r (nominal interest rate on corporate interest rate) as follows:

$$PV^T(x, t) = \sum_{i=t+1}^{t+T} \frac{x_i}{\prod_{j=t+1}^{t+i} (1 + r_j)}$$

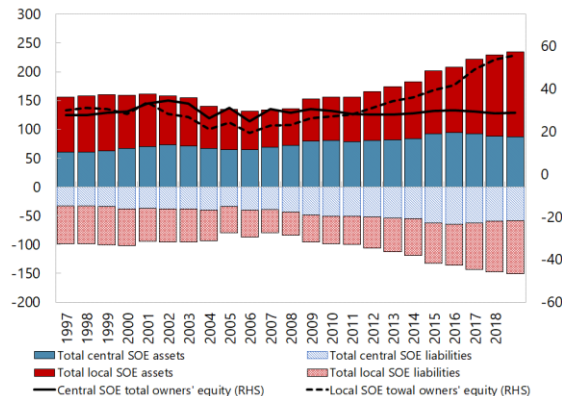
The profit stream is assumed to stabilize at 3 percent of GDP by 2022 (from 3.5 percent of GDP in 2017) assuming a discount factor of 2 percent, a level of average real interest rates over the past decades.

Figure A3.1. Government Equity Holdings of Nonfinancial Public Corporations

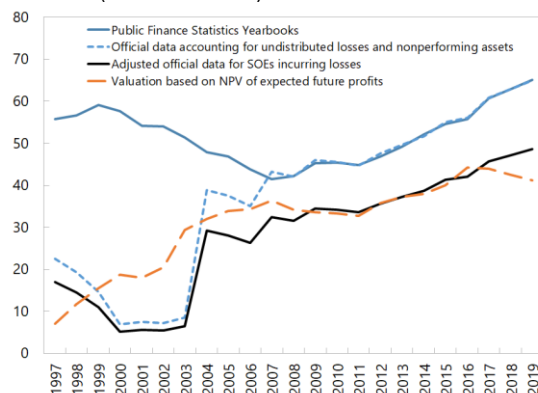
1. Government Equity Holdings of SOEs
(Percent of total owners equity in SOEs)



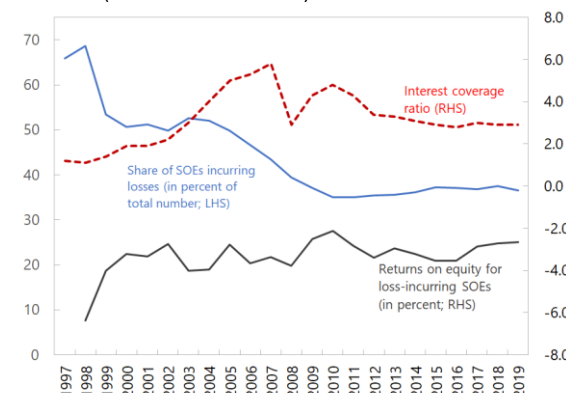
2. Size of Central and Local SOEs
(Percent of GDP)



3. Valuation of SOEs
(Percent of GDP)



4. Financial Performance of SOEs
(Percent and number)



Sources: China Public Finance Statistics Yearbook; and authors' estimates.

1/ Data on SOE nonperforming assets and undistributed losses were available in Public Finance Statistics Yearbooks up to 2004 and 2009, respectively.

4. State-owned financial institutions

Our estimates include the valuation of the government's equity holdings into 22 largest financial institutions comprising state-owned commercial banks, policy banks, and national sovereign wealth funds.²² These institutions account for the majority of assets in the financial system or over 85 percent of the banking system. Due to data constraints, the analysis does not include smaller depository institutions such as regional banks and credit cooperatives (many of them are not listed and do not regularly publish audited financial statements). This could potentially affect our estimates of financial

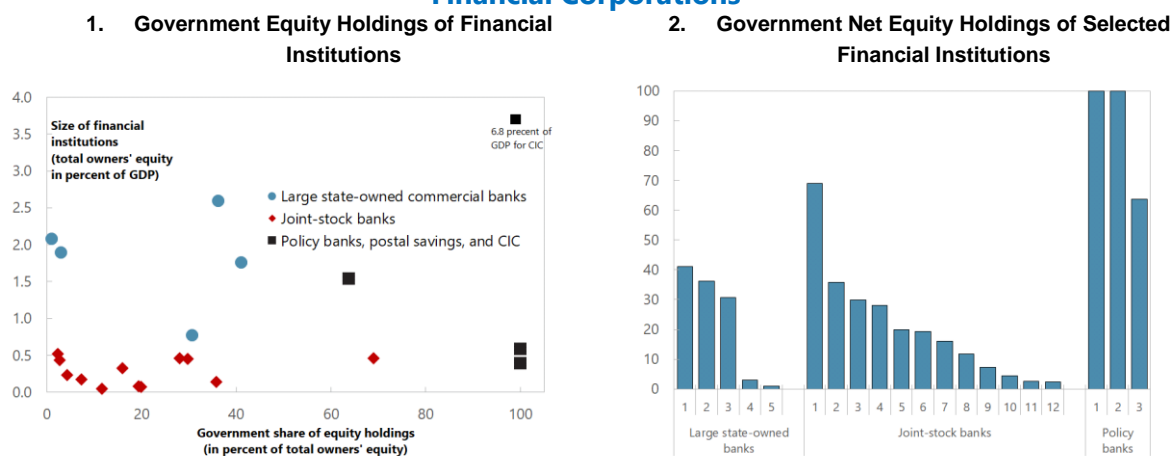
²² The sample include five large state-owned banks: Agriculture Bank of China, Bank of China, Bank of Communications, China Construction Bank, Industrial and Commercial Bank of China; several joint-stock banks: Everbright Bank, Industrial Bank, Minsheng Bank, China Merchants Bank, CITIC, Guangdong Development Bank, HuaXia Bank, Pudong Development Bank, Ping An Bank; three policy banks: Agriculture Development Bank of China, China Development Bank, Export-Import Bank of China; China Postal Savings, and China Investment Corporation, a national sovereign wealth fund specialized in equity investment. China Development Bank has changed its mandate since 2008.

assets of local governments as they often have equity stakes in these institutions. Our analysis also does not cover government holdings of nonbank financial institutions (such as securities brokerages and insurance companies) that are potentially large.

Official data on the general government's equity holdings of state financial institutions are limited. The State Council announced the aggregate value of the government holdings as of end-2017 (the latest estimates) amounting to RMB 9.4 trillion (or 19 percent of GDP) but there is not further breakdown or time series data. Also, it is unclear whether this estimate accounts for cross-holdings of state-owned financial institutions and other public sectors nor is there any information on the valuation method. Given data constraints we follow two alternative approaches:

- (1) For years prior to mid-2000s, before the largest state-owned banks were listed, the analysis uses the total owners' equity of the overall banking system, adjusted by the asset share of state-owned banks. The bias is likely to be within reasonable range given the government had full ownership of those banks at the time. We also use other studies to adjust the size of bank recapitalization by the government in the late 1990s to mid-2000s when estimating the financial balance sheet of the government (Garcia-Herrero, Gavila, and Santabarbara 2006; Ma 2006; Yang, Zhang, and Tan 2017). We also adjust for nonperforming assets using data from China Public Finance Yearbooks
- (2) For the years after the listing of the largest state-owned banks, we follow the approach in Yang, Zhang, and Tang (2017) and compile the government equity holdings using the published annual audited financial statements. Data on total equity valuation are obtained from CEIC. We also consolidate the data by netting out the cross holdings among state-owned financial institutions using the notes to the audited financial statements on the top shareholders to the extent data are available. As an example, the audited 2015 financial statement of the Industrial and Construction Bank of China (ICBC) showed that Central Huijin Investment held 34.7 percent of its equity (Table A3.1). Central Huijin Investment has in turn been owned by the parent China Investment Corporation, and therefore, it should be excluded when consolidating to arrive at the government holdings of financial assets on public financial corporations. As a result, the government equity holdings in ICBC were about 36 percent of total equity, a drop from the gross holdings of 90 percent of total equity. Adjusting for cross-holdings to the extent plausible given limited data, the net government equity holdings are estimated at about 37 percent of total equity in these financial institutions, but they vary widely across individual institutions (Figure A3.2).

Figure A3.2. Government Financial Assets on Equity Holdings of Selected Public Financial Corporations



Sources: CEIC; Annual financial reports; Yang and others (2017); and authors' estimates.

Table A3.1. Estimating Net Government Equity Holdings: An Example of Industrial and Commercial Banking Corporation, 2015

Top shareholders	Shareholdings	To be excluded for consolidation purpose?	Reasons
Central Huijin Investment	34.7	Yes	Overlap with the state holdings by the parent organization - China Investment Corporation.
Ministry of Finance	34.6	No	Government equity holdings
Hong Kong Securities Clearing Company Ltd	24.2	No	Nonresident holdings not part of government ownership
China Securities Finance Holding Company	1.2	No	Holdings belong to legal corporations
Ping An Life Insurance	1.2	No	Holdings not part of government ownership
Buttonwood Investment Platform Ltd	0.4	No	Holdings belong to legally incorporated financial institutions
Central Huijin Asset Management Ltd	0.3	Yes	Overlap with the state holdings by the parent organization - Central Huijin Investment
Anbang Life Insurance Ltd	0.1	No	Not part of government ownership
China Life Insurance Ltd	0.1	No	Not part of government ownership
GIC Private Ltd	0.1	No	Nonresident holdings not part of government ownership
Net government equity holdings	36.2		

Sources: Yang, Zhang, and Tang (2017); and authors' estimates.

Notes: The net government equity holdings for Industrial and Commercial Banking Corporation in 2015 was estimated to be 36.2 percent, which consists of the entities belong to the general government (Ministry of Finance, China Securities Finance Holding Company, and Buttonwood Investment Platform Limited). The rest of the banks' shareholdings was not included because of consolidation or because they were held by entities did not belong to the general government.

B. Financial liabilities

Our data on financial liabilities are based on the estimates included in IMF Article IV Staff Reports, which use the 'augmented' concept of public to include official government debt as well as estimates of debt incurred by entities that should have been classified as government entities according to the *Government Finance Statistics Manual* (2014).

The nominal value of debt is reported by the Ministry of Finance, which includes explicit debt of central and local governments. The official government debt reached 45 percent of GDP in 2020,

rising significantly since 2010, notably with the recognition of 22 percent of GDP LGFV debt in 2014 under the revised budget law and related directives. Data on the off-budget borrowings by government entities that should have been classified within the perimeters of general governments are based on the approach in Zhang and Barnett (2014), IMF (2014), and Mano and Stokoe (2017).²³ As of 2019, the off-budget borrowing amounts to 43 percent of GDP on top of official debt.

²³ These include not only the estimate borrowing of nonmarket LGFVs, but also Government Guided Funds, and Special Construction Funds (SCFs) to the extent that data are available.

Appendix 4. Comparison of Local Government Financing Vehicles and State-owned Enterprises—an Illustrative Example

Both LGFVs and local SOEs are legally registered as corporations and the distinction between the two types of entities is often blurred. The main differences relate to the control structure and policy objectives.

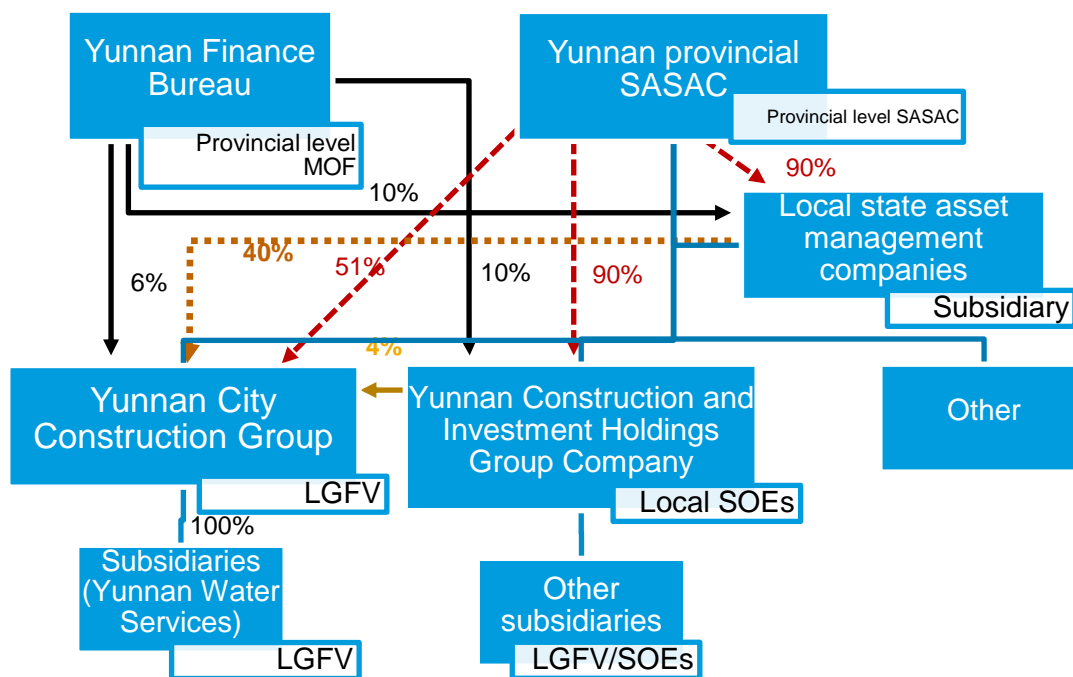
- *LGFVs* are corporations established by local governments' finance bureaus to finance specific investment projects—often in infrastructure, construction, and real estate (IMF 2014). LGFVs typically can collateralize their bank loans or corporate bonds with land or other assets, either owned by the LGFV itself or pledged by the local governments. Although local governments may not have full ownership of LGFVs, they tend to have significant control on LGFV activity. In the past, local governments provided guarantees, and sometimes subsidized their losses. The 2014 Budget Law, however, prohibited the provision of guarantees by local governments.
- *Local SOEs* are owned by local governments, but they are often under the supervision of the local State-owned Assets Supervision and Administration Commission (SASAC). They have a broader mandate than LGFVs (providing a broader set of goods and services mostly on a commercial basis) and have greater access to different financing sources. Although SOEs do not necessarily focus on infrastructure, in some instances there can overlap with LGFVs.

An illustrative example

We illustrate a provincial case in Yunnan to help illustrate the complex cross holdings between local SOEs and LGFVs and between local government and the broader public sector, which can make the classification between the two types of entities challenging (Figure A4.1):

- *The Yunnan Construction and Investment Holdings Company* is a local SOE fully owned by Yunnan provincial-level SASAC (90 percent) and the finance bureau (10 percent). It is one of the largest state-owned entities in Yunnan that has been granted the authority to own, hold, or invest in other SOE shares, including in many strategic sectors such as railway, petroleum and gas, banks, securities firms, and real estate. In that context, it has multiple layers of subsidiaries. The local SOE receives credit lines from banks, state subsidies, and other guarantees.
- *The Yunnan City Construction Group*, on the other hand, is considered an LGFV. It was established by the finance bureau at the provincial level and is jointly owned by the local finance bureau and local SASAC. It is the main entity involved in infrastructure investment in Yunnan province and can participate in state-authorized investment projects. It has multiple subsidiaries with its main businesses involving land development, social housing, real estate, construction, utilities, logistics, travel services.

Figure A4.1. Complex Cross Holdings between LGFVs and SOEs



Notes: The chart illustrated the complex interrelationship between selected LGFVs and SOEs in the Yunnan province. Numbers refer to ownership shares. Yunnan SASAC is the provincial level State-owned Assets Supervision and Administration Commission. It established a provincial-level state asset management company to hold local SOEs and subsidiaries. Yunnan Finance Bureau is the provincial level ministerial agency under the Ministry of Finance. Yunnan City Construction Group is an LGFV established by the Yunnan Finance Bureau. Yunnan Construction and Investment Holdings Group company is a local SOE owned by provincial SASAC.

References

- Allen, M., C. Rosenberg, C. Keller, B. Setser, and N. Roubini. 2002. "A Balance Sheet Approach to Financial Crises." IMF Working Paper 02/210, International Monetary Fund, Washington, DC.
- Alves, M., De Clerck, S., and Gamboa-Arbelaez, J. 2020. "Public Sector Balance Sheet Database: Overview and Guide for Compilers and Users," IMF Working Paper No. 20/130, International Monetary Fund, Washington, DC.
- Bai, C., Lu, J., Tao, Z. 2006. "The Multitask Theory of State Enterprise Reform: Empirical Evidence from China," *American Economic Review*, vol. 96, iss. 2, pp. 353–57.
- Bai, C., C.T. Hsieh, and Z.M. Song. 2016. "The Long Shadow of a Fiscal Expansion," Brookings Papers on Economic Activity, pp. 129–181: Brookings Institute, Fall 2016. *Brookings Papers on Economic Activity*, pp. 129-181
- Bai, Y., Lu, D.. and Tian, X. 2018, "Do Financial Frictions Explain Chinese Firms' Saving and Misallocation?," NBER Working Paper No. 24436.
- Bank for International Settlements. 1999. "Strengthening the Banking System in China: Issues and Experiences," BIS Policy Papers, no 7, October, Basel.
- Batson, A. 2016. "Villains or Victims? The Role of SOEs in China's Economy?" In *The State Sector's New Clothes, GaveKal China Economic Quarterly* 20 (2).
- Berkowitz, D., H. Ma, and S. Nishioka. 2017. "Recasting the Iron Rice Bowl: The Reform of China's State-Owned Enterprises," *Review of Economics and Statistics*, October 2017, 99(4), pp.735–47.
- Brandt, L., and X. Zhu. 2000. "Redistribution in a Decentralized Economy: Growth and Inflation in China under Reform," *Journal of Political Economy*, Vol. 108(2), pp. 422–39.
- Brandt, L., Van Biesebroeck, J., Wang, L., and Y. Zhang. 2017. "WTO Accession and Performance of Chinese Manufacturing Firms," *American Economic Review*, Vol. 107(9), pp. 2784–2820.
- Brandt, L., Litwack, J., Mileva, E., Luhang, W., Yifan, Z., & Luan, Z. (2022). Recent Productivity Trends in China: Evidence from Macro-and Firm-Level Data. *China: An International Journal*, 20(1), 93-113.
- Brede, M., and Henn, C. 2019. Finland's public sector balance sheet. *Baltic Journal of Economics*, 19(1), pp. 176-194.
- Brehm, S., and C. Macht. 2005. "Is a New Broom Sweeping Clean? The Emergence of the China Banking Regulatory Commission," *Aussenwirtschaft*, University of St. Gallen, School of Economics and Political Science, Swiss Institute for International Economics and Applied Economics Research, vol. 60(02), pages 169-207, June.
- Bryant, C. 1987. "National and sector balance sheets", *Economic Trends*, May 1987

- Cabazon, E., and C. Henn. 2020. "Norway's Public Sector Balance Sheet," *Applied Economic Letters*, Vol. 27, iss. 11, pp. 930–36.
- Cao, Y. and Ma, J., 2012. Investigating national balance sheet. *Caijing Magazine*, 15.
- Cao, Y.Z., Y.Y. Qian, and B. R. Weingast. 1999. "From Federalism, Chinese Style to Privatization, Chinese Style," *Economics of Transition*, Vol.7, iss. 1, pp. 103–31.
- Cerdeiro, D. and C. Ruane, 2022. "China's Declining Business Dynamism," IMF Working Paper No. 22/32, International Monetary Fund, Washington, DC.
- Chen, H., Li, R. and Tillmann, P., 2019. "Pushing on a string: State-owned enterprises and monetary policy transmission in China," *China Economic Review*, 54, pp.26-40.
- Chen, Z., He, Z. and Liu, C., 2020. "The financing of local government in China: Stimulus loan wanes and shadow banking waxes," *Journal of Financial Economics*, 137(1), pp.42-71.
- Ching, H.S., Hsiao, C., Wan S.K., Wang, T. 2011. "Economic Benefits of Globalization: The Impact of Entry to the WTO on China's Growth," *Pacific Economic Review*. Vol. 16(3), pp. 285-301. doi:10.1111/j.1468-0106.2011.00548.x
- Cong, L.W., Gao, H., Ponticelli, J. and Yang, X., 2019. "Credit allocation under economic stimulus: Evidence from China," *The Review of Financial Studies*, 32(9), pp.3412-3460.
- Dan, Y. 2016. "The Compilation and Analysis of Chinese Government Balance Sheet," mimeo.
https://www.bis.org/ifc/events/ifc_8thconf/ifc_8thconf_4c2pap.pdf
- Deng, H., McGuckin, R., Haltiwanger, J., Xu, J., Liu, Y., Liu, Y. 2007. "The Contribution of Restructuring and Reallocation to China's Productivity Growth," The Conference Board, Economics Program, Economics Program Working Papers: 07-04.
- Deng, Y., Morck, R., Wu, J., Yeung, B. 2015. "China's Pseudo-monetary Policy," *Review of Finance* Vol. 19, pp. 55–93.
- Dickinson, F. G., and Eakin, F. 1936. "A balance sheet of the nation's economy," University of Illinois.
- Dube, A., Girardi, D., Jorda, O. and Taylor, A. 2022. "A local projections approach to difference-in-differences event studies," NBER working paper.
- Fardoust, S., Lin, J. Y., & Luo, X. 2012. Demystifying China's fiscal stimulus. World Bank Policy Research Working Paper, 6221.
- Finance Yearbook of China. 1997–2007. Ministry of Finance, China Financial Press, Beijing.
- Finanzministerium. 1933. Finanzieller Überblick über den Reichshaushaltsplan. Berlin, Germany.
- Firth, M., Lin, C., Lu, P., and Wong, S. M. L. 2009. "Inside the Black Box: Bank Credit Allocation in China's Private Sector," *Journal of Banking & Finance*, Vol. 33, pp. 1144–1155.

- Garcia-Herrero, A. S. Gavila, and D. Santabarbara. 2006. "China's Banking Reform: An Assessment of Its Evolution and Possible Impact", *CESifo Economic Studies*, vol.52, 2/2006, pp. 304–363.
- Garnaut, R., Song, L., and Yao, Y. 2006. "Impact and Significance of State-Owned Enterprise Restructuring in China," *The China Journal*, No. 55 (January), pp. 35–63.
- Giles, J., A. Park, and J. Zhang. 2005. "What is China's True Unemployment Rate?" *China Economic Review*, Vol. 16, pp. 149–170.
- Griffin, N. N., Walsh, J.P. 2017. "A Rapidly Changing Financial System," in *Modernizing China: Investing in Soft Infrastructure*, ed. Lam, Rodlauer, Schipke, 2017, International Monetary Fund, Washington, D.C.
- Goldsmith, R.W. 1982. *The national balance sheet of the United States, 1953-1980*. University of Chicago Press.
- Goldsmith, R.W. and Lipsey, R.E. 1963. The National Balance Sheet of the United States During the Postwar Period. In *Studies in the National Balance Sheet of the United States, Volume 1* (pp. 41-106). Princeton University Press.
- Gourinchas, P.O., and M. Obstfeld. 2012. "Stories of the Twentieth Century for the Twenty-First," *American Economic Journal: Macroeconomics* 4 (1): 226–65.
- Groves, T., Hong, Y., McMillan, J., and Naughton, B. J. 1994. "Autonomy and Incentives in Chinese State Enterprises," *Quarterly Journal of Economics*, Vol. 109 (1), pp. 873–892.
- Harrison, A., Meyer, M., Wang, P., Zhao, L. and Zhao, M., 2019., "Can a Tiger Change Its Stripes? Reform of Chinese State-Owned Enterprises in the Penumbra of the State," NBER Working Paper 25475.
- Ho, D., and A. Young. 2013. "China's Experience in Reforming Its State-owned Enterprises: Something New, Something Old and Something Chinese?" *International Journal of Economy, Management and Social Sciences*, Vol. 2(4), pp. 84–90.
- Holz, C. A. 2019. "The Unfinished Business of State-owned Enterprise Reform in the People's Republic of China," CESifo Working Paper No. 7688.
- Horn, S., C. Reinhart, and C. Trebesch. 2019. "China's Overseas Lending", NBER Working Paper No. 26050, July 2019.
- Hsieh, C.T. and Klenow, P.J. 2009. "Misallocation and manufacturing TFP in China and India," *The Quarterly journal of economics*, 124(4), pp.1403-1448.
- Hsieh, C.T. and Z.M. Song. 2015. "Grasp the Large, Let Go of the Small: The Transformation of the State Sector in China", *Brookings Papers on Economic Activity*, Spring 2015, pp. 295-346
- Huang, Y., Pagano, M., and Panizza, U. 2020. "Local crowding-out in China," *The Journal of Finance*, 75(6), 2855-2898.

- International Monetary Fund. 2011. "People's Republic of China Financial System Stability Assessment," IMF Country Report No.11/321.
- _____. 2014. "People's Republic of China Article IV Consultation Staff Report", IMF Country Report No.14/235, Washington, D.C.
- _____. 2017a. "People's Republic of China: Financial System Stability Assessment," IMF Country Report No.17/358, Washington, D.C.
- _____. 2017b. "People's Republic of China Staff Report for the Article IV Consultation" IMF Country Report No. 17/247.
- _____. 2018a. "Managing Public Wealth," *Fiscal Monitor* (October), Washington DC.
- _____. 2018b. "People's Republic of China Staff Report for the Article IV Consultation" IMF Country Report No.18/240, International Monetary Fund, Washington, DC.
- _____. 2019. "People's Republic of China Staff Report for the Article IV Consultation" IMF Country Report No.19/266, International Monetary Fund, Washington, DC.
- _____. 2020. "State-Owned Enterprises: The Other Government," *Fiscal Monitor* (April), Chapter 3, Washington DC.
- _____. 2021. "People's Republic of China Staff Report for the Article IV Consultation" IMF Country Report No.21/006, International Monetary Fund, Washington, DC.
- _____. 2022. "People's Republic of China Selected Issues" IMF Country Report No.22/22, International Monetary Fund, Washington, DC.
- _____. 2023. "People's Republic of China. Selected Issues" IMF Country Report No.23/81, International Monetary Fund, Washington, DC.
- Jurzyk, E. and C. Ruane. 2021. "Resource Misallocation Among Listed Firms in China: The Evolving Role of State-Owned Enterprises," IMF Working Paper, No. 21/75.
- Khandelwal, A.K., P.K. Schott, P.K., and S.J. Wei. 2013. "Trade Liberalization and Embedded Institutional Reform: Evidence from Chinese Exporters," *American Economic Review*, Vol. 103(6), pp. 2169–2195.
- Knight J. and J. Xue. 2006. "How High is Urban Unemployment in China?" *Journal of Chinese Economic and Business Studies*, Vol. 4, iss. 2, pp. 91–107.
- Krugman, P. 2010. "Keynes in Asia," *New York Times*, July 24.
- Laeven, L, and F. Valencia. 2018. "Systemic Banking Crises Revisited," IMF Working Paper No.18/206, International Monetary Fund, Washington, DC.
- Lam, W.R., and A. Schipke. 2017. "State-Owned Enterprise Reform," in *Modernizing China: Investing in Soft Infrastructure*, ed. Lam, Rodlauer, Schipke, 2017, International Monetary Fund, Washington, D.C.

- Lam, W.R., J.N., Wei, and H. van Eden. 2017. "Local Government Finances and Fiscal Risks." in *Modernizing China: Investing in Soft Infrastructure*, ed. Lam, Rodlauer, Schipke, 2017, International Monetary Fund, Washington, D.C.
- Lam, W.R., A. Schipke, Y.Y. Tan, and Z.B. Tan. 2017. "Resolving China's Zombies: Tackling Debt and Raising Productivity", IMF Working Paper No.17/266, International Monetary Fund, Washington, DC.
- Lam, W.R., M. Rodlauer, A. Schipke. 2017. "Modernizing China: Investing in Soft Infrastructure", International Monetary Fund, Washington, DC.
- Lardy, N. 1998. *China's Unfinished Economic Revolution*, Brookings Institution Press, Washington DC.
- _____. 1999. "The Challenge of Bank Restructuring in China", in BIS Policy Papers, no. 7, *Strengthening the Banking System in China: Issues and Experience*, October, Basel, pp 17–39.
- Lardy, N. 2014. "Markets over Mao: The Rise of Private Business in China," Peterson Institute for International Economics, September 2014.
- _____. 2019. "The State Strikes Back: The End of Economic Reform in China?," Peterson Institute for International Economics.
- Li, W., and Putterman, L. 2008. "Reforming China's SOEs: An Overview," *Comparative Economic Studies*, Vol. 50, pp. 353–380.
- Li, Y., Zhang, X.J., and Chang, X. 2018. "China's National Balance Sheet (2015): Leverage Adjustment and Risk Management," Springer Press.
- Li, Y., and X. J. Zhang. 2017. "China's National Balance Sheet: Theories, Methods and Risk Assessment," Springer Press.
- Liang, H. 2015. "Government Savings Continue to Rise" CICC Report, 2015.
- Liang, H. and L. Liu. 2019. "The Mounting LGFV Debt—A 'Gray Rhino' in China's Balance Sheet", CICC Macro Research, March 2019.
- Lou, J. 2000. "China's Bank Non-Performing Loan Problem: Seriousness and Causes," *International Lawyer* 34 (4), pp. 1147–1192.
- Lou, J.W. 2019. "An Overview of 40-Year Public Finance Reforms," *Fiscal Studies*, No.2/2019.
- Luo, P. 2003. "Challenges for China's Banking Sector and Policy Responses," Paper presented at the conference: A Tale of Two Giants: India's and China's Experience with Reform and Growth. Co-organizers: International Monetary Fund and the National Council of Applied Economic Research (India), 14–16 November 2003, Beijing: China Banking Regulatory Commission.
- Ma, G. 2006. "Sharing China's Bank Restructuring Bill," *China and World Economy*, Vol.14/3, pp. 19–37.

- _____. 2007. "Who Pays China's Bank Restructuring Bill?" *Asian Economic Papers*, Vol. 6, Iss. 1, pp. 46–71.
- Ma J., Zhang X. and Li Z. 2012. *Research on China's National Balance Sheet*, Social Sciences Academic Press.
- Mano, R. and P. Stokoe. 2017. "Reassessing the Perimeter of Government Accounts in China", IMF Working Paper No.17/272, International Monetary Fund, Washington, DC.
- Maliszewski, W., S. Arslanalp, J. Caparusso, J. Garrido, S. Guo, J.S. Kang, W. R. Lam, T. D. Law, W. Liao, N. Rendak, P. Wingender, J.Y. Yu, and L.M. Zhang. 2016. "Resolving China's Corporate Debt Problem," IMF Working Paper, No.16/203, International Monetary Fund, Washington, DC.
- McGuinness, P. and K. Keasey. 2010. "The Listing of Chinese State-owned Banks and Their Path to Banking and Ownership Reform," *The China Quarterly*, No.201, pp.125-155, March 2010.
- Megginson, W.L., Ullah, B., and Wei, Z. 2014. "State Ownership, Soft-budget Constraints, and Cash Holdings: Evidence from China's Privatized Firms," *Journal of Banking and Finance* Vol. 48, pp. 276–291.
- Mo, Y. K. 1999. "A Review of Recent Banking Reforms in China", in BIS Policy Papers, no. 7, *Strengthening the Banking System in China: Issues and Experience*, October, Basel, pp 90–109.
- Molnar, M. and J. Lu. 2019. "State-owned firms behind China's corporate debt", OECD Economics Department Working Papers, No. 1536, OECD Publishing, Paris, <https://doi.org/10.1787/7c66570e-en>.
- National Development and Reform Commission (NDRC). 2-16. "The 13th Five-Year Plan for Economic and Social Development of the People's Republic of China 2016-2020", National Development and Reform Commission, January 2016.
- National People's Congress. 2018. "General Report on 2017 National Assets Management", National People's Congress of the People's Republic of China, 2017.
<http://www.npc.gov.cn/npc/c22242/201811/8682bea56f1e4bae86f4eaafda53dd6e.shtml>
- Naughton, 2016. "State Enterprise Reform: Missing in Action," in *The State Sector's New Clothes, GaveKal China Economic Quarterly* 20 (2).
- OECD. 2002. "China in the World Economy. The Domestic Policy Challenges." OECD Publishing, Paris.
- _____. 2005. "OECD Economic Surveys: China," OECD Publishing, Paris.
- Poncet, S., Steingress, W., and Vandebussche H., 2010. "Financial constraints in China: Firm-level evidence," *China Economic Review*, 21(3), 411–422.
- Putterman, L., and X. Dong. 2000. "China's State-Owned Enterprises: Their Role, Job Creation, and Efficiency in Long-Term Perspective," *Modern China*, Vol. 26, No. 4, pp. 403–447.

- Qiu, Z., Sun, X., Wu, L., Jia, D. and Wang, Z., 2022. "The 2018 new asset management regulation and LGFV bonds in China," *Economic and Political Studies*, pp.1-25.
- Revell, J., 1966. The national balance sheet of the United Kingdom. *Review of Income and wealth*, 12(4), pp.281-305.
- Sadeghian D., G. White, and P. D'Arcy. 2013. "Macroeconomic Management in China," RBA Bulletin, Reserve Bank of Australia, pages 11-20, June.
- Scissors, D. 2019. "China's Global Investment in 2019: Going Out Goes Small", American Enterprise Institute.
- Shen, G. and Chen, B., 2017. "Zombie firms and over-capacity in Chinese manufacturing," *China Economic Review*, 44, pp.327-342.
- Song, Z., K. Storesletten, and F. Zilibotti. 2011. "Growing Like China," *American Economic Review*, Vol.101, No.1, pp.196–233.
- State Council of People's Republic of China. 2018a. "Report on the Management of State Assets in 2017—An Overview", October 2018.
- _____. 2018b. "Thematic Report on the State-Owned Financial Institutions in 2017," October 2018.
- Tang, MK., and S.J. Wei. 2009. "The Value of Making Commitments Externally: Evidence from WTO Accessions," *Journal of International Economics* Vol. 78, pp. 216–229.
- Tombe, T. and X. Zhu. 2019. "Trade, Migration, and Productivity: A Quantitative Analysis of China," *American Economic Review*, 109, 1843–1872.
- Traa, B., and A. Carare. 2007. "A Government's Net Worth," *Finance and Development* 44 (2), pp. 46–49.
- Wang, X., and R. Herd. 2013. "The System of Revenue Sharing and Fiscal Transfers in China," OECD Economics Department Working Paper No. 1030, Organization for Economic Co-operation and Development, Paris.
- Wang, Y. and Wu, S.X. 2023. "Local guarantees and SOE bond pricing in China," *China Economic Review*, p.101920.
- Wen, Y. and Wu, J., 2019. "Withstanding the great recession like China," *The Manchester School*, 87(2), pp.138-182.
- Wei, S., Z. Xie, and X. Zhang. 2017. "From "Made in China" to "Innovated in China": Necessity, Prospect, and Challenges," *Journal of Economic Perspectives*, Vol. 31, No.1 (Winter), pp. 49–70.
- Wei, X., Chen, Y., Zhou, M., and Zhou, Y. 2016. "SOE Preference and Credit Misallocation: A Model and Some Evidence from China," *Economic Letters* No. 138, pp. 38–41.

- Wingender, P. 2018. "Intergovernmental Fiscal Reform in China," IMF Working Paper No.18/88, International Monetary Fund, Washington, DC.
- Wong, C. 2011. "The fiscal stimulus programme and public governance issues in China," *OECD Journal on Budgeting*, 11(3), pp.1-22.
- _____.2013. "Reforming China's public finances for long-term growth," in *China: A new model for growth and development*: 199.
- World Bank. 1999. "China: Weathering the Storm and Learning the Lessons," Country Economic Memorandum, Washington, DC: World Bank.
- _____. 2002. *China: National Development and Sub-national Finance, a Review of Provincial Expenditures*, Report No. 22951-CHA, April, Washington, DC: World Bank.
- _____. 2007. *China's Modernizing Labor Market: Trend and Emerging Challenges*, Synthesis Report for the ESW Component of the China Labor Market AAA Program, August, Washington DC: World Bank.
- Wright, L. and D. Rosen. 2018. "Credit and Credibility: Risks to China's Economic Resilience", Center for Strategic and International Studies, October 2018.
- Wu, W., Firth, M. and Rui, O.M., 2014. "Trust and the provision of trade credit," *Journal of Banking & Finance*, 39, pp.146-159.Xu, C. 2011. "The Fundamental Institutions of China's Reforms and Development," *Journal of Economic Literature* Vol. 49:4, pp. 1076–1151.
- Xu, C. 2011. "The fundamental institutions of China's reforms and development," *Journal of economic literature*, 49(4), pp.1076-1151.
- Xu, J.G. and X. Zhang. 2014. "China's Sovereign Debt: A Balance Sheet Perspective," *China Economic Review*, Vol. 31, pp. 55–73.
- Yang, L., Jing, Z.X., Xin, C., Duoduo, T. and Cheng, L. 2012. "China's Sovereign Balance Sheet and Its Risk Assessment," *China Economist*, 7(6), p.78.
- Yang, Z.Y., B. Zhang, and L.M. Tang. 2017. "Chinese Government Balance Sheet," Social Sciences Academics Press, Beijing.
- Zhang, Y.Y. and S. Barnett. 2014. "Fiscal Vulnerabilities and Risks from Local Government Finance in China," IMF Working Paper No.14/4, International Monetary Fund, Washington, DC.
- Zhang, M., M. L., Zhang, B., and Yi, Z. 2016. "Pyramid Structure, Political Intervention and Firms' Tax Burden: Evidence from China's Local SOEs," *Journal of Corporate Finance*, Vol. 36, pp. 15–25
- Zhu, X. 2012. "Understanding China's Growth: Past, Present, and Future," *Journal of Economic Perspectives*, Vol. 26, No. 4 (Fall), pp. 103–124.

Zilibotti, F. 2017. Growing and slowing down like China. *Journal of the European Economic Association*, 15(5), pp.943-988.



PUBLICATIONS