Government Deleveraging and Corporate Distress*

Jiayin Hu† Songrui Liu‡ Yang Yao§ Zhu Zong¶

Abstract

We show that government deleveraging causes corporate distress in a distorted financial market. Our difference-in-differences analysis exploits China's top-down deleveraging policy in 2017, which reduces local governments' borrowing capacity through shadow bank financing. Private firms with government procurement contracts experience larger accounts receivable increases, larger cash holdings reductions, and higher external financing costs. These firms also experienced greater likelihoods of ownership changes and deteriorated performance. Effects are muted for state-owned enterprises, which enjoy funding privileges in China's financial system. Our paper thus reveals a novel channel of allocation inefficiencies where government deleveraging amplifies adverse impacts of financial distortions.

Keywords: Deleveraging, shadow banking, local government debt, corporate distress, government procurement, financial distortions

JEL classification: G30, G32, G38, H57, H72, H74, P34

*We thank Tuo Chen, Haoyu Gao, Di Gong, Lixing Li, Wenlan Luo, Jun Pan, Yuchao Peng, Xuesong Qian (discussant), Yanan Wang (discussant), Wen Yao, Conson Yingguang Zhang, and participants at the China Banking and Corporate Finance Conference (CBCF), Tsinghua SEM Economics Seminar, Tsinghua SEM Alumni Forum, Asian Meeting of the Econometric Society (AMES) in Beijing, UIBE School of Banking and Finance Seminar, and CCER Summer Institute for their helpful suggestions and comments. All errors are our own.

†jyhu@nsd.pku.edu.cn. China Center for Economic Research, National School of Development, Peking University. 5 Yiheyuan Rd, Beijing, China 100871. Phone: (86)10-62750316.

‡lsr1997@pku.edu.cn. China Center for Economic Research, National School of Development, Peking University. 5 Yiheyuan Rd, Beijing, China 100871.

§yyao@nsd.pku.edu.cn. China Center for Economic Research, National School of Development, Peking University. 5 Yiheyuan Rd, Beijing, China 100871.

¶zzong2018@nsd.pku.edu.cn. China Center for Economic Research, National School of Development, Peking University. 5 Yiheyuan Rd, Beijing, China 100871.

1 Introduction

Local governments in China have greatly expanded their debt capacity since the 4 trillion stimulus package in 2009, accumulating a debt balance of 34.4 trillion yuan by the end of 2016, as estimated by the International Monetary Fund (IMF). More than half of the debt is financed in the shadow banking sector through local government financing vehicles (LGFVs), which provide off-budget funding for various government projects and activities. While existing literature has investigated the substantial risks brought by the soaring local government debt (e.g., Huang et al., 2020; Chen et al., 2020), few studies have ever examined the impact of the deleveraging of government debt, which, despite its potential long-run benefits, may bring unintended consequences and amplify existing financial distortions.

We investigate the impact of government deleveraging on supplier firms exploiting China's top-down deleveraging policy in 2017. China provides an ideal setting for our empirical analysis. First, the central government in China implemented a massive deleveraging policy in 2017, which targeted the shadow banking sector and substantially reduced the borrowing capacity of local governments. Furthermore, we build a unique dataset combining local government procurement (GP) contracts and publicly listed firms in China between 2014 and 2019, enabling us to identify the impact of government deleveraging in a difference-in-differences (DID) framework. Our paper uses local GP contract data to identify business connections between firms and local governments, hence separating the impact of government deleveraging from other impacts of the 2017 deleveraging campaign (e.g., Geng and Pan, 2019) on firms' financial distress.

We hypothesize that local governments facing deleveraging pressure cause financial distress for supplier firms. While firms winning government contracts are often regarded as endorsed by the government, which increases their credibility in the financial market and relaxes their borrowing constraint, this advantage may become a disadvantage when the government itself faces deleveraging pressure. By delaying payments to supplier firms, lo-

cal governments can shift some financing pressure to GP contractors. Therefore, while the 2017 deleveraging policy had a direct and negative impact on firms' external financing, GP contractors, particularly non-SOE contractors, could suffer more than their non-GP counterparts due to the spillover of local governments' credit contraction.

Consistent with our hypothesis, we find that the decrease in local government shadow financing leads to financial distress among private firms with government contracts, hence amplifying the negative impact of the deleveraging policy. Specifically, firms that entered into GP contracts before 2017 (*GP firms*) experienced a larger increase in accounts receivable after the deleveraging policy than firms without such GP contracts (*non-GP firms*). GP firms also experience larger decreases in cash holdings and increases in bond financing costs than their non-GP counterparts, which is in sharp contrast to the pre-deleveraging comparison. We further conduct heterogeneity analyses to test our baseline results along the dimension of local governments' shadow bank financing capacity. We find that the financial distress impact on private GP firms is more pronounced on firms located in provinces with heavier debt burdens and more restrictions in MCB issuance, indicating that the liquidity deterioration among GP firms is associated with financially constrained local governments.

Financial distress has real impacts on private GP firms. We find that increases in accounts receivable (relative to assets) hurt business profitability and slow down revenue growth, dragging firms into real distress. These patterns support our argument that GP firms suffer from government payment delays rather than receiving other forms of compensation from the government. Additionally, we find increased share-pledging activities among the controlling shareholders of GP firms after the deleveraging policy, consistent with the hypothesis that GP firms have to resort to riskier, non-standard funding channels to raise funds. We also find a higher probability of ownership changes among GP firms, measured by a reduction in the shares held by firms' controlling shareholders, which could either be due to a fire sale in share-pledging or acquisition by outside parties. Notably, all these negative impacts are statistically significant only among the non-SOE subsample but not among SOEs, indicating

that the government deleveraging exacerbates financial distortions against private firms and hence leads to inefficiencies associated with credit misallocation.

Our paper contributes to several strands of literature.

First, our paper contributes to the literature by investigating the impact of the 2017 deleveraging policy, which expands the research scope from local government debt to local government deleveraging. Lacking the ability to directly issue municipal bonds, local governments in China rely on LGFVs to raise off-budget funding in the shadow banking system (for instance, see Ang et al., 2018; Chen et al., 2018, 2020).[1] The massive debt accumulated by local governments exacerbates the inefficiencies associated with financial distortions. Prominently, Huang et al. (2020) shows that the debt of local governments in China crowded out firms' investment by tightening their funding constraints. They also find that the impact is only pronounced for private firms but not SOEs, which benefit from the financial distortions. Gao et al. (2021) documents the selective default of local governments on bank loans. Notwithstanding those negative impacts of local government debt, we find that quick and sharp deleveraging by local governments can also have a large contractionary effect on private GP firms. Our results show that local governments facing deleveraging pressure cause financial distress for firms with government exposures, which is novel in the literature on shadow banking and local government debt problems in China. Our result thus provides novel evidence of the inefficiency of the shrinkage of local governments' shadow bank financing.

Second, our paper provides novel empirical evidence for the impact of government deleveraging, opening a new chapter in the deleveraging literature that mainly concentrates on examining the accumulation and collapse of household debt (e.g., Eggertsson and Krugman,

[1]The shadow banking system in China is closely connected to off-balance-sheet activities by commercial banks such as wealth-management products (WMPs) (Acharya et al., 2021) and entrusted loans (Allen et al., 2019). Several papers also investigate the driving forces behind the rise of LGFVs (Chen et al., 2018, 2020). For instance, Chen et al. (2018) document that shadow bank loans rise rapidly amid contractionary monetary policies during the period 2009-2015. Chen et al. (2020) shows that tightened regulations on traditional bank loans increase the demand for shadow bank financing by local governments.

2012; Justiniano et al., 2015; Di Maggio et al., 2017) and corporate deleveraging (e.g., DeAngelo et al., 2018; Andres et al., 2020). Government deleveraging differs from deleveraging in the private sector in that the overborrowing of local governments is rooted in soft budget constraints (Kornai, 1986; Bai and Wang, 1998; Qian and Roland, 1998; Maskin, 1999) and government guarantees. Government deleveraging thus deserves independent study. However, the existing deleveraging literature mainly focuses on the financial market rather than the government. China features a market-based economy with a heavy government presence (see, e.g., Xiong, 2018; Brunnermeier et al., 2022), thus providing an excellent empirical setting to examine the impact of government deleveraging. While a top-down deleveraging policy has the potential to alleviate the soft budget constraint problem, our findings show that it worsens the relative performance of private GP firms, underscoring the complexity of deleveraging policies.

Third, our paper contributes new empirical evidence to the literature on financial distortions. An abundant body of literature has documented the inefficiencies associated with SOEs and government-sponsored enterprises (GSEs) (Carvalho, 2014) and the distortionary impact of government guarantees and bailouts due to moral hazard and a lack of market discipline (Rucker and Alston, 1987; Allen et al., 2021; Acharya et al., 2016; Jiang et al., 2021; Hett and Schmidt, 2017). In the Chinese context, financial distortions mainly take the form of credit misallocation in the financial system favoring less-productive SOEs, as indicated by Song et al. (2011). Recently, the divergence between SOEs and non-SOEs in China has actually widened. For instance, Geng and Pan (2019) shows that the financing premium enjoyed by SOEs relative to their non-SOE counterparts increases amid government-led credit tightening, deepening the segmentation in China's bond markets. Fang et al. (2022) show that China's anti-corruption campaign may contribute to the recent resurgence of SOEs and the retreat of private firms in the real estate sector due to the stereotype that there is bribery associated with the government's interactions with private developers. Our paper echoes these papers by showing that governments facing borrowing constraints delay

payments to private supplier firms, which leads to the financial distress of non-SOEs while leaving SOEs unscathed under the existing financial distortions. Our paper thus demonstrates a novel channel for allocation inefficiencies where government deleveraging amplifies the adverse impact of financial distortions.

Fourth, we contribute to the corporate distress literature by analyzing the impact of the government's financial constraints on corporate performance. we contribute to the corporate distress literature by demonstrating a transmission channel from local government deleveraging to supplier firms' financial distress. In addition to analysis of firms' cash holdings, bond financing costs, and profitability, we also identify the impact on share-pledging activities of controlling shareholders, complementing previous literature analyzing the impact of financial distress on firms' sales and production (Opler and Titman, 1994; Hortacsu et al., 2013), investment (Eisdorfer, 2008), hiring (Giroud and Mueller, 2021; Brown and Matsa, 2016), capital structure (Gilson, 1997), and equity returns (Opler and Titman, 1994; Campbell et al., 2008; Garlappi and Yan, 2011). Particularly, Giroud and Mueller (2021) find that firm leverage buildups are predictably associated with boom-bust growth cycles. Our paper echoes their findings by showing that firms' business relationships with the government, which may bring financing advantages to firms in the short run, can also amplify the adverse impacts of government deleveraging in the medium run, thus leading to corporate distress and contributing to boom-bust cycles in the economy at large.

Fifth, we expand the data and research scope of the GP literature by investigating the financial aspect of GP contracts. Previous literature mainly focuses on the bidding process and the contracting features of GP and examines corruption in the bidding and allocation of procurement contracts (Mironov and Zhuravskaya, 2016; Palguta and Pertold, 2017; Coviello and Gagliarducci, 2017; Decarolis et al., 2020; Lewis-Faupel et al., 2016). Brogaard et al. (2021) contributes to the literature by examining ex-post renegotiation of existing contracts, while our paper provides novel evidence on ex-post contract payments. More generally, our paper offers a financial perspective on the impact of government activities, complementing

the broad research on government intervention.[2] Notably, governments are not omnipotent, and their economic involvement often results in distortions and inefficiencies.[3] Our paper adds a new research chapter on political influences and GP firms' performance by showing the connections between governments' financial constraints and procurement suppliers' financial distress.

The remainder of our paper proceeds as follows: Section 2 introduces the institutional background of local government financing, the deleveraging policy, and the GP system in China. Section 3 details the data and presents our empirical methodology. In Section 4, we show the impact of government deleveraging on the accounts receivable of GP supplier firms. Section 5 analyzes the financial distress faced by private GP firms and Section 6 examines the real impact of deteriorating financial conditions on firms' performance. We discuss the policy implications and conclude the paper in Section 7.

2 Institutional Background

2.1 Shadow Bank Financing of Local Governments

The financing of local governments in China has long been restricted by the central government given the absence of municipal bankruptcy institutions and the soft budget constraint problem. According to the Budget Law of the People's Republic of China promulgated in 1994,[4] local governments at all levels in China are prohibited from financing fiscal deficits

[2]Governments play a considerable role in both developing and developed countries, intervening in the economy in various ways. A strand of the literature investigates government intervention in various markets such as the housing market (Floetotto et al., 2016), the financial market (Hetzel, 2009), the venture capital and private equity market (Colonnelli et al., 2022), and the foreign exchange market (Humpage, 2003; Pasquariello, 2018). Several papers also examine the impact of politicians on government intervention in the economy (Tahoun and van Lent, 2013; Jia et al., 2021; Piotroski and Zhang, 2014).

[3]For instance, Chen et al. (2011) and Deng et al. (2020) show that government intervention distorts firms' investment decisions and induces inefficiencies. Duchin et al. (2020) investigate the role of government involvement in small, unlisted firms and find that firms with greater distance from the government have better operating performance and higher growth rates.

[4]http://www.npc.gov.cn/zgrdw/englishnpc/Law/2007-12/06/content_1382108.htm

directly through the financial market.[5] Lacking the ability to issue municipal bonds, local governments with deficits have to resort to alternative financing methods, which face stringent regulations as well. The tension between local government expenditures and financing restrictions heightened in 2008 when the Chinese government rolled out the 4 trillion fiscal stimulus plan[6] to stabilize the economy amid the global financial crisis.

Facing the substantial funding gap that emerged between local government fiscal revenue and stimulus plan expenditures, the Chinese central government began to encourage local governments to establish LGFVs,[7] which are essentially SOEs that engaged in off-balance-sheet activities for local governments (Chen et al., 2020), to raise funding for those investment projects promoted by the stimulus package. Several papers (e.g., Bai et al., 2016; Chen et al., 2018, 2020) have documented the connection between the 4 trillion yuan stimulus package and the reliance of local governments on the shadow banking system to raise off-budget funding. While 90% of local government investment projects were financed through bank loans when the stimulus package was launched (Bai et al., 2016), this bank loan funding channel has been substantially impeded since 2010 as China's monetary policy began to normalize through the reduction of bank loans. Nevertheless, the pressure of debt rollover (as well as further financing needs for infrastructure constructions) faced by Chinese local governments was persistent, hence stimulating the rapid development of China's shadow banking sector where LGFVs play an important role (Chen et al., 2020). Commercial banks in China, although restricted from extending credit directly to LGFVs since 2010, have also continued to inject liquidity into local governments through their off-balance-sheet shadow banking businesses (Chen et al., 2018).

[5]Revisions in 2015 enabled provincial governments to issue municipal bonds; however, the issuance still requires approval and is closely monitored by the central government.

[6]In fact, far more than 4 trillion yuan of liquidity was injected into the real economy over two years, according to Bai et al. (2016).

[7]For example, in March 2009, the People's Bank of China issued guidance encouraging local governments to incentivize and motivate the banking industry to increase their credit support for the investment projects planned by the central government by establishing compliant LGFVs and supporting qualified local governments in establishing LGFVs to issue corporate bonds, medium-term notes, and other financing tools to broaden the financing channels for the investment projects planned by the central government. See http://www.gov.cn/gongbao/content/2009/content_1336375.htm.

One way LGFVs raise funds in the shadow banking sector is through bond issuance. Distinguishing from typical municipal bonds, bonds issued by LGFVs are commonly referred to as municipal corporate bonds (MCBs), which are legally corporate bonds but are backed by explicit or implicit government guarantees. Local governments usually inject assets or provide guarantees for LGFVs to support them to borrow in financial markets and then provide funds for local governments' various expenditures. Hence, MCBs are often backed by land and fiscal revenue as collateral and repayment sources. Additionally, many senior executives of LGFVs are also senior officials of the local government, which makes the financial relationship between the local government and LGFVs very complicated and blurs the relationship between on-budget and off-budget revenues and expenditures. Fitch, one of the three major international rating agencies, downgraded China's long-term local currency credit rating in 2013, partly due to the reason that "the lending behavior between local governments and their platforms is not transparent."[8]

The shadow bank financing channel has become an important funding source for local governments in China thereafter. As shown in Panel A of Figure 1, MCB issuance increased to 1.2 trillion yuan in 2012, which was equivalent to one-fifth the size of the fiscal revenue of local governments. This increase is substantial given the fact that less than 500 billion yuan in MCBs were issued in 2011, or approximately one-tenth the size of local governments' fiscal revenue. Although the Chinese central government adopted several measures to "promote the transformation of LGFVs" and strip their function of local government financing,[9] it again loosened its restrictions on LGFVs in 2015 as the economy slowed.[10] As shown in

[8] https://www.fitchratings.com/entity/china-80442243#ratings

[9] The risks associated with local government debts call attention to the Chinese leadership as early as in 2010 when it tightens the regulations on LGFVs. See http://www.gov.cn/zwgk/2010-06/13/content_1627195.htm. The central government then issued several pieces of guidance on managing local government debts. For instance, in September 2014, the State Council of China issued opinions on strengthening the management of local government debt. The 2015 revision of the budget law also enables provincial and municipality governments, the administrative level below the central government but above the prefecture-level governments in China, to issue municipal bonds and hence replace shadow bank debts with formal government bonds. However, the amount of local government bonds need to be approved by the National People's Congress in a centralized way, and prefecture-level governments need to borrow through higher-level provincial governments.

[10] For instance, On May 25, 2015, the National Development and Reform Commission (NDRC) is-

Figure 1, the issuance of MCBs increases between 2015 and 2016. By 2016, MCB issuance by local governments in China has reached 2.8 trillion yuan, equivalent to one-third of local governments' fiscal revenue.

The soaring debts of local governments contribute to the increases in China's macroleverage[11] and bring substantial systemic risks via the accumulation of extensive hidden debt through shadow bank financing. According to the Ministry of Finance (MOF),[12] China's official government debt balance was 27.3 trillion yuan in 2016, including a local government debt balance of 15.3 trillion yuan. Meanwhile, BIS estimates that China's total government debt was 36 trillion yuan in 2016, hence implying a hidden debt of 8.7 trillion yuan. The scale of local government hidden debt is even greater according to IMF statistics. The IMF's 2017 report shows that at the end of 2016, China's government debt balance (in an augmented sense)[13] was 46.4 trillion yuan, with an estimated 19.1 trillion yuan of hidden debt, equivalent to 70% of the total government debt balance (27.3 trillion yuan) and 125% of the local government debt balance (15.3 trillion yuan). Extensive local government debts are hidden in the shadow banking sector via financing through LGFVs, imposing substantial pressure on the macroeconomy and financial stability.

sued a notice to relax the requirements for MCB issuance regarding guarantee measures, asset-liability ratio, net profit and government debt level. See http://www.changshu.gov.cn/zgcs/UploadFile/9f270884-a1d8-4220-a416-9cc5349beb247c69e215-d820-4d51-a90a-03c6001c5ebb.pdf.

[11]China's macroleverage, measured by its debt-to-GDP ratio, has also risen rapidly since 2008. According to statistics of the Bank for International Settlements (BIS), China's macroleverage increased rapidly from 139% in the fourth quarter of 2008 to 179% in the fourth quarter of 2010. In response to rising inflation, China's monetary policy began to normalize after 2010, but the overall leverage maintained a rapid growth rate of 12% per year on average. By the fourth quarter of 2016, China's macroleverage had risen to a staggering 252%. See https://www.bis.org/statistics/totcredit.htm?m=2669.

[12]See http://www.mof.gov.cn/gkml/caizhengshuju/201703/t20170317_2559812.htm.

[13]The augmented fiscal data expand the perimeter of government to include LGFVs and other off-budget activity.

2.2 The Deleveraging Campaign in China

In 2017, the Chinese central government declared financial stability a key priority[14] and embarked on a multiyear deleveraging campaign intended to stabilize the country's debt-to-GDP ratio over the following few years (Schipke et al., 2019). A series of unprecedentedly tough policies were adopted to address the hidden debt problem associated with the shadow bank financing of local governments. At the beginning of January 2017, the MOF requested several local governments to punish LGFV executives and other people who were directly responsible for illegally expanding government debt against relevant provisions of the Budget Law.[15] In April 2017, the MOF issued a proposed draft of the Notice on Further Disciplining the Debt Financing Behavior of Local Governments, which maintains that any local government, enterprise, financial institution, and the person responsible for illegally accumulating government debt would be punished.

Most importantly, on July 14, 2017, President Xi Jinping stated at the National Financial Work Conference that local party secretaries and government officials should "strictly control the increases in local government debt" and that they would be "held accountable for a lifetime", which provides strong political incentives for local officials to contain the size of newly issued government debt.[16] On July 24, 2017, the meeting of the Political Bureau of the Communist Party of China (CPC) Central Committee chaired by President Xi emphasized the importance of resolving the accumulated risks of local government debt, effectively disciplining the debt financing of local governments, and resolutely containing the increases in hidden debts.[17] These policy priorities were again highlighted at the executive meeting of

[14] President Xi Jinping announced this priority in 2017, and the 19th National Congress of the Communist Party of China highlighted financial stability as one of three critical battles. In early 2018, Vice-Premier Liu He delivered a speech at the World Economic Forum entitled "Three critical battles China is preparing to fight", reaffirming the resolution of financial risks as one of these three critical battles. See https://www.weforum.org/agenda/2018/01/pursue-high-quality-development-work-together-for-global-economic-prosperity-and-stability/.

[15] http://www.eeo.com.cn/2017/0227/298914.shtml

[16] See http://www.gov.cn/xinwen/2017-07/15/content_5210774.htm.

[17] See http://www.xinhuanet.com//politics/2017-07/24/c_1121372170.htm.

the State Council presided by Premier Li Keqiang on July 28, 2017.[18]

In addition to strong political incentives, the 2017 deleveraging campaign involved a series of monetary and financial policies aimed at "tightening credit" and "strengthening financial supervision" to restrict the flow of funds through shadow banking activities into "risky" sectors (including LGFVs, SOEs with excess capacity, and real estate companies). The People's Bank of China (PBC), together with relevant regulatory authorities, launched a series of strict supervision requirements on China's shadow banking sector. For instance, the China Banking Regulatory Commission (CBRC; now the China Banking and Insurance Regulatory Commission, CBIRC) has taken special rectification measures against the banking industry since March 2017 in response to regulatory arbitrage and illegal operations in China's banking industry.[19] In November 2017, a draft of the New Regulations on Asset Management (*ziguan xingui*, NRAM) was jointly released by the PBC and other four regulatory authorities, targeting the shadow banking system which includes the asset management industry and banks' off-balance-sheet business. In April 2018, the official release of the NRAM marks a new era of comprehensive supervision in the financial industry.[20]

The deleveraging policy had an immediate impact on the shadow bank financing of local governments by constraining the MCB issuance of LGFVs. As shown in Panel B of Figure 1, China's total LGFV bond issuance declined significantly from 2016 to 2017, and a low level of issuance was maintained in 2018. Although total issuance rebounded significantly in 2019, a closer examination of bond issuance purposes reveals that newly issued bonds are mainly used to repay existing debt, while bond issuance related to infrastructure construction and replenishment of corporate liquidity demonstrates a relatively stable downward trend since 2017. This structural change of MCB issuance echoes Chinese central government's determination to divest LGFVs as financing vehicles for local governments.

The intense deleveraging approach has driven LGFVs to the brink of exhausting their

[18]See http://www.gov.cn/xinwen/2017-07/28/content_5214192.htm.
[19]See http://www.gov.cn/xinwen/2018-01/22/content_5259163.htm.
[20]See http://www.pbc.gov.cn/tiaofasi/144941/3581332/3730258/index.html.

debt capacity. Facing external financing pressure, local governments and LGFVs shift their financial burdens to supplier firms by deferring or even defaulting on supplier payments. For example, in May 2022, China's MOF announced eight "typical cases" of local governments' accountability for the accumulation of hidden debts. Almost half of the cases involve local governments' practice of deferring or defaulting on payments to suppliers.[21]

2.3 Government Procurement in China

GP has been in operation in China since the late 1980s, but it was not until 2002 that the Government Procurement Law of the People's Republic of China[22] was promulgated. Taking effect on January 1, 2003, the Government Procurement Law marked the establishment of a GP institution where the finance departments of governments at various levels take charge of the supervision and administration of corresponding GP.[23] The scale of national GP reached 3.7 trillion yuan in 2020, accounting for 10.2% and 3.6% of national fiscal expenditure and GDP, respectively. The scales of central and local GP are 0.3 and 3.4 trillion yuan, respectively, accounting for 7.7% and 92.3% of the national totals.

Figure B1 illustrates the role of LGFVs in providing financial support for local GP. First, LGFVs can borrow from the financial market, and the borrowed funds backed by fiscal funds as a source of repayment are to be regarded as identical to fiscal funds.[24] Second, LGFVs can provide nonfiscal funds for certain local governments. In China, governments can conduct GP with fiscal funds or a combination of fiscal funds and nonfiscal funds.[25] Third, LGFVs

[21] See http://jdjc.mof.gov.cn/jianchagonggao/202205/t20220518_3811312.htm.

[22] http://www.npc.gov.cn/zgrdw/englishnpc/Law/2007-12/06/content_1382108.htm

[23] To purchase certain goods, services, or projects, a government department needs to determine whether the budget exceeds a certain amount and whether the required goods, services, or projects belong to certain categories. If so, the GP process must be implemented. Figure B2 outlines the general procedures of GP.

[24] See the Regulations on the Implementation of the Government Procurement Law of the People's Republic of China, http://www.gov.cn/zhengce/2020-12/27/content_5573728.htm.

[25] The Regulations on the Implementation of the Government Procurement Law of the People's Republic of China stipulates that when fiscal funds and nonfiscal funds are combined for purchasing goods, services, or projects, the Government Procurement Law and these regulations shall apply uniformly. http://www.gov.cn/zhengce/2020-12/27/content_5573728.htm

can provide self-raised funds for local GP. In practice, local governments sometimes occupy the funds of LGFVs for purposes such as "capital exchanges".[26] Hence, funding for GP is closely related to the shadow bank financing of local governments.

Local governments pay supplier firms after obtaining the goods, projects, or services specified in their GP contracts, which means that the supplier firm needs to bear all the costs during the provision of GP in advance. While it is similar to the practice common in the private sector, this payment delay may be abused by local governments given the difficulty faced in suing a government under weak legal institutions. Supplier firms face complex legal procedures and high time costs when prosecuting the government, in addition to concerns regarding deteriorating their relationships with the government.[27] Even after winning the case in court, a supplier firm often faces obstacles in the process of implementation to execute the government property and state assets, resulting in the judgment becoming a dead letter.[28]

In recent years, several cases show that local governments carry out procurement activities even when there is already no money to pay and eventually delay payments to supplier firms.[29] A reasonable conjecture is that a financially constrained government is more likely to delay payment for GP, which causes financial difficulties for supplier firms. The common practice of governments delaying payments to supplier firms eventually attracts the attention of national leadership. Since the end of 2018, Premier Li Keqiang has regularly mentioned at State Council executive meetings that no government department or SOE shall run arrears with POEs and SMEs.[30]

[26] http://finance.people.com.cn/n1/2022/0518/c1004-32424529.html

[27] According to the provisions of the Government Procurement Law, a supplier should first complain to the purchaser (the government) in the case of a payment dispute. If the complaint is not satisfactorily resolved, the supplier should then raise complaints to the procurement supervision and administration agency, i.e., the bureau of finance of the local government. Only when all the above attempts fail to produce satisfactory results can an administrative lawsuit be filed with the court. See https://wenshu.court.gov.cn/website/wenshu/181107ANFZ0BXSK4/index.html?docId=JGWeB5tetTmdf5+siNMtgxcNFpBqw2QDfM7IUFj26/a4xePKgEN63pO3qNaLMqsJj+oibYjLv3g+JmQEVNplzZ47V5TUBnhAcOT8WTmTb/8ruXQT74veVuu5MMh13wxh.

[28] An example case can be found at https://www.66law.cn/laws/322003.aspx.

[29] See http://news.iqilu.com/shandong/yuanchuang/2020/0104/4410408.shtml

[30] See http://www.gov.cn/zhengce/2020-07/02/content_5523719.htm.

3 Data and Empirical Methodology

3.1 Data Sources

Publicly Listed Firm Data

Our research focuses on publicly listed firms and their affiliated companies. We obtain the financial data and ownership information of Chinese A-share firms (i.e., firms listed on the Shanghai and Shenzhen Stock Exchanges) from CSMAR, a widely used economic and financial database in China. These variables include (1) administrative basics such as firm name and location; (2) financial statement variables such as total assets, total revenue, accounts receivable, cash holdings, profits, and return on assets (ROA); (3) ownership data such as ownership structure and the number of shares held by controlling shareholders; and (4) share-pledging data such as the number of stocks pledged by controlling shareholders.

Additionally, we collect bond issuance data of these listed firms from the WIND database, which includes information on each corporate bond such as issuance date and bond yield. In our empirical study, we focus on firms' external financing costs measured by the coupon rates of bond issuance.

Government Procurement Data

The Government Procurement Law requires that information regarding GP be announced to the public promptly through designated media channels, with information related to trade secrets being the only exception. Since 2000, the Chinese Government Procurement website (http://www.ccgp.gov.cn/) becomes the official website on which all levels of the government release procurement information. We scrape from the website to obtain all procurement announcements containing the bidding results of each public procurement, which enables us to identify firms that have become GP suppliers and obtain the procurement

value (i.e., the amount of money the government should pay) of each procurement contract.

To address discrepancies in firm names, we adopt both exact and fuzzy matching approaches to map the extracted GP supplier firms to the listed firms. While we have the full names of all listed firms in the Chinese mainland and their affiliates, the exact names may not be used in the GP announcements, especially when the winning bidder is an affiliated company. Appendix Table A1 provides further details regarding the textual analysis and matching methods we use. Finally, we manually check the matching results and drop any observations that are incorrectly matched with the help of the industrial and commercial registration data query system provided by QICHACHA (https://www.qcc.com/).

Local Government Data

Our LGFV bond data come from the WIND database and our local government fiscal deficits and GDP data come from the National Bureau of Statistics of China. In China, a relatively large local government deficit ratio means that the provincial government lacks "fiscal self-sufficiency" and thus heavily depends on external financing in addition to central government transfers. We use the difference between the general budget expenditure and the general budget revenue of Chinese provincial governments to measure the fiscal deficits of local governments. We use the ratio of the government's fiscal deficit to the GDP of the province where the focal GP firm is located to measure the external financing pressure faced by the government at the province level.

3.2 Main Variables

According to the timeline of the deleveraging policy, we define 2017-2019 ($After2017_t$) as the post-policy period and 2014-2016 as the pre-policy period. We define GP firms as firms that won one or more GP contracts between 2014 and 2016, i.e., before the top-down deleveraging policy, including those that won GP contracts through their affiliated subsidiaries. The

indicator $GPfirm$ equals one if a firm is a GP firm and zero otherwise. Essentially, we are comparing firms with pre-deleveraging-policy procurement contracts with those that never won a GP contract throughout our sample period.

Following the literature on state ownership and financial distortions in China, we identify a firm as an SOE if it is ultimately controlled by a government entity, which includes the central SASAC, local SASACs, the MOF, or other government agents. If a firm is not controlled by either of these government entities, we label it as a private firm.

One direct impact of local government deleveraging is an increase in GP firms' accounts receivable due to government payment delays. We use accounts receivable over total assets $Receivable(ratio)$ to capture these changes. Meanwhile, we include a series of financial statement variables to control for firm-level confounding factors. We use total assets (log value) to proxy for firm size($Size$) and total liabilities over total assets to proxy for financial leverage ($Leverage$). Other financial statement variables include fixed assets ($Fixedassets$, divided by total assets), total income ($Income$, divided by total assets), the annual growth rate of total income($Incomegrowth$), the shareholding ratio of top 10 major shareholders ($Top10Share$) and the proportion of independent directors ($IDPdirector$).

Additionally, we construct variables capturing firms' external financing costs and ownership status to further our analysis of the indirect and distributional impact of local government deleveraging. We use $Couponrate_{it}$, the weighted average coupon rate using the amount of each bond issued by the same listed firm in a certain year as weight, to proxy for firms' external financing costs. $Pledgeratio$, the percentage of the controlling shareholder's shares that are pledged at the end of a certain year, captures the alternative financing of listed firms, which could also be interpreted as controlling shareholders' loss of confidence in the firm. $Controlratio$ denotes the shareholding of the controlling shareholder as a percentage of total firm shares. For firms with multiple controlling shareholders, we retain only the earliest controlling shareholder with the largest shareholding ratios in our sample period.

3.3 Summary Statistics

We focus on nonfinancial firms listed on Chinese A-share markets between 2014 and 2019. We exclude firms that won GP orders for the first time in 2017-2019. Our final sample contains 2,265 listed nonfinancial firms listed on Chinese A-share stock markets between 2014 and 2019. We construct balanced panel data for our main regressions, i.e., each firm in the regression sample has complete 6-period data.

Table 1 reports the summary statistics of our sample data. There are 1,405 POEs and 860 SOEs in our sample. Among the 1,020 GP firms, which account for 45% of our sample firms, 604 are POEs and 416 are SOEs. There are 1449 firm-year observations of coupon rates corresponding to 420 bond-issuing listed firms, including 249 SOEs and 171 POEs.

On average, accounts receivable constitute 11.9% of a firm's total assets. The ratio of cash holdings to total assets, $Cash(ratio)$, has a mean value of 0.164, higher than the mean value of $Receivable(ratio)$. ROA, defined as net profit over total assets, has a mean value of 0.025 and a standard error of 0.081. The mean coupon rate value is 5.142 percent. $Pledgeratio$ has an average value of 0.345; that is, the controlling shareholders who pledged their shares during the sample period pledged an average of 34.5% of the shares they held. $Controlratio$ has a mean value of 0.323; that is, on average, the controlling shareholder of a Chinese A-share listed firm owns 32% of the firm's shares. Notably, nearly 1,700 among the 2,265 companies in our sample once had at least one controlling shareholder, accounting for more than 70% of the listed companies.

In terms of local government characteristics, there are large differences in the fiscal conditions of local governments in different regions of China. The average fiscal deficit ratio (fiscal deficit/real GDP) of China's 31 provincial-level local governments was 0.18, with a standard error of 0.21. In the developed coastal provinces, such as Jiangsu, Zhejiang, and Guangdong, the general fiscal deficit rate was less than 5% during our sample period. However, in the western provinces such as Guizhou, Yunnan, and Qinghai, the general fiscal

deficit rate remained over 20% for a long time. A high general fiscal deficit means that the local government lacks "fiscal self-sufficiency" and is more sensitive to changes in shadow bank financing conditions.

3.4 Empirical Methodology

We use the following DID specification to analyze the impact of government deleveraging on procurement suppliers:

$$y_{it} = \alpha + \beta GPfirm_i \times After2017_t + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \tag{1}$$

where y_{it} is the dependent variable for firm i at the end of year t and our coefficient of interest is β, which captures the impact of the deleveraging policy on firms with local government contracts (measured by pre-deleveraging-policy GP contracts) relative to firms without such business connections. The indicator $After2017_t$ equals one for years between 2017 and 2019 (i.e., the post-deleveraging-policy period) and zero for the period between 2014 and 2016 (i.e., the pre-deleveraging-policy period). $GPfirm_i$ equals one for firms that obtained GP orders between 2014 and 2016. ϵ_{it} represents the error term.

To further address the omitted variable problem, we add lagged control variables X_{it-1} to control for time-varying firm-level characteristics, including firm size, leverage, fixed assets, income, the annual growth rate of total income, the shareholding ratio of the top 10 major shareholders and proportion of independent directors. We also include firm fixed effects γ_i and year fixed effects γ_t in the regression to control for time-invariant firm characteristics and common time trends, respectively.

We exclude firms that won GP orders for the first time between 2017 and 2019, i.e., the post-deleveraging-policy period. Hence, $GPfirm_i = 0$ refers to listed firms that never won GP contracts throughout our sample period, which serves as a clean control group. As

long as the two types of firms exhibit parallel trends in the pre-deleveraging-policy period, we have confidence that our DID approach is solid in identifying the causal impact of the deleveraging policy on firms with GP contracts.

4 The Impact on Accounts Receivable

4.1 Baseline Regression Results

We find that GP firms (i.e., firms that won GP bids between 2014 and 2016) experience a significant increase in accounts receivable after China's implementation of the deleveraging policy in 2017. Figure B4 further demonstrates the differentiated impact of government deleveraging among SOE and non-SOE groups. As shown in Figure B4, the accounts receivable of private GP firms start to increase in 2017, while the accounts receivable of private firms without GP contracts remained stable after the government deleveraging. In the SOE sample, the accounts receivable of both GP firms and non-GP firms remained almost unchanged after the deleveraging policy, showing that while private GP firms are facing cash flow pressure, SOE firms with GP contracts are immune to the shrinkage of local governments' shadow bank financing.

To quantify the magnitude and statistical significance of the impact of government deleveraging, we estimate DID coefficients as specified in Equation 1. As shown in Column (1) of Table 2, the increase in accounts receivable (divided by total assets) is 0.5% higher among GP firms than among non-GP firms after the deleveraging shock. In Column (2), we add time-varying firm-level control variables such as firm size, fixed assets, leverage, and total income to account for observable differences between GP firms and non-GP firms. In both columns, we control for firm and year fixed effects to exclude the impact of time-invariant firm characteristics and macroeconomic trends. We do not find a substantial change in the coefficient, suggesting that firms' financial characteristics cannot help explain

the difference. These results show that firms with GP contracts experience a deterioration in financial health compared to their non-GP counterparts, which cannot be fully explained by other firm characteristics and is consistent with our payment delay hypothesis.

When a local government can delay payments on government contracts at its discretion, we would also expect firms with fewer political advantages to be more affected. Columns (3)-(6) report the subsample results for POEs and SOEs. Consistent with our hypothesis, we find that private GP firms experience a significant increase in receivables after the deleveraging policy compared to private non-GP firms. The deleveraging policy leads to a 1% increase (as a share of total assets) in accounts receivable of private GP firms. Translating into economic significance, this result implies an increase in accounts receivable of 80 million RMB, which is approximately 8% of the average accounts receivable and 7% of the average cash holdings of listed POEs.

In contrast, we do not find such a significant impact in the SOE subsample, indicating that state-owned GP firms were not affected by the deleveraging policies in a way significantly different from state-owned firms without GP contracts. These results support our hypothesis that governments facing deleveraging pressures are more likely to delay payments to POE suppliers, which have fewer political connections and lower bargaining powers relative to SOEs. Given the fact that non-SOEs are usually more constrained in external financing in China's distorted financial market favoring SOEs, this selective payment delay would amplify the negative impacts of government deleveraging on private firms and exacerbate the inefficiencies associated with credit misallocation.

Pre-Trend Analysis

Our interpretation of β as a causal impact is challenged by the endogeneity problem due to omitted variables since GP firms may be intrinsically different from non-GP firms. For instance, firms that win GP contracts may be larger, more productive, or more politically

connected than their non-GP counterparts. However, even if GP firms and non-GP firms are systematically different along other dimensions we cannot control for, our DID identification is valid as long as the omitted variable is orthogonal to our outcome variables, i.e., GP firms and non-GP firms have parallel trends if there are no exogenous shocks.

Specifically, we use the following dynamic DID specification to test whether the parallel trend assumption holds in the pre-deleveraging period:

$$\begin{aligned} y_{it} =& \alpha + \beta_1 GPfirm_i \times Year2014_t + \beta_2 GPfirm_i \times Year2015_t \\ &+ \beta_3 GPfirm_i \times Year2017_t + \beta_4 GPfirm_i \times Year2018_t \\ &+ \beta_5 GPfirm_i \times Year2019_t + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \end{aligned} \tag{2}$$

where $Year2014_t$, $Year2015_t$, $Year2017_t$, $Year2018_t$ and $Year2019_t$ are year dummies that equal one in the corresponding year and zero otherwise. We set the year 2016, i.e., right before the deleveraging policy implementation, as a benchmark by excluding the dummy for 2016 from our regression. Our assumption of pre-policy parallel trends holds if the coefficients for interaction terms in 2014 and 2015 are not significantly different from zero.

Figure 2 plots the regression coefficients of the dynamic DID as specified by Equation 2 with accounts receivable as the dependent variable for both the POE sample and the SOE sample. Before the policy shock, there is no significant change in the accounts receivable of GP firms relative to that of non-GP firms in either subsample; that is, parallel trends existed during the pre-policy period. However, after the implementation of the deleveraging policies, the accounts receivable of private GP firms increase significantly relative to their non-GP counterparts. The results of the SOE subsample, on the other hand, reconfirm that deleveraging policies have not had a significant impact on the accounts receivable of state-owned GP firms. Overall, our results show that government deleveraging causes significant increases in the accounts receivable of private GP firms relative to their non-GP counterparts while leaving SOE GP firms unscathed.

Alternative Measurements

One possibility is that the increases in accounts receivable of private GP firms may reflect an expansion of firms' assets and revenue rather than payment delay from local governments. However, we find this argument highly unlikely. First, we have included firms' total income ($Income$) and income growth ($Incomegrowth$) as control variables in the above regressions. Second, to further exclude the influence of changes in firm revenue, we use the ratio of accounts receivable to total income as an alternative measure of our outcome variable.

Nevertheless, we report robustness check results in Table B3, which shows the regression results where the accounts receivable are measured in log form of the original number and as a ratio of total income in Panel A and Panel B, respectively. We find that these results using alternative measures are consistent with our baseline regression results. Hence, our findings in the baseline results are robust to alternative measurements of the outcome variables.

Placebo Tests

We also conduct a placebo test by redistributing the experimental group through random sampling. We keep the proportion of GP firms in the POE sample and SOE sample unchanged, label "fake" GP firms through random sampling, and then perform the same regression as in Column (2) of Table 2. We repeat the above process 500 times, and Figure B6 plots the kernel density function of the regression coefficients (red line) and the corresponding p-values (blue circles) for the regression coefficients. Among the 500 regressions of POE samples, the maximum coefficient is 0.009 (corresponding to a p-value of 0.003), and there are 57 observations with p-values less than 0.1 (10% significance level); the baseline regression result is 0.011 (black dashed line), which is greater than the maximum value of this distribution, indicating that our baseline result is unlikely to be driven by random factors.

Triple Differences Analysis

Our baseline analysis compares the DID results between SOEs and non-SOEs (i.e., private firms) through subsample regressions within each ownership category. To compare the differentiated impact of government deleveraging between SOEs and non-SOEs, we adopt a DDD regression approach specified as follows with POE_i equal $1 - SOE_i$:

$$\begin{aligned} y_{it} =& \alpha + \beta GPfirm_i \times After2017_t \times POE_i + \beta_1 GPfirm_i \times After2017_t + \\ & \beta_2 GPfirm_i \times POE_i + \beta_3 After2017_t \times POE_i + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \end{aligned} \tag{3}$$

The coefficient β estimates the differences in the deleveraging impact between private and state-owned GP firms. Table 3 reports the results of the DDD estimation. We find the estimated coefficients are significantly positive, corroborating our argument that local governments selectively delay payments to supplier firms, which affects private GP firms more than state-owned firms. The DDD results are also consistent with our baseline findings, indicating that our DID regression estimates are unlikely to be affected by systematic differences between SOEs and non-SOEs.

4.2 Mechanism Analysis: Local Government Debt Capacity

One caveat is that we do not have a comprehensive measure of local government debt and therefore cannot rule out the substitution hypothesis that local governments use alternative financing options, such as bank loans, to make up for the decreases in shadow bank financing. Since China's bank loan data is not publicly available at the bank-firm level, we are unable to directly test this alternative hypothesis. However, we find this substitution possibility highly unlikely, as the top-down deleveraging policy makes it very clear that local governments should contain the increases in their debts, regardless of the financing sources. Moreover, it is the tightened regulations on bank loans that induce local governments to raise funding in

the shadow banking sector in the first place Chen et al. (2020).

We further conduct heterogeneity analysis utilizing measures of local government borrowing capacity and obtain results that are consistent with our payment delay hypothesis. Intuitively, when local governments have the discretion to run arrears, they are more likely to delay payments to GP firms, especially to less politically connected ones, when the governments face greater financing pressure. Hence, the accounts receivable of the corresponding private GP firms would experience a more significant increase when their contracts come from more financially constrained local governments.

Local Government Fiscal Deficits

We first use the ratio of the government's fiscal deficit (central government transfer included) to the GDP of the province where the focal GP firm is located[31] to measure the external financing pressure faced by the government at the province level. In the Chinese institutional context, a large local government deficit ratio means that the provincial government lacks "fiscal self-sufficiency" and that this local government strongly depends on external financing in the shadow banking sector. We classify the provinces of China into high- and low-fiscal-deficit groups based on whether the average deficit ratio of province p is higher or lower than the median of the average deficit ratios of all provinces.

We find that private GP firms experience a more significant increase in accounts receivable than their non-GP counterparts if located in high-deficit-ratio provinces. Panel A in Table 4 presents a significantly positive coefficient of $GPfirm_i \times After2017_t$ in the POE sample, indicating that private GP firms experience significant increases in accounts receivable after the deleveraging policy. Moreover, the significantly positive coefficient of $GPfirm_i \times After2017_t \times GDhigh_p$ indicates that this negative impact on private GP firms

[31]Due to information advantages, cost advantages, and support for local firms, a large proportion of the GP business of listed firms in China is obtained in the province where the listed firm is located, and such business accounts for nearly 40% of GP projects in our sample.

is more pronounced in high-fiscal-deficit provinces. Translating into economic significance, the increase in accounts receivable of listed companies in high-fiscal-deficit provinces is three times larger than that of firms in low-fiscal-deficit provinces. Again, we do not find similar patterns in the SOE sample, as shown in Columns (5) and (6).

Reductions in MCB Issuance

Another indicator of the external financing pressure faced by local governments after the deleveraging policy is the repayment ratio of MCBs, namely the proportion of newly issued MCBs that are used to repay existing debts. A high MCB repayment ratio means that the stock debt of local governments is high and that the funds that local governments can obtain through MCBs for infrastructure projects are limited. Thus, we expect private GP firms located in provinces with higher MCB repayment ratios to experience a larger increase in accounts receivable. Panel B in Table 4 presents our heterogeneity analysis by classifying provinces into high- and low-repayment-ratio groups based on whether their MCB repayment ratios are above or below the average in 2016. The coefficients in Columns (3) and (4) of Panel B are significantly positive, meaning that private GP firms experience more substantial increases in accounts receivable than their non-GP counterparts after the deleveraging policy and that this corporate distress impact is more pronounced in provinces more adversely affected by the deleveraging policy, consistent with our hypothesis.

One concern is that MCB issuance and LGFV debts account only for a portion of local government debt, and thus our MCB measure may not capture the overall local government debt in an accurate way. This argument only works against ours when the rest financing options (e.g., bank loans) of local governments remain intact or even increase after the top-down deleveraging policy in 2017. However, the Chinese leadership emphasizes the importance of curbing local government debt, regardless of the funding source, in multiple occasions in 2017. Additionally, if these alternative financing options, say bank loans, move

in the opposite direction from the shadow bank financing of local governments, then this substitution hypothesis actually works in our favor because this substitution leads to an overestimate of local government financial constraint. Hence, our estimated coefficients should be interpreted as a lower bound of the impact of local government deleveraging. If bank loans move in tandem with MCB issuance, then it directly supports our government deleveraging story. If bank loans are uncorrelated with MCB issuance, then it should not bias our estimates unless bank loans to governments are correlated with whether a firm obtains GP contracts with the same government, which is highly unlikely.

Overall, our results show that government deleveraging significantly increases the accounts receivable of private GP firms relative to their non-GP counterparts while leaving SOE GP firms unscathed. This negative impact of the deleveraging policy is more pronounced among firms located in provinces with greater shadow financing needs or with larger reductions in shadow bank financing capacity. Our findings are consistent with the hypothesis that financially constrained local governments selectively delay their payments to less politically resourceful firms.

5 Financial Distress

5.1 Corporate Cash Holdings

In the previous section, our empirical results show that after the deleveraging policy, the accounts receivable of private GP firms start to grow. Increasing accounts receivable tend to squeeze firms' cash holdings. If our payment delay hypothesis holds, then the negative impact of government leveraging and payment delay would also reflect in the deterioration of firm cash holdings.

Panel A of Table 5 presents our regression results using firm's cash holdings (as a ratio of total assets) as the dependent variable. Consistent with our hypothesis, private GP

firms experience significant deterioration in their cash holdings after the deleveraging policy. Column (4) shows that cash holdings as a percentage of total assets decreased by 1.1% among private GP firms, which is approximately 7% of the average cash holdings of listed POEs, which means that the increase in accounts receivable has a nearly one-to-one crowding-out effect on cash holdings.

The dynamic DID results shown in Figure 3 also support the causal relationship. Before the policy shock, there was no significant change in the cash holdings of private GP firms relative to their non-GP counterparts; that is, parallel trends existed in the pre-policy period. However, the cash holdings of private GP firms increase significantly relative to those of private non-GP firms after the deleveraging policy. Again, there is a one-to-one crowding-out effect of the increase in accounts receivable on corporate cash holdings.

5.2 External Financing Costs

In a distorted financial system where SOEs have funding privileges over their private counterparts (e.g., Cull et al., 2015; Li et al., 2008; Lu and Yao, 2004), private firms' business connections with the government partly alleviate firms' borrowing constraints, helping them to obtain external financing support at lower costs. Figure B4 illustrates the change in the financing costs of private GP firms relative to their non-GP counterparts. We find that GP firms enjoy a stable financing cost advantage before the government deleveraging in 2017, even after controlling firm characteristics such as firm size.

After the implementation of deleveraging policies, however, private GP firms experience a significant increase in bond financing costs. As shown in Panel B of Table 5, we find that the coupon rates of private GP firms increase by more than 40 basis points compared to their non-GP counterparts after the deleveraging policy, indicating that GP firms experience a liquidity crunch in the bond market. Figure 3 plots the dynamic DID regression coefficients as specified by Equation 2 with coupon rates as the dependent variable, and these results

are consistent with our hypothesis.

6 The Real Impact

In previous sections, we have shown that the government deleveraging in 2017 causes financial distress in private GP firms. A surge in accounts receivable constrains the cash holdings of these firms; moreover, private GP firms suffer increases in external financing costs. In this section, we demonstrate the real impact of this financial distress, which induces their controlling shareholders to resort to highly risky share-pledging financing and thereby exposes the ownership of controlling shareholders to the risks of stock market fluctuations, taking a toll on the performance and profitability of these private GP firms.

6.1 Share-Pledging and Ownership Changes

The liquidity dilemma caused by deleveraging policies leads many controlling shareholders of POEs to choose highly risky financing vehicles such as share pledging, which impaired their ability to withstand stock market risks. Panel A of Table 6 reports the DID regression results with the share pledging ratio of controlling shareholders as the dependent variable. The change in the share pledging ratio of controlling shareholders exhibits the same pattern as that of accounts receivable. The share pledging ratio by controlling shareholders of private GP firms increases by more than five percentage points over that of the controlling shareholders of private non-GP firms. The results of the dynamic DID regression reported in Figure B5 also confirm this effect.

In our sample, the average share pledging ratio of POE controlling shareholders with share pledging records is 0.48, or nearly 50%. This means that our estimates are not only statistically significant but also economically important. In the SOE subsample, the average share-pledging ratio of the controlling shareholders is 0.09, a meager value compared to

that of the POE subsample. This is mainly because the Chinese government has strict supervision over the share-pledging of controlling shareholders of SOEs. On the other hand, because SOEs have privileges in obtaining bank loans and borrowing in the bond market, they are less likely to be financially constrained and thus less dependent on highly risky financing methods.

Share pledging exposes the controlling shareholders to stock price fluctuations and increases their probability of losing the controlling stake in the company in its downturns. Panel B of Table 6 shows that the controlling shareholders of private GP firms experience a significant decline in firm ownership after the implementation of the deleveraging policies. Column (4) of Panel B shows that the controlling shareholder's average holding ratio drops significantly by one percentage point during the deleveraging period. Given the average shareholding ratio of controlling shareholders of POEs is approximately 30%, a one-percentage-point drop in the shareholding ratios may seem to have limited economic significance. However, the relatively small average treatment effect is mainly due to the fact that major changes in the shareholding structure are concentrated in certain companies. Therefore, the actual impact on private firms is considerable. This decline in the shareholding ratio of controlling shareholders may be because the shares pledged by controlling shareholders for external financing suffered from liquidation and sales under the impact of the bear market in 2018, or it may stem from the fire sales of controlling shareholders when companies faced financial difficulties.[32]

[32]Through communications with executives in the industry, we learned that before the government deleveraging in 2017, the capital market generally preferred the shares of firms with government contracts and would set a lower haircut for these types of share-pledging transactions. However, shareholders' confidence in the prospects of stock prices also leads to a relatively high liquidation line and a weaker ability to withstand the downside risks of the stock market.

6.2 Firm Performance

One alternative explanation to our findings is that local governments may have compensated these private GP firms in other forms, thus counteracting the adverse impact of financial distress. To promote sales and future profitability, firms may sometimes be willing to hold a larger percentage of accounts receivable in their operating income. If this is the case, we should expect the relative increases in the accounts receivable of private GP firms to be associated with increases in sales and profitability.

However, we find this alternative hypothesis unlikely to be true. We investigate the relationship between accounts receivable and firm performance using the following regression specification:

$$\begin{aligned} ROA_{it} =& \alpha + \beta Receivable_{it}(Pledgeratio_{it}, Cash_{it}) \times After2017_t + \\ & \beta_1 Receivable_{it}(Pledgeratio_{it}, Cash_{it}) + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \end{aligned} \tag{4}$$

Table 7 reports the regression results for the full sample and for the POE and SOE subsamples. We find that the coefficient of *Receivable* in Column (3) is significantly negative, indicating that an increase in accounts receivable is negatively associated with firm profitability during the full sample period. In Column (4), we add the interaction of *Receivable* with the dummy variable indicating the post-policy period, $After2017$. We find that the coefficient of the interaction item $Receivable \times After2017$ is significantly negative, which indicates that an increase in accounts receivable in the government deleveraging period is associated with a negative impact on firm performance. Nevertheless, we do not find such relationships in the pre-deleveraging period.

The same pattern was found when cash holdings and the share pledge ratio were used as independent variables. In Panel B of Table 7, we replace *Receivable* with $Cash$ (cash holdings) and run regressions specified by Equation 4. We find a significantly positive coefficient on $Cash \times After2017$, which suggests that the deterioration of external financing constraints

makes the operations of POEs more sensitive to cash holdings, which are squeezed by surging accounts receivable.

Column (4) of Panel C in Table 7 shows that an increase in the share-pledging ratios of controlling shareholders is associated with poor firm performance after deleveraging. A possible mechanism for this phenomenon could be the adverse effect of the transfer of corporate ownership related to stock pledges on corporate operations. For instance, Li et al. (2019) found that during the bear market of 2018, highly pledged firms that faced greater stock crash risk due in part to forced sales of pledged stock had worse stock returns, a higher likelihood of default and worse operating performance. Given the crucial role of a stable holding structure in corporate operations, we believe that during the deleveraging period, the turmoil in the corporate holding structure encountered by private GP firms is a potential reason for the subsequent deterioration of corporate profitability.

7 Conclusion

In this paper, we investigate the unintended consequences of government deleveraging on private firms with government contracts. Exploiting hand-collected GP contract data and the 2017 deleveraging policy in China, we find that government deleveraging resulted in financial distress among private supplier firms but not among SOEs, implying the privileges enjoyed by SOEs to negotiate with local governments and obtain external funding. After the government deleveraging, private firms with government contracts experienced increases in accounts receivable, external financing costs, share pledging by controlling shareholders, and probabilities of ownership changes, as well as a reduction in cash holdings and corporate profitability. Overall, our results show that business connections with the government sour into a heavy burden on private firms when the government becomes financially constrained, which amplifies the negative impact of government deleveraging in a distorted financial system.

Our paper also underscores the complexity of deleveraging policies in the context of financial distortions and weak legal institutions. The deleveraging policy targeting local government debt quickly achieved its goal, albeit at the unexpected cost of harming private firms while leaving SOEs relatively unscathed. Our findings are consistent with the hypothesis that local governments facing borrowing constraints essentially finance their expenditures by selectively delaying contract payments to private supplier firms. Given the discretion enjoyed by local governments and the lack of legal enforcement, firms with the weakest bargaining power bear the heaviest burden of government deleveraging. Our findings imply that financially constrained local governments adopt a selective delay approach favoring SOEs, thus exacerbating existing financial distortions and credit misallocation. A sustainable deleveraging policy, therefore, requires leveling the playing field of SOEs and private firms, as well as improving judiciary independence and legal institutions.

References

Acharya, V. V., D. Anginer, and A. J. Warburton (2016, May). The End of Market Discipline? Investor Expectations of Implicit Government Guarantees. *SSRN working paper*.

Acharya, V. V., J. Q. Qian, Y. Su, and Z. Yang (2021). In the Shadow of Banks: Wealth Management Products and Issuing Banksâ Risk in China. *SSRN working paper*.

Allen, F., X. Gu, C. W. Li, J. Q. Qian, and Y. Qian (2021, September). Implicit Guarantees and the Rise of Shadow Banking: The Case of Trust Products. *SSRN working paper*.

Allen, F., Y. Qian, G. Tu, and F. Yu (2019). Entrusted loans: A close look at China's shadow banking system. *Journal of Financial Economics 133*(1), 18–41.

Andres, J., O. Arce, D. Thaler, and C. Thomas (2020). When fiscal consolidation meets private deleveraging. *Review of Economic Dynamics 37*, 214–233.

Ang, A., J. Bai, and H. Zhou (2018, July). The Great Wall of Debt: Real Estate, Political Risk, and Chinese Local Government Financing Cost. *SSRN working paper*.

Bai, C.-E., C.-T. Hsieh, and Z. M. Song (2016). The long shadow of china's fiscal expansion. *Brookings Papers on Economic Activity*, 129–181.

Bai, C.-E. and Y. Wang (1998). Bureaucratic Control and the Soft Budget Constraint. *Journal of Comparative Economics 26*(1), 41–61.

Brogaard, J., M. Denes, and R. Duchin (2021). Political Influence and the Renegotiation of Government Contracts. *The Review of Financial Studies 34*(6), 3095–3137.

Brown, J. and D. A. Matsa (2016). Boarding a Sinking Ship? An Investigation of Job Applications to Distressed Firms. *The Journal of Finance 71*(2).

Brunnermeier, M. K., M. Sockin, and W. Xiong (2022). Chinaâ s Model of Managing the Financial System. *The Review of Economic Studies 89*(6), 3115–3153.

Campbell, J. Y., J. Hilscher, and J. Szilagyi (2008). In Search of Distress Risk. *The Journal of Finance 63*(6), 2899–2939.

Carvalho, D. (2014). The real effects of government-owned banks: Evidence from an emerging market. *Journal of Finance 69*(2), 577–609.

Chen, K., J. Ren, and T. Zha (2018). The Nexus of Monetary Policy and Shadow Banking in China. *American Economic Review 108*(12), 3891–3936.

Chen, S., Z. Sun, S. Tang, and D. Wu (2011). Government intervention and investment efficiency: Evidence from China. *Journal of Corporate Finance 17*(2), 259–271.

Chen, Z., Z. He, and C. Liu (2020). The financing of local government in China: Stimulus loan wanes and shadow banking waxes. *Journal of Financial Economics 137*(1), 42–71.

Colonnelli, E., B. Li, and E. Liu (2022). Investing with the Government: A Field Experiment in China. *SSRN working paper*.

Coviello, D. and S. Gagliarducci (2017). Tenure in Office and Public Procurement. *American Economic Journal: Economic Policy 9*(3), 59–105.

Cull, R., W. Li, B. Sun, and L. C. Xu (2015). Government connections and financial constraints: Evidence from a large representative sample of chinese firms. *Journal of Corporate Finance 32*, 271–294.

DeAngelo, H., A. S. Goncalves, and R. M. Stulz (2018). Corporate Deleveraging and Financial Flexibility. *The Review of Financial Studies 31*(8), 3122–3174.

Decarolis, F., R. Fisman, P. Pinotti, and S. Vannutelli (2020). Rules, Discretion, and Corruption in Procurement: Evidence from Italian Government Contracting. *NBER working paper*.

Deng, L., P. Jiang, S. Li, and M. Liao (2020). Government intervention and firm investment. *Journal of Corporate Finance 63*, 101231.

Di Maggio, M., A. Kermani, B. J. Keys, T. Piskorski, R. Ramcharan, A. Seru, and V. Yao (2017). Interest Rate Pass-Through: Mortgage Rates, Household Consumption, and Voluntary Deleveraging. *American Economic Review 107*(11), 3550–3588.

Duchin, R., Z. Gao, and H. Shu (2020, December). The Role of Government in Firm Outcomes. *The Review of Financial Studies 33*(12), 5555–5593.

Eggertsson, G. B. and P. Krugman (2012). Debt, Deleveraging, and the Liquidity Trap: A Fisher-Minsky-Koo Approach. *The Quarterly Journal of Economics 127*(3), 1469–1513.

Eisdorfer, A. (2008). Empirical Evidence of Risk Shifting in Financially Distressed Firms. *The Journal of Finance 63*(2), 609–637.

Fang, H., J. Wu, R. Zhang, and L.-A. Zhou (2022). Understanding the Resurgence of the SOEs in China: Evidence from the Real Estate Sector. *NBER working paper*.

Floetotto, M., M. Kirker, and J. Stroebel (2016, June). Government intervention in the housing market: Who wins, who loses? *Journal of Monetary Economics 80*, 106–123.

Gao, H., H. Ru, and D. Y. Tang (2021). Subnational debt of China: The politics-finance nexus. *Journal of Financial Economics 141*(3), 881–895.

Garlappi, L. and H. Yan (2011). Financial Distress and the Cross-section of Equity Returns. *The Journal of Finance 66*(3), 789–822.

Geng, Z. and J. Pan (2019, December). The SOE Premium and Government Support in China's Credit Market. *NBER working paper* (26575).

Gilson, S. C. (1997). Transactions Costs and Capital Structure Choice: Evidence from Financially Distressed Firms. *The Journal of Finance 52*(1), 161–196.

Giroud, X. and H. M. Mueller (2021, December). Firm leverage and employment dynamics. *Journal of Financial Economics 142*(3), 1381–1394.

Hett, F. and A. Schmidt (2017, December). Bank rescues and bailout expectations: The erosion of market discipline during the financial crisis. *Journal of Financial Economics 126*(3), 635–651.

Hetzel, R. L. (2009). Government Intervention in Financial Markets: Stabilizing or Destabilizing? *SSRN working paper*.

Hortacsu, A., G. Matvos, C. Syverson, and S. Venkataraman (2013). Indirect Costs of Financial Distress in Durable Goods Industries: The Case of Auto Manufacturers. *The Review of Financial Studies 26*(5), 1248–1290.

Huang, Y., M. Pagano, and U. Panizza (2020). Local Crowding-Out in China. *The Journal of Finance 75*(6), 2855–2898.

Humpage, O. (2003). Government Intervention in the Foreign Exchange Market. *SSRN working paper*.

Jia, R., X. Lan, and G. Padró i Miquel (2021). Doing business in China: Parental background and government intervention determine who owns busines. *Journal of Development Economics 151*, 102670.

Jiang, J., L. Liao, Z. Wang, and X. Zhang (2021). Government Affiliation and Peer-To-Peer Lending Platforms in China. *Journal of Empirical Finance 62*, 87–106.

Justiniano, A., G. E. Primiceri, and A. Tambalotti (2015). Household leveraging and deleveraging. *Review of Economic Dynamics 18*(1), 3–20.

Kornai, J. (1986). The Soft Budget Constraint. *Kyklos*.

Lewis-Faupel, S., Y. Neggers, B. A. Olken, and R. Pande (2016). Can Electronic Procurement Improve Infrastructure Provision? Evidence from Public Works in India and Indonesia. *American Economic Journal: Economic Policy 8*(3), 258–283.

Li, F., Q. Jun, H. Wang, and J. L. Zhu (2019, August). Stock pledged loans, capital markets, and firm performance: the good, the bad and the ugly. *NBER Working Paper*.

Li, H., L. Meng, Q. Wang, and L.-A. Zhou (2008). Political connections, financing and firm performance: Evidence from chinese private firms. *Journal of Development Economics 87*, 283–299.

Lu, F. and Y. Yao (2004). The effectiveness of the law, financial development, and economic growth in a economy of financial repression: Evidence from china. *Social Sciences in China 1*, 42–55.

Maskin, E. S. (1999). Recent Theoretical Work on the Soft Budget Constraint. *American Economic Review 89*(2), 421–425.

Mironov, M. and E. Zhuravskaya (2016). Corruption in Procurement and the Political Cycle in Tunneling: Evidence from Financial Transactions Data. *American Economic Journal: Economic Policy 8*(2), 287–321.

Opler, T. C. and S. Titman (1994). Financial Distress and Corporate Performance. *The Journal of Finance 49*(3), 1015–1040.

Palguta, J. and F. Pertold (2017). Manipulation of Procurement Contracts: Evidence from the Introduction of Discretionary Thresholds. *American Economic Journal: Economic Policy 9*(2), 293–315.

Pasquariello, P. (2018, September). Government Intervention and Arbitrage. *The Review of Financial Studies 31*(9), 3344–3408.

Piotroski, J. and T. Zhang (2014). Politicians and the IPO decision: The impact of impending political promotions on IPO activity in China. *Journal of Financial Economics 111*(1), 111–136.

Qian, Y. and G. Roland (1998). Federalism and the Soft Budget Constraint. *The American Economic Review 88*(5), 1143–1162.

Rucker, R. R. and L. J. Alston (1987). Farm Failures and Government Intervention: A Case Study of the 1930's. *The American Economic Review 77*(4), 724–730.

Schipke, A., M. Rodlauer, and L. Zhang (2019). *The future of China's bond market: Chapter 1.* International Monetary Fund.

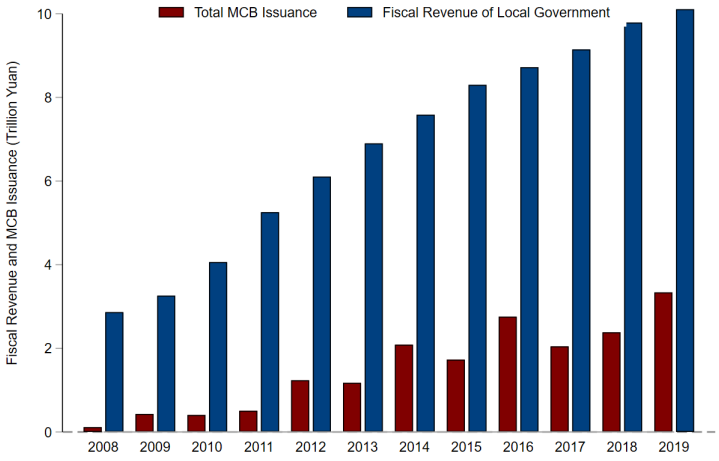
Song, Z., K. Storesletten, and F. Zilibotti (2011). Growing Like China. *American Economic Review 101*(1), 196–233.

Tahoun, A. and L. van Lent (2013, August). The Personal Wealth Interests of Politicians and Government Intervention in the Economy. *SSRN working paper*.

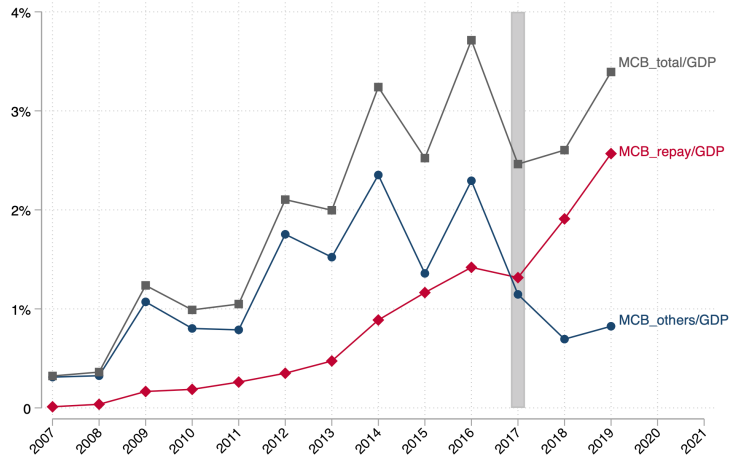
Xiong, W. (2018). The Mandarin Model of Growth. *NBER working paper*.

Figure 1: Shadow Bank Financing by Local Governments in China

Note: This figure shows the impact of the deleveraging policy on the shadow bank financing by local governments. Panel A plots the municipal corporate bond (MCB) issued by LGFVs and local government fiscal revenue. Panel B plots the total MCB issuance over GDP, MCB issuance for repayment (of bank loans and maturing bonds) over GDP, and MCB issuance for other purposes (including replenishing working capital and financing for new investment) over GDP.



(A) MCB Issuance and Local Government Fiscal Revenue



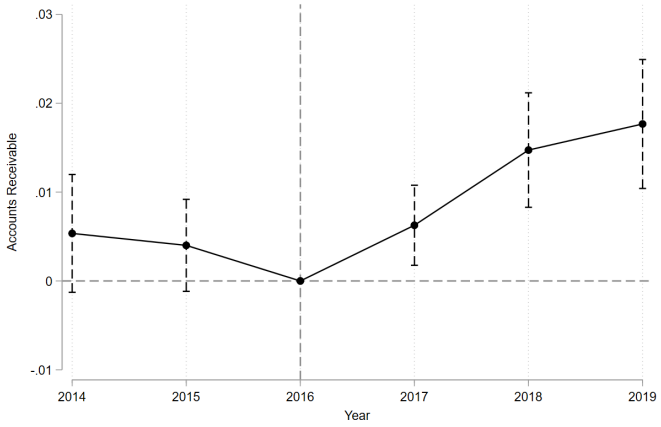
(B) Repayment Pressure from Shadow Bank Financing

Figure 2: The Dynamic Effect of Deleveraging on Accounts Receivable

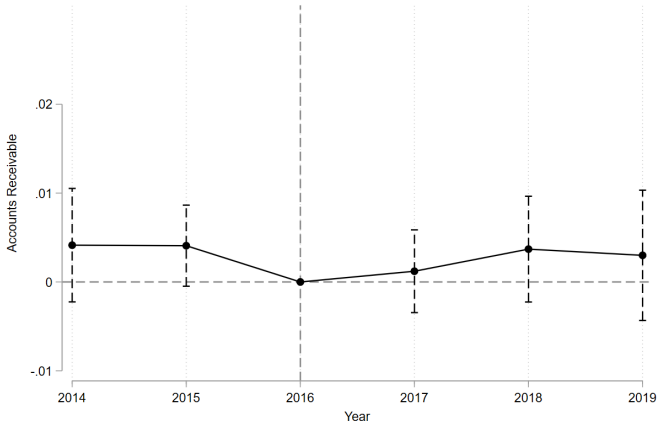
Note: This figure plots the effect of deleveraging on firm accounts receivable for both the POE sample and the SOE sample. We report estimated coefficients from the following regression:

$$\begin{aligned} Receivable_{it} =& \alpha + \beta_1 GPfirm_i \times Year2014_t + \beta_2 GPfirm_i \times Year2015_t \\ &+ \beta_3 GPfirm_i \times Year2017_t + \beta_4 GPfirm_i \times Year2018_t \\ &+ \beta_5 GPfirm_i \times Year2019_t + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \quad , \end{aligned} \tag{1}$$

$Receivable_{it}$ denotes accounts receivable (divided by total assets). We define 2017-2019 ($After2017_t$) as post-policy periods, and dummy variable $GPfirm_i$ denotes listed firms that obtained government procurement orders during 2014-2016 (pre-policy period). X_{it-1} are control variables including firm size ($Size$), financial leverage ($Leverage$), fixed assets ($Fixedassets$, divided by total assets), total income ($Income$, divided by total assets), the annual growth rate of total income($Incomegrowth$), the shareholding ratio of top 10 major shareholders ($Top10Share$) and proportion of independent directors ($IDPdirector$). γ_i and γ_t denote firm fixed effects and time fixed effects, respectively, and ϵ_{it} represents the error term. The dashed lines represent 95% confidence intervals, adjusted for firm-level clustering.



(A) POEs



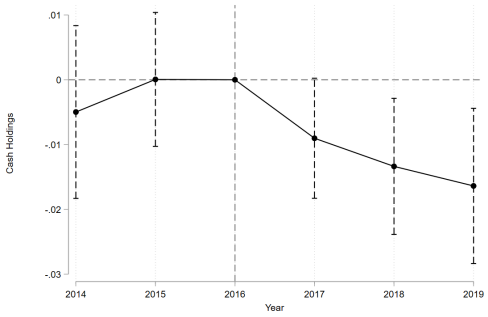
(B) SOEs

Figure 3: Financial Distress among Government Procurement Firms

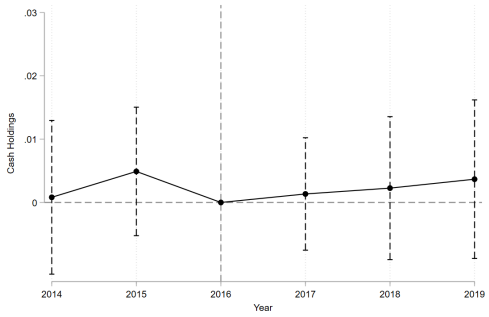
Note: This figure plots the effect of deleveraging on firm cash holdings and bond issuance for both the POE sample and SOE sample. We report estimated coefficients from the following regression:

$$\begin{aligned} Y_{it} =& \alpha + \beta_1 GPfirm_i \times Year2014_t + \beta_2 GPfirm_i \times Year2015_t + \beta_3 GPfirm_i \times Year2017_t + \\ & \beta_4 GPfirm_i \times Year2018_t + \beta_5 GPfirm_i \times Year2019_t + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \quad , \end{aligned} \tag{2}$$

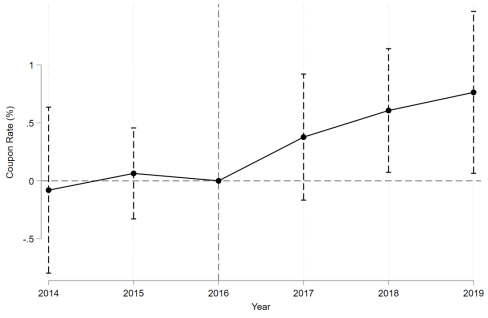
where Y_{it} denotes the outcome variable, which is $Cash_{it}$ (cash holdings divided by total assets) in Panels A and B and $Interestrate_{it}$ (coupon rates of bonds issued by listed firms) in Panels C and D. We define 2017-2019 ($After2017_t$) as post-policy periods, and dummy variable $GPfirm_i$ denotes listed firms that obtained government procurement orders during 2014-2016 (pre-policy period). X_{it-1} are control variables including firm size ($Size$), financial leverage ($Leverage$), fixed assets ($Fixedassets$, divided by total assets), total income ($Income$, divided by total assets), the annual growth rate of total income($Incomegrowth$), the shareholding ratio of top 10 major shareholders ($Top10Share$) and proportion of independent directors ($IDPdirector$). γ_i and γ_t denote firm fixed effects and time fixed effects, respectively, and ϵ_{it} represents the error term. The dashed lines represent 95% confidence intervals, adjusted for firm-level clustering.



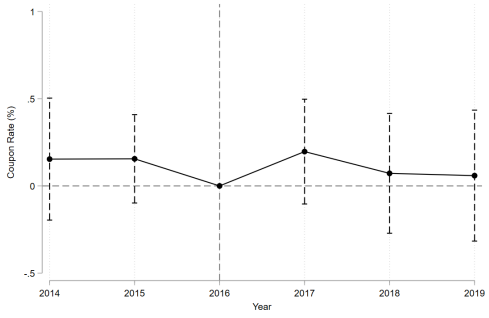
(A) Cash holdings (POE Sample)



(B) Cash holdings (SOE Sample)



(C) Bond financing costs (POE Sample)



(D) Bond financing costs (SOE Sample)

Table 1: Summary Statistics

Note: This table reports the summary statistics of 2,265 non-financial firms listed in Chinese A-share stock markets between 2014-2019. $GPfirm$ is a dummy variable indicating firms that have won in government procurement bids during 2014 - 2016, for bid-winners $GPfirm$ is 1, otherwise it is 0. SOE is a dummy variable indicating a state-owned enterprise (SOE). We use total assets (log value) to proxy for firm size($Size$) and total liabilities over total assets to proxy for financial leverage ($Leverage$). Variables ending with ($ratio$) denote the amount divided by total assets for accounts receivable ($Receivables(ratio)$), fixed assets ($Fixedassets(ratio)$), cash holdings ($Cash(ratio)$), total income ($Income(ratio)$) and Variables ending with (log) denote the log value for accounts receivable ($Receivables(log)$), fixed assets ($Fixedassets(log)$), cash holdings ($Cash(log)$), total income ($Income(log)$). $Incomegrowth$ is the annual growth rate of total income, and ROA is the return on assets; i.e., net profits over total assets. $Top10Share$ is the proportion of shares held by the top ten shareholders. $IDPdirector$ is the proportion of independent directors on the board of directors. $Controlratio$ denotes the shareholding of the controlling shareholder as a percentage of the firm total share. $Pledgeratio$ is the percentage of the controlling shareholder's ownership that is pledged at the end of the year and $Couponrate_{it}$ is the coupon rate of bonds issued by listed firms. We exclude firms that won government procurement orders for the first time in 2017-2019 (after the top-down deleveraging policy) and we winsorize all continuous variables at 1% and 99% levels.

	N	Mean	Sd	Min	P50	Max
Panel A: Firm characteristics						
$GPfirm_i$	2265	0.450	0.485	0	0	1
SOE_i	2265	0.380	0.498	0	0	1
Panel B: Dependent variables						
$Receivable_t$(ratio)	13590	0.119	0.105	0	0.095	0.477
$Receivable_t$(log)	13590	19.51	1.720	13.64	19.63	23.55
$Cash_t$(ratio)	13590	0.164	0.113	0.013	0.135	0.564
$Cash_t$(log)	13590	20.16	1.394	16.800	20.06	24.14
ROA_t	13590	0.025	0.081	-0.435	0.031	0.187
$Controlratio_t$	9823	0.323	0.145	0	0.303	0.900
$Pledgeratio_t$	9786	0.345	0.379	0	0.189	1
$Couponrate_t$	1449	5.142	1.399	2.161	5.003	9.500
Panel C: Control variables						
$Size_{t-1}$	13590	22.24	1.295	19.62	22.09	26.15
$Leverage_{t-1}$	13590	0.438	0.212	0.055	0.424	0.951
$Fixedasset_{t-1}$(ratio)	13590	0.219	0.166	0.002	0.183	0.713
$Fixedasset_{t-1}$(log)	13590	20.13	1.760	15.06	20.10	24.66
$Income_{t-1}$(ratio)	13590	0.593	0.420	0.051	0.492	2.500
$Income_{t-1}$(log)	13590	21.42	1.473	17.83	21.29	25.58
$Incomegrowth_{t-1}$	13590	0.196	0.544	-0.593	0.097	3.866
$Top10share_{t-1}$	13590	0.572	0.154	0.225	0.576	0.927
$IDPdirector_{t-1}$	13590	0.376	0.054	0.333	0.364	0.571

Table 2: Baseline DID: The Deleveraging Policy Shock

Note: This table reports the results of the following regression

$$Receivable_{it} = \alpha + \beta GPfirm_i \times After2017_t + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \quad (3)$$

We report the regression results of the full sample, the POE sub-sample, and the SOE sub-sample in separate columns. $Receivable_{it}$ denotes accounts receivable (divided by total assets). We define 2017-2019 ($After2017_t$) as post-policy periods, and dummy variable $GPfirm_i$ denotes listed firms that obtained government procurement orders during 2014-2016 (pre-policy period). X_{it-1} are lagged control variables including firm size ($Size$), financial leverage ($Leverage$), fixed assets ($Fixedassets$, divided by total assets), total income ($Income$, divided by total assets), the annual growth rate of total income($Incomegrowth$), the shareholding ratio of top 10 major shareholders ($Top10Share$) and proportion of independent directors ($IDPdirector$). γ_i and γ_t denote firm fixed effects and time fixed effects, respectively, and ϵ_{it} represents the error term. Standard errors are adjusted for firm-level clustering and reported in parentheses. ***, **, * denote significance levels at 1%, 5%, and 10%, respectively.

	Y_{it} = **Accounts Receivable (as a share of total assets)**					
	Full sample		POE		SOE	
	(1)	(2)	(3)	(4)	(5)	(6)
GPfirm × After2017	0.005**	0.006***	0.009***	0.010***	-0.000	-0.000
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Size		0.003		0.003		-0.001
		(0.002)		(0.003)		(0.003)
Leverage		-0.005		-0.010		0.005
		(0.008)		(0.010)		(0.011)
Fixedasset		-0.040***		-0.033***		-0.051***
		(0.010)		(0.013)		(0.016)
Income		0.030***		0.039***		0.023***
		(0.005)		(0.006)		(0.006)
Incomegrowth		0.003***		0.002		-0.001
		(0.001)		(0.002)		(0.001)
Top10share		0.021**		0.017		0.026*
		(0.009)		(0.012)		(0.015)
IDPdirector		-0.002		0.024		-0.034
		(0.015)		(0.021)		(0.022)
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
Observations	13,590	13,590	8,430	8,430	5,160	5,160
R-squared	0.872	0.876	0.849	0.854	0.900	0.903

Table 3: The Effect of Deleveraging on Accounts Receivable - DDD

Note: This table reports the results of the following regression

$$\begin{aligned} Y_{it} =& \alpha + \delta GPfirm_i \times After2017_t \times POE_i \\ &+ \beta GPfirm_i \times After2017_t + \rho POE_i \times After2017_t + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \quad , \end{aligned} \tag{4}$$

We define 2017-2019 ($After2017_t$) as post-policy periods, and the dummy variable $GPfirm_i$ denotes listed firms that obtained government procurement orders during 2014-2016 (pre-policy period). X_{it-1} are lagged control variables including firm size ($Size$), financial leverage ($Leverage$), fixed assets ($Fixedassets$, divided by total assets), total income ($Income$, divided by total assets), the annual growth rate of total income($Incomegrowth$), the shareholding ratio of top 10 major shareholders ($Top10Share$) and proportion of independent directors ($IDPdirector$). γ_i and γ_t denote firm fixed effects and time fixed effects, respectively, and ϵ_{it} represents the error term. Standard errors are adjusted for firm-level clustering and reported in parentheses. ***, **, * denote significance levels at 1%, 5%, and 10%, respectively.

	Receivable		Cash		Couponrate	
	(1)	(2)	(3)	(4)	(5)	(6)
GPfirm × After2017 × POE	0.010***	0.009***	-0.011*	-0.010*	0.424**	0.372**
	(0.004)	(0.004)	(0.007)	(0.006)	(0.201)	(0.190)
GPfirm × After2017	-0.000	0.000	-0.003	-0.000	0.042	0.039
	(0.003)	(0.003)	(0.005)	(0.005)	(0.109)	(0.109)
POE × After2017	-0.002	-0.002	-0.028***	-0.019***	0.057	0.112
	(0.003)	(0.003)	(0.005)	(0.005)	(0.166)	(0.163)
Controls	NO	YES	NO	YES	NO	YES
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
Observations	13,590	13,590	13,590	13,590	1,449	1,449
R-squared	0.872	0.876	0.652	0.661	0.860	0.866

Table 4: Mechanism: Local Government Fiscal Deficits and Borrowing Capacity

Note: This table reports the results of the following regression

$$\begin{aligned} Receivable_{it} =& \alpha + \beta GPfirm_i \times After2017_t \times GDhigh_p + \beta_1 GPfirm_i \times After2017_t + \\ & \beta_2 GPfirm_i \times GDhigh_p + \beta_3 After2017_t \times GDhigh_p + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \end{aligned} \tag{5}$$

which examines the heterogeneity of accounts receivable following the implementation of deleveraging policies from the perspective of local government fiscal conditions by a DDD methodology. Panel A examines the fiscal deficits of local governments, $GDhigh_p$, which takes a value of 1 (the high-fiscal-deficit group) when the average deficit ratio of a province p is higher than the median of the average deficit ratio of all provinces and otherwise equals 0 (the low-fiscal-deficit group). Panel B examines the borrowing capacity of local governments, $Repayhigh_p$, which takes a value of 1 (the high-repayment-pressure group) when the average repayment ratio of MCBs in province p is higher than the median of the average repayment ratio of all provinces and otherwise equals 0 (the low-repayment-pressure group). $Receivable_{it}$ denotes accounts receivable (divided by total assets). We define 2017-2019 ($After2017_t$) as post-policy periods, and dummy variable $GPfirm_i$ denotes listed firms that obtained government procurement orders during 2014-2016 (pre-policy period). X_{it-1} are lagged control variables. γ_i and γ_t denote firm fixed effects and time fixed effects, respectively, and ϵ_{it} represents the error term. Standard errors are adjusted for firm-level clustering and reported in parentheses. ***, **, * denote significance levels at 1%, 5%, and 10%, respectively.

	y_{it}: **Accounts Receivable (as a share of total assets)**					
	Full sample		POE		SOE	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Fiscal Deficits						
GPfirm × After2017 × GDhigh	0.004	0.005	0.017**	0.019**	-0.006	-0.005
	(0.005)	(0.005)	(0.008)	(0.008)	(0.007)	(0.007)
GPfirm × After2017	0.005*	0.005**	0.007**	0.007**	0.001	0.001
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
GPfirm × GDhigh	0.074**	0.071**	0.126***	0.128***	0.048	0.048
	(0.032)	(0.028)	(0.042)	(0.038)	(0.037)	(0.030)
GDhigh × After2017	0.001	0.000	-0.001	-0.002	0.003	0.003
	(0.003)	(0.003)	(0.005)	(0.005)	(0.004)	(0.004)
Observations	13,590	13,590	8,430	8,430	5,160	5,160
R-squared	0.872	0.876	0.850	0.855	0.900	0.903
Panel B: Repayment Pressure						
GPfirm × After2017 × Repayhigh	0.004	0.003	0.014**	0.014**	-0.010	-0.010
	(0.004)	(0.004)	(0.006)	(0.006)	(0.007)	(0.007)
GPfirm × After2017	0.004	0.004	0.003	0.004	0.005	0.006
	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)	(0.005)
GPfirm × Repayhigh	0.020	0.014	0.030	0.021	-0.091***	-0.082***
	(0.037)	(0.037)	(0.040)	(0.041)	(0.003)	(0.006)
Repayhigh × After2017	-0.004	-0.002	-0.007*	-0.005	0.002	0.003
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
Observations	13,590	13,590	8,430	8,430	5,160	5,160
R-squared	0.872	0.876	0.849	0.854	0.900	0.903
Both Panels A and B:						
Controls	NO	YES	NO	YES	NO	YES
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES

Table 5: Internal and External Financing Difficulties

Note: This table reports the results of the following regression

$$Y_{it} = \beta GPfirm_i \times After2017_t + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \quad (6)$$

which examines firms' financial conditions following the implementation of deleveraging policies, measured by cash holdings divided by total assets $Cash_{it}$ in Panel A, and coupon rate of bonds issued by listed firms $Couponrate_{it}$ in Panel B. We define 2017-2019 ($After2017_t$) as post-policy periods, and dummy variable $GPfirm_i$ denotes listed firms that obtained government procurement orders during 2014-2016 (pre-policy period). X_{it-1} are lagged control variables including firm size ($Size$), financial leverage ($Leverage$), fixed assets ($Fixedassets$, divided by total assets), total income ($Income$, divided by total assets), the annual growth rate of total income($Incomegrowth$), the shareholding ratio of top 10 major shareholders ($Top10Share$) and proportion of independent directors ($IDPdirector$). γ_i and γ_t denote firm fixed effects and time fixed effects, respectively, and ϵ_{it} represents the error term. Standard errors are adjusted for firm-level clustering and reported in parentheses. ***, **, * denote significance levels at 1%, 5%, and 10%, respectively.

	Full sample		POE		SOE	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Y_{it} = Cash holding (as a share of total assets)						
GPfirm × After2017	-0.009**	-0.005	-0.015***	-0.011**	-0.003	0.001
	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)	(0.005)
Observations	13,590	13,590	8,430	8,430	5,160	5,160
R-squared	0.647	0.658	0.605	0.612	0.740	0.749
Panel B: Y_{it} = Coupon Rate						
GPfirm × After2017	0.206**	0.194**	0.481***	0.413***	0.026	0.037
	(0.096)	(0.094)	(0.172)	(0.166)	(0.110)	(0.109)
Observations	1,449	1,449	558	558	891	891
R-squared	0.856	0.863	0.833	0.839	0.857	0.866
Both Panels A and B:						
Controls	NO	YES	NO	YES	NO	YES
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES

Table 6: Controlling Shareholders' Activities and Ownership Structure

Note: This table reports the results of the following regression

$$Y_{it} = \alpha + \beta GPfirm_i \times After2017_t + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \quad (7)$$

which examines controlling shareholders' activities and ownership structure following the implementation of deleveraging policies, measured by the year-end percentage of the controlling shareholder's pledged ownership $Pledgeratio_{it}$ in Panel A, and the shareholding of the controlling shareholder as a percentage of the firm total share $Controlratio_{it}$ in Panel B. We define 2017-2019 ($After2017_t$) as post-policy periods, and dummy variable $GPfirm_i$ denotes listed firms that obtained government procurement orders during 2014-2016 (pre-policy period). X_{it-1} are lagged control variables including firm size ($Size$), financial leverage ($Leverage$), fixed assets ($Fixedassets$, divided by total assets), total income ($Income$, divided by total assets), the annual growth rate of total income($Incomegrowth$), the shareholding ratio of top 10 major shareholders ($Top10Share$) and proportion of independent directors ($IDPdirector$). γ_i and γ_t denote firm fixed effects and time fixed effects, respectively, and ϵ_{it} represents the error term. Standard errors are adjusted for firm-level clustering and reported in parentheses. ***, **, * denote significance levels at 1%, 5%, and 10%, respectively.

	Full sample		POE		SOE	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Y_{it} = Share pledging by controlling shareholders						
GPfirm × After2017	0.036***	0.027**	0.064***	0.054***	-0.012	-0.011
	(0.011)	(0.011)	(0.016)	(0.016)	(0.011)	(0.010)
Observations	9,786	9,786	6,417	6,417	3,368	3,369
R-squared	0.796	0.799	0.740	0.742	0.754	0.756
Panel B: Y_{it} = Corporate shares held by controlling shareholders						
GPfirm × After2017	-0.006*	-0.004	-0.013***	-0.010***	0.008	0.006
	(0.003)	(0.003)	(0.003)	(0.003)	(0.006)	(0.006)
Observations	9,823	9,823	6,449	6,449	3,374	3,374
R-squared	0.911	0.915	0.905	0.909	0.916	0.918
Both Panels A and B:						
Controls	NO	YES	NO	YES	NO	YES
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES

Table 7: Real Impact: Firm Performance and Profitability

Note: This table reports the results of the following regression

$$\begin{aligned} ROA_{it} =& \alpha + \beta Receivable_{it}(Pledgeratio_{it}, Cash_{it}) \times After2017_t \\ &+ \beta_1 Receivable_{it}(Pledgeratio_{it}, Cash_{it}) + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \end{aligned} \tag{8}$$

which examine the relationship between ROA and accounts receivable ($Receivable$), stock pledge ratio ($Pledgeratio$), and cash holdings ($Cash$) in Panel A, Panel B, and Panel C, respectively. $After2017_t$ is a dummy variable denoting 2017-2019. X_{it-1} are lagged control variables including firm size ($Size$), financial leverage ($Leverage$), fixed assets ($Fixedassets$, divided by total assets), total income ($Income$, divided by total assets), the annual growth rate of total income($Incomegrowth$), the shareholding ratio of top 10 major shareholders ($Top10Share$) and proportion of independent directors ($IDPdirector$). γ_i and γ_t denote firm fixed effects and time fixed effects, respectively, and ϵ_{it} represents the error term. Standard errors are adjusted for firm-level clustering and reported in parentheses. ***, **, * denote significance levels at 1%, 5%, and 10%, respectively.

	y_{it}: **ROA**					
	Full sample		POE		SOE	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Accounts Receivable						
Receivable	-0.055*	-0.007	-0.096***	-0.046	0.077*	0.097**
	(0.029)	(0.028)	(0.035)	(0.034)	(0.042)	(0.044)
Receivable × After2017		-0.096***		-0.101***		-0.040***
		(0.013)		(0.019)		(0.015)
Observations	13,590	13,590	8,430	8,430	5,160	5,160
R-squared	0.414	0.418	0.418	0.421	0.444	0.445
Panel B: Cash holdings						
Cash	0.116***	0.106***	0.111***	0.090***	0.108***	0.117***
	(0.011)	(0.011)	(0.013)	(0.013)	(0.018)	(0.018)
Cash × After2017		0.028**		0.057***		-0.021
		(0.013)		(0.019)		(0.015)
Observations	13,590	13,590	8,430	8,430	5,160	5,160
R-squared	0.429	0.429	0.428	0.429	0.461	0.462
Panel C: Share pledging by controlling shareholders						
Pledgeratio	-0.017***	0.007	-0.016**	0.003	0.012	0.014
	(0.006)	(0.007)	(0.007)	(0.007)	(0.012)	(0.012)
Pledgeratio × After2017		-0.044***		-0.040***		-0.012
		(0.005)		(0.007)		(0.013)
Observations	9,786	9,786	6,417	6,417	3,369	3,369
R-squared	0.429	0.438	0.433	0.439	0.464	0.464
Panels A, B and C:						
Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES

Internet Appendix

A Textual analysis on the government procurement contracts

We use natural language processing (NLP) to address the problem presented by unstructured text data. Specifically, we use the CPCA package to extract administrative information from the title of each announcement, which usually includes the provincial-prefecture-county three-tier-level name of the purchasing government. We then use the spaCy package to perform named entity detection to extract the names of the supplier firms. We also extract each GP announcement's date and budgeted expenditure amount. We successfully identify 337 prefecture-level governments and approximately 810,000 firm names, accounting for 99% of all prefecture-level cities and 85% of the announcements.

For the sample period between 2014 and 2019, we obtain a total of 7.6 million announcements. Among them, the number of announcements including bid-winning results is 2.5 million, accounting for approximately one-third of the total. Approximately 88% of the bid-winning result announcements come from local government procurement, with the central government procurement accounting for 12% of the bid-winning results.[33] Our data are consistent with the official statistics, which were first released by the government in 2019. The proportion of the central government procurement amount to the national procurement amount was 8% in 2019 and 7.7% in 2020, according to the official statistics. Considering the gradual downward trend exhibited by the central government in the sample period, the proportion calculated using our data and the official number is of the same magnitude.

After extracting the information on procurement firms, we match the procurement firms

[33]When our algorithm fails to identify a province name, it is usually because the procurement announcement came from the central government. There are 411,471 procurement announcements for which we cannot identify a province and these account for approximately 11% of our observations.

with listed firms with both exact matching and fuzzy matching. We develop a customized fuzzy matching method based on Chinese word segmentation by first constructing a dictionary including common suffixes of company names like "有限公司"(Ltd.) or "股份有限公司"(Co. Ltd.) in Chinese. We then segment companies' names and compare the differences between the core part using three indicators. Table A1 presents an example: the first is the similarity score of the word vector; the second is whether the core part of the former column is contained in the core part of the latter column; the third is whether the core part of the latter column is contained in the core part of the former column. In order to avoid as many omissions as possible, we keep all data of which the Former in Latter indicator is 1 or the Latter in Former indicator is 1. We manually check and drop out those samples that are incorrectly matched with the help of the Industrial and commercial registration data query system provided by QICHACHA (https://www.qcc.com/).

Table A1: An Example of Fuzzy Matching

	Procurement Firms	Listed Firms
Original	沃森生物技术有限公司	云南沃森生物技术股份有限公司
Segmentation	沃森生物技术 \有限公司	云南沃森生物技术\ 股份有限公司
Core Part	沃森生物技术	云南沃森生物技术

Similarity Score	Former in Latter	Latter in Former
83.86	1	0

B A Case Study: Beijing Orient Landscape

A prominent example of corporate distress amid government deleveraging is the case of Beijing Orient Landscape and Environment Co., Ltd., (henceforth Orient Landscape), a Beijing-based company principally engaged in landscape construction and urban ecosystem repair projects. Orient Landscape's business is closely associated with infrastructure investments made by local governments in the form of public-private partnership (PPP) projects

as a part of GP activities. According to its annual reports, Orient Landscape successfully bid on 50 PPP projects in 2017, amounting to a total of 71.6 billion yuan.

The GP projects come with substantial financial pressure because Orient Landscape is responsible for financing the construction of these projects. For instance, Orient Landscape won a 458.5 million yuan bid for a PPP project involving the development of rural tourism in Nanchong, Sichuan Province. According to a news report, Orient Landscape would hold a controlling stake of 88 percent in the project and would be responsible for the financing, operation, and overall management of the project. Thus, the financial health of Orient Landscape hinges on payments from local governments and external financing capacity backed by government projects. Orient Landscape noted in its 2017 annual report that "even though local governments have relatively high credit ratings, the accounts receivable collection efficiency is inevitably affected by factors such as the local government budget, financial conditions, and local government debt levels. The speed of capital turnover is related to local government office efficiency. There is a risk of collection delay due to settlement delay."

Delayed payments from local governments eventually created a heavy financial burden on Orient Landscape. In 2018, the company disclosed total accounts receivable of 8.9 billion yuan, representing 21.3% of its total assets. Making matters even worse, 60% of these accounts receivable would not be paid.[34] In addition to its increasing accounts receivable and deteriorated cash holdings, Orient Landscape experienced setbacks in the bond market and the stock market, which sent a public signal that the company was in financial distress. A landmark event was the failure of Orient Landscape's bond issuance plan in May 2018, which was intended to raise 1 billion yuan but ultimately raised only 5% of its target.

Following the announcement of the failed issuance, Orient Landscape's stock plunged nearly 9% in afternoon trading. Although the stock price later recovered some of its losses, the fluctuations were costly given that Qiaonv He, founder and chairperson of Orient Land-

[34]For instance, one of its largest clients, the Management Committee of Binzhou Economic Development Zone, paid only 13 million of its total of 1.5 billion in unpaid procurements between 2014 and 2018.

scape, had pledged over 90% of her shares in the company. China Securities Regulatory Commission (CSRC), the regulator, advised creditors of Orient Landscape not to engage in forced sales of pledged shares. The distress of Orient Landscape was finally resolved in August 2018, when the State-owned Assets Supervision and Administration Commission (SASAC) of Beijing's Chaoyang District injected liquidity into Orient Landscape in exchange for controlling rights of the company, changing its ownership from private to state-owned.

Figure B1: Government Procurement in China: Funding and Payments

Note: This figure depicts the fund inflows and outflows associated with government procurement. The figure shows that focal government financing vehicles play an important role in providing funds for government procurement. Moreover, the enterprises often provide goods, projects, and services to the government first, and then receive payment from the government. Therefore, when the government lacks funds, it may delay paying its suppliers.

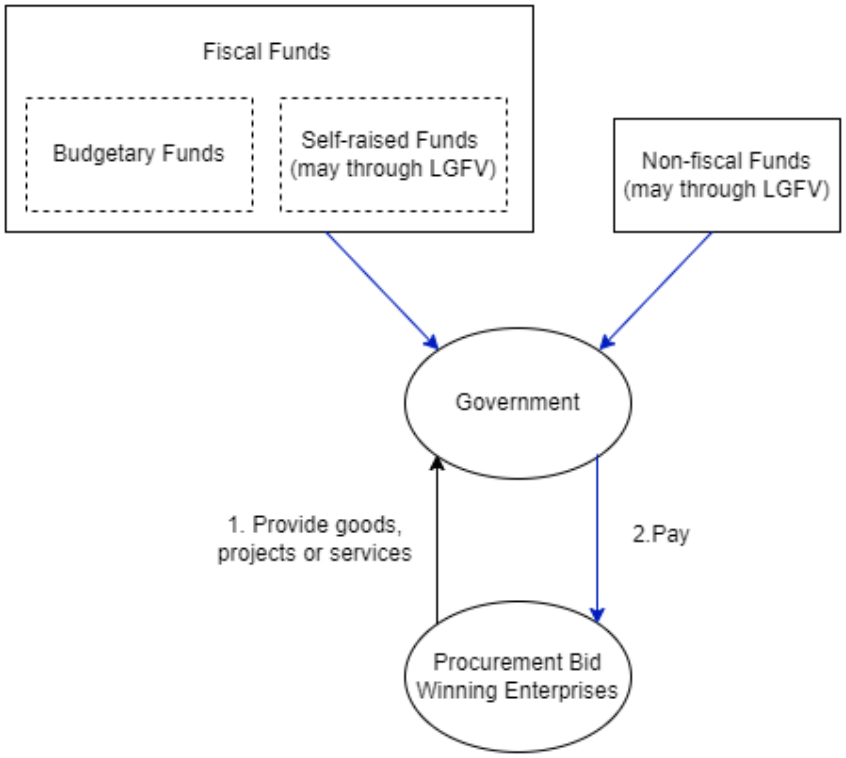


Figure B2: Government Procurement in China: Bidding Process

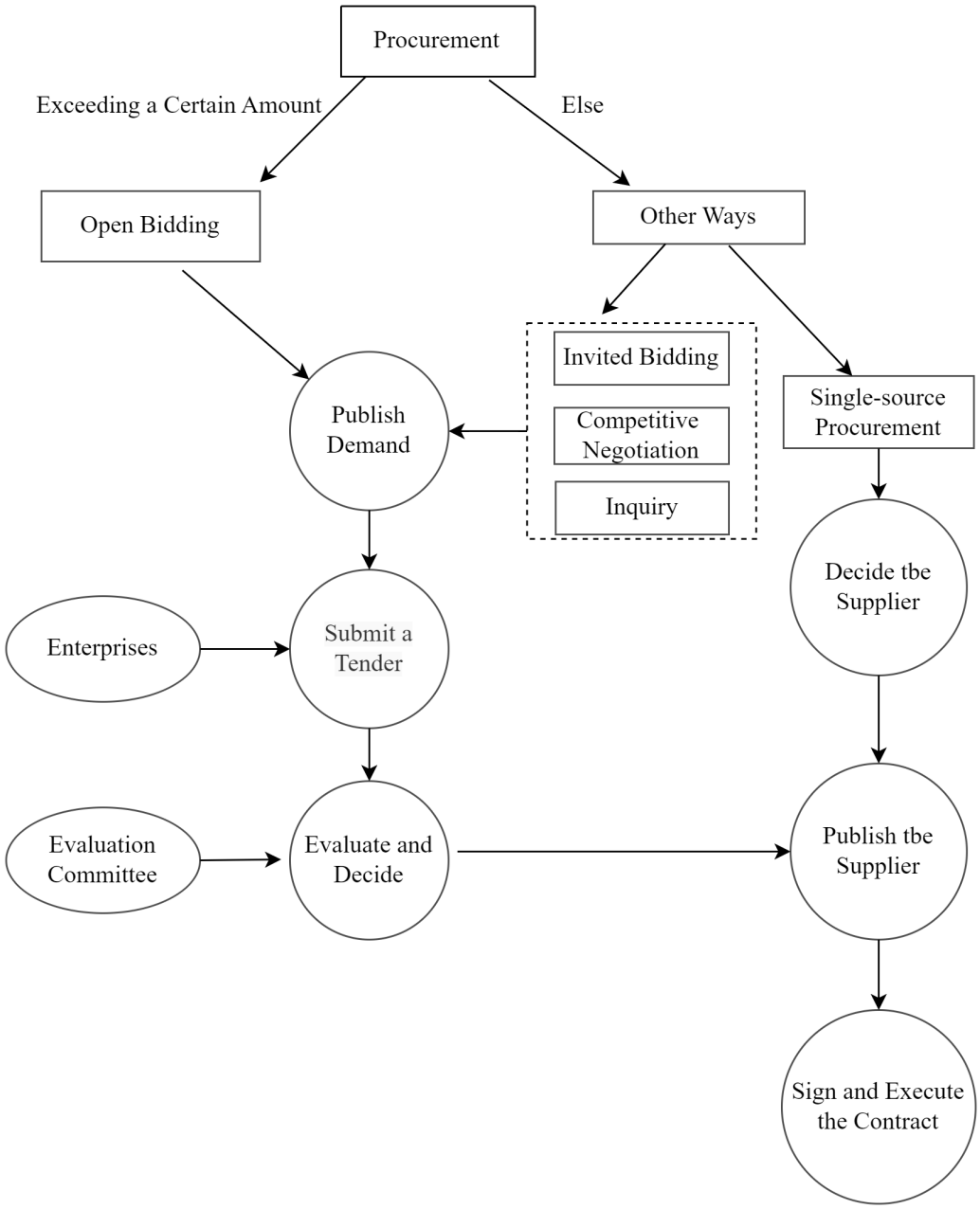


Figure B3: Data Source



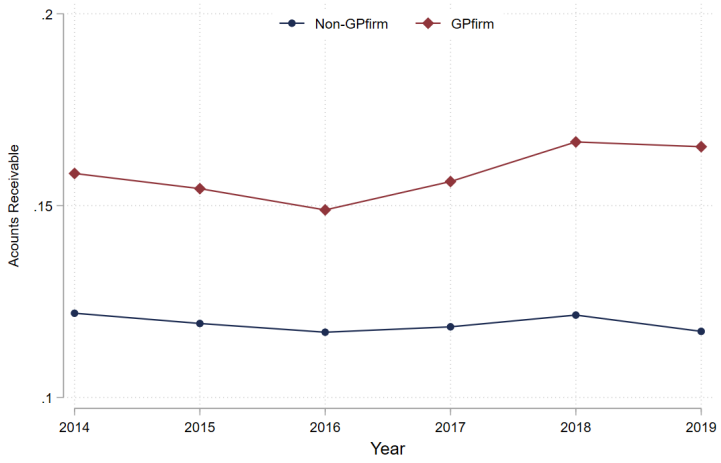
(A) Procurement website



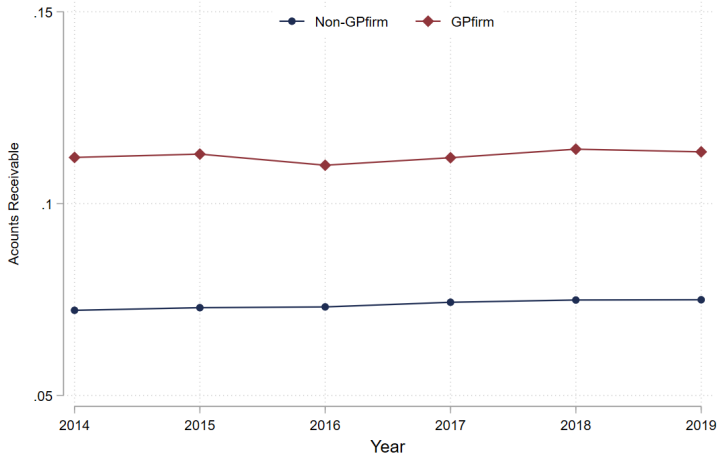
(B) Bid-winner information

Figure B4: Rising Accounts Receivable among Government Procurement Firms

Note: This figure plots the time trends of the accounts receivable over total assets of POEs (Panel A) and SOEs (Panel B) both before and after the deleveraging policy in 2017. Our sample consists of 2,265 non-financial firms listed in Chinese A-share stock markets between 2014-2019. $GPfirm$ is a dummy variable indicating firms that have won in government procurement bids during 2014 - 2016, for bid-winners $GPfirm$ is 1, otherwise it is 0. SOE is a dummy variable indicating a state-owned enterprise (SOE). $Receivable(ratio)$ is defined as accounts receivable over total assets.



(A) POE Sample



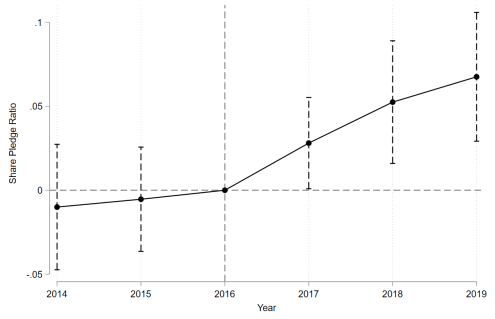
(B) SOE Sample

Figure B5: Sharepledging and Shareholding Status of Controlling Shareholders

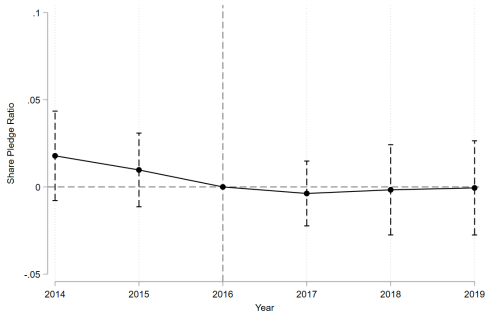
Note: This figure plots the effect of deleveraging on the share pledging ratio of controlling shareholders for both the POE sample and SOE sample. Specifically, we report estimated coefficients from the following regression:

$$\begin{aligned} Y_{it} =& \alpha + \beta_1 GPfirm_i \times Year2014_t + \beta_2 GPfirm_i \times Year2015_t + \beta_3 GPfirm_i \times Year2017_t + \\ & \beta_4 GPfirm_i \times Year2018_t + \beta_5 GPfirm_i \times Year2019_t + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \quad , \end{aligned} \tag{B1}$$

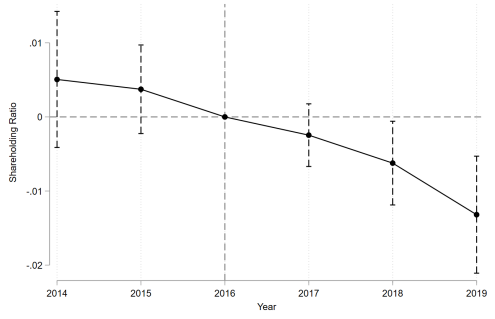
where Y_{it} denotes the outcome variable, which is $Pledgeratio_{it}$ (the percentage of the controlling shareholder's ownership that is pledged at the end of the year) in Panels A and B and $Controlratio_{it}$ (the shareholding of the controlling shareholder as a percentage of the firm total share) in Panels C and D. We define 2017-2019 ($After2017_t$) as post-policy periods, and dummy variable $GPfirm_i$ denotes listed firms that obtained government procurement orders during 2014-2016 (pre-policy period). X_{it-1} are control variables including firm size ($Size$), financial leverage ($Leverage$), fixed assets ($Fixedassets$, divided by total assets), total income ($Income$, divided by total assets), the annual growth rate of total income($Incomegrowth$), the shareholding ratio of top 10 major shareholders ($Top10Share$) and proportion of independent directors ($IDPdirector$). γ_i and γ_t denote firm fixed effects and time fixed effects, respectively, and ϵ_{it} represents the error term. The dashed lines represent 95% confidence intervals, adjusted for firm-level clustering.



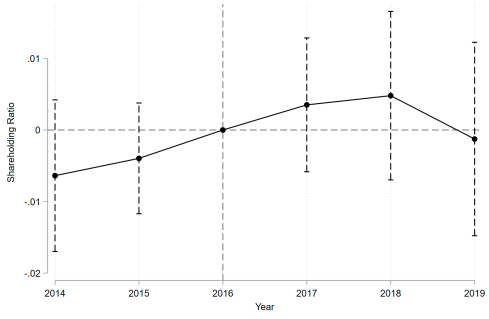
(A) Share pledging ratios (POE Sample)



(B) Share pledging ratios (SOE Sample)



(C) Shareholding of controlling shareholders (POE Sample)

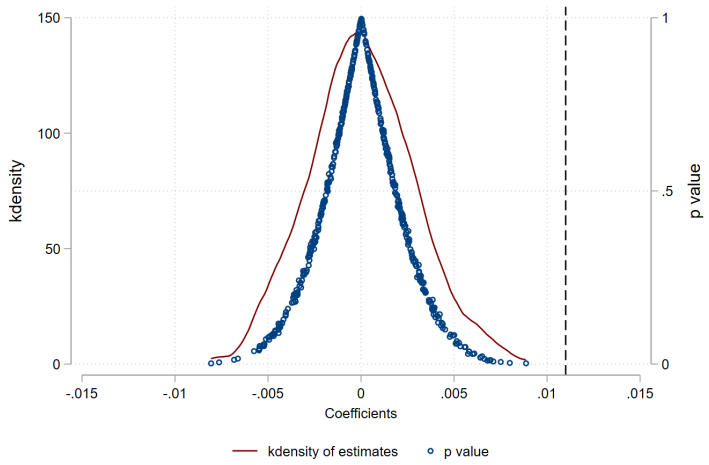


(D) Shareholding of controlling shareholders (SOE Sample)

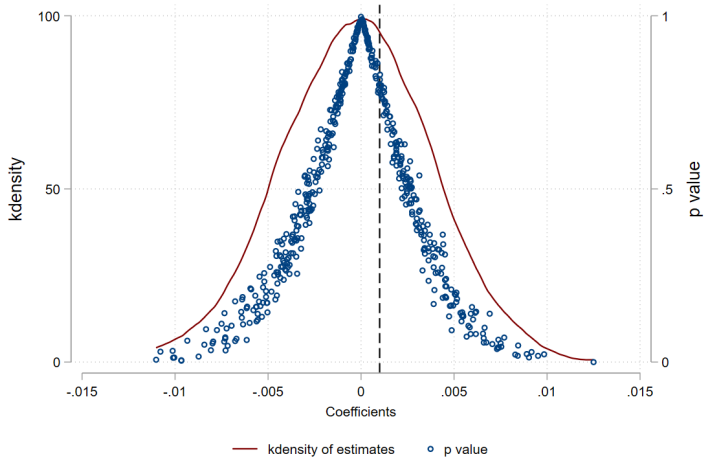
Figure B6: Placebo Tests: Random Draw of the Treatment Group

Note: This figure plots the regression results of placebo tests with the kernel density (red line) of the regression coefficients and the corresponding p-values (blue circles) for the key variable ($GPfirm_i^R \times After2017_t$). We keep the proportion of GP firms in the sample of POEs and SOEs unchanged, then redistribute GP firms through random sampling and perform regression according to specification B2. We repeat random sampling and regression 500 times. The black dashed lines mark the coefficients in the baseline regression.

$$Receivable_{it} = \alpha + \beta GPfirm_i^R \times After2017_t + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \tag{B2}$$



(A) Placebo test - POE



(B) Placebo test - SOE

Table B2: Balance Test

Note: This table compares the descriptive statistics of GP firms and Non-GP firms between 2014-2016 (GP firms are firms that have won in government procurement bids during 2014 - 2016). Panel A reports the results of state-owned enterprise (POE) sample , and panel B reports that of state-owned enterprise (SOE) sample. $Receivable(ratio)$(ratio) and $Cash(ratio)$ denote the amount divided by total assets for accounts receivable and cash holdings, respectively. $Couponrate_{it}$ is coupon rate of bonds issued by listed firms. We use total assets (log value) to proxy for firm size($Size$) and total liabilities over total assets to proxy for financial leverage ($Leverage$). $Fixedassets(ratio)$ and $Income(ratio)$ denote the amount divided by total assets for fixed assets and total income, respectively. $Incomegrowth$ is the annual growth rate of total income. $Top10Share$ is the proportion of shares held by the top ten shareholders. $IDPdirector$ is the proportion of independent directors in the board of directors. MeanDiff reports the difference between the mean value of GP firms and Non-GP firms, ***, **, * denote significance levels at 1%, 5%, and 10%, respectively.

	GP Firms		Non-GP Firms		
	N	Mean	N	Mean	MeanDiff
Panel A: POE Sample					
$Receivable_t$(ratio)	1812	0.154	2403	0.119	0.034***
$Cash_t$(ratio)	1812	0.194	2403	0.171	0.023***
$Couponrate_t$	224	5.361	171	5.929	-0.568***
$Size_{t-1}$	1812	21.78	2403	21.49	0.282***
$Leverage_{t-1}$	1812	0.396	2403	0.369	0.027***
$Fixedasset_{t-1}$(ratio)	1812	0.171	2403	0.229	-0.058***
$Income_{t-1}$(ratio)	1812	0.591	2403	0.579	-0.012
$Incomegrowth_{t-1}$	1812	0.225	2403	0.174	0.051***
$Top10share_{t-1}$	1812	0.582	2403	0.591	-0.009*
$IDPdirector_{t-1}$	1812	0.377	2403	0.380	-0.003*
Panel B: SOE Sample					
$Receivable_t$(ratio)	1248	0.112	1332	0.073	0.039***
$Cash_t$(ratio)	1248	0.173	1332	0.146	0.027***
$Couponrate_t$	307	4.488	237	5.132	-0.643***
$Size_{t-1}$	1248	22.90	1332	22.44	0.459***
$Leverage_{t-1}$	1248	0.533	1332	0.517	0.016*
$Fixedasset_{t-1}$(ratio)	1248	0.220	1332	0.314	-0.094***
$Income_{t-1}$(ratio)	1248	0.713	1332	0.595	0.117***
$Incomegrowth_{t-1}$	1248	0.127	1332	0.064	0.063***
$Top10share_{t-1}$	1248	0.573	1332	0.562	0.012*
$IDPdirector_{t-1}$	1248	0.372	1332	0.365	0.006***

Table B3: The Deleveraging Impact on Accounts Receivable: Alternative Measurements

Note: This table reports the results of the following regression

$$Y_{it} = \alpha + \beta GPfirm_i \times After2017_t + \eta X_{it-1} + \gamma_i + \gamma_t + \epsilon_{it} \quad \text{(B3)}$$

Panel A and Panel B demonstrate the regression results where the accounts receivable is measured as the log value and as a ratio of total income, respectively. We report the regression results of the full sample, the POE sub-sample, and the SOE sub-sample in separate columns. $Receivable_{it}$ denotes accounts receivable. We define 2017-2019 ($After2017_t$) as post-policy periods, and the dummy variable $GPfirm_i$ denotes listed firms that obtained government procurement orders during 2014-2016 (pre-policy period). X_{it-1} are lagged control variables including firm size ($Size$), financial leverage ($Leverage$), fixed assets (log value in Panel A and as a ratio of total assets in Panel B), total income (log value in Panel A and as a ratio of total assets in Panel B), the annual growth rate of total income($Incomegrowth$), the shareholding ratio of top 10 major shareholders ($Top10Share$) and proportion of independent directors ($IDPdirector$). γ_i and γ_t denote firm fixed effects and time fixed effects, respectively, and ϵ_{it} represents the error term. Standard errors are adjusted for firm-level clustering and reported in parentheses. ***, **, * denote significance levels at 1%, 5%, and 10%, respectively.

	Full sample		POE		SOE	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Y_{it} = Accounts Receivable (log value)						
GPfirm × After2017	0.159***	0.083***	0.209***	0.111***	0.107	0.035
	(0.035)	(0.029)	(0.044)	(0.035)	(0.057)	(0.048)
Observations	13,590	13,590	8,430	8,430	5,160	5,160
R-squared	0.885	0.904	0.869	0.893	0.906	0.918
Panel B: Y_{it} = Accounts Receivable (as a share of total income)						
GPfirm × After2017	0.024***	0.020***	0.031***	0.027***	0.014	0.010
	(0.006)	(0.006)	(0.009)	(0.008)	(0.008)	(0.008)
Observations	13,590	13,590	8,430	8,430	5,160	5,160
R-squared	0.813	0.818	0.793	0.798	0.827	0.835
Both Panels A and B:						
Controls	NO	YES	NO	YES	NO	YES
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES

Table B4: The Financing Cost Advantage of GP Firms before Deleveraging

Note: This table reports the results of the following regression

$$Couponrate_{it} = \alpha + \beta GPfirm_i + \eta X_{it-1} + \gamma_t + \epsilon_{it} \tag{B4}$$

which examines the financing cost advantage of GP firms relative to non-GP firms before deleveraging (2014-2016). $Couponrate_{it}$ is the coupon rate of bonds issued by listed firms. Dummy variable $GPfirm_i$ denotes listed firms that obtained government procurement orders during 2014-2016. X_{it-1} are lagged control variables including firm size ($Size$), financial leverage ($Leverage$), fixed assets ($Fixedassets$, divided by total assets), total income ($Income$, divided by total assets), the annual growth rate of total income($Incomegrowth$), the shareholding ratio of top 10 major shareholders ($Top10Share$) and proportion of independent directors ($IDPdirector$). γ_t denote time fixed effects, and ϵ_{it} represents the error term. Robust standard errors are reported in parentheses. ***, **, * denote significance levels at 1%, 5%, and 10%, respectively.

	Y_{it} = **Coupon Rate**					
	Full sample		POE		SOE	
	(1)	(2)	(3)	(4)	(5)	(6)
GPfirm	-0.609***	-0.440***	-0.568***	-0.458***	-0.643***	-0.530***
	(0.097)	(0.092)	(0.156)	(0.141)	(0.115)	(0.112)
Size		-0.588***		-0.780***		-0.368***
		(0.041)		(0.073)		(0.052)
Leverage		2.961***		4.600***		2.321***
		(0.298)		(0.498)		(0.350)
Fixedasset		-0.040***		-0.033***		-0.051***
		(0.010)		(0.013)		(0.016)
Income		-0.271***		-0.753***		-0.018
		(0.102)		(0.184)		(0.120)
Incomegrowth		0.074		0.261***		-0.112
		(0.095)		(0.124)		(0.094)
Top10share		0.202		0.451		-0.513
		(0.259)		(0.406)		(0.320)
IDPdirector		1.100		0.547		0.321
		(0.793)		(1.223)		(0.996)
Year FE	YES	YES	YES	YES	YES	YES
Observations	939	939	395	395	544	544
R-squared	0.333	0.506	0.319	0.542	0.459	0.589