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# Holding the market under the stimulus plan: Local government financing vehicles' land purchasing behavior in China

Zhonghua Huang<sup>a</sup>, Xuejun Du<sup>b,\*</sup>

- <sup>a</sup> College of Economics and Management, Zhejiang University of Technology, Hangzhou 310023, China
- b School of Economics and Management, Zhejiang University of Science and Technology, Hangzhou 310023, China

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#### ABSTRACT

China's stimulus plan in 2009–2010 brought local government financing vehicles (LGFVs) and new types of land finance into the spotlight. This paper uses national parcel-level land transaction data to examine the causes and consequences of LGFVs' land purchasing behavior in China. We found that LGFVs overbid significantly in terms of land prices. We explore channels through which LGFVs bid high prices for land. The stimulus plan induced local government to increase debt and rely more on land-based mortgages and land leasing revenue. Fiscal pressure led to an increase in LGFVs bidding for land. We found that the stimulus plan changed local governments' control over land leasing and land finance. Local governments hold more of the land market and inflate land prices following implementation of the stimulus plan.

#### 1. Introduction

Consensus is slowly emerging that stimulus plans do not always benefit society, and can even have some unintended effects, such as worsening the efficiency of capital allocation and resource misallocation (Bai, Hsieh, & Song, 2016; Deng, Morck, Wu, & Yeung, 2011). China's stimulus plan in 2009–2010 brought local government financing vehicles (LGFVs) and local debt into the spotlight. To boost economic growth after the global financial crisis in 2007, Chinese central government put in place the ambitious plan to implement 4 trillion yuan worth of fiscal stimulus package at the end of 2008—roughly 12% of gross domestic product (GDP)—mainly including infrastructure projects. This stimulus plan spurred local governments to expand infrastructure investments for promoting economic growth. However, given the increasing fiscal pressure on local governments and the fact that they are forbidden from directly borrowing from banks by the Budget Law, they rely on LGFVs (also named local government financing platforms) to gain extra revenue and funding for infrastructure spending (Pan, Zhang, Zhu, & Wójcik, 2017). LGFVs aggressively purchase land from the primary land market at high prices and use it as collateral to borrow from banks (Lu & Sun, 2013).

Our paper aims to investigate LGFVs' land purchasing behavior and its effect on land prices in China based on national land transaction big data. We also identify the mechanisms through which LGFVs inflate land prices in the land market. Our paper provides new insights into local governments' behavior and intervention in the land market. Our paper also provides new evidence on LGFV-led land finance and its effect on land prices.

Our paper relates to three strands of literature. The first pertains to the effect of government intervention on land market, especially the role of local government intervention in the Chinese land market (Deng, 2003; Huang & Du, 2017a, 2017b; Tao, Su, Liu, & Cao, 2010). There is still confusion regarding the nature and effect of government intervention in land market among scholars and policy makers, especially in developing countries such as China. Compared to previous studies, our study attempts to identify a

E-mail addresses: zhonghuahuang2006@aliyun.com (Z. Huang), duxuejun@aliyun.com (X. Du).

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<sup>\*</sup> Corresponding author.

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new type of government intervention in the Chinese land market, whereby local governments participate in this market and inflate land prices through LGFVs' land purchasing.

The second strand of literature concerns local governments' land finance behavior. Most related literature has focused on local governments' land leasing and land financing behavior (Lin & Yi, 2011; Lin & Zhang, 2014; Yang, Ren, Liu, & Zhang, 2015) and the effects of these on the real estate market and urban development (Ding & Lichtenberg, 2011; Huang & Du, 2017a). Chinese local governments use land to gain land revenue, finance infrastructure investment and spur economic growth (Brueckner, 2007; Tao et al., 2010). In contrast to previous studies, however, we attempt to study a new phenomenon of LGFV-led land finance, whereby local governments gain land-based finance to fund infrastructure investment through LGFVs. This represents a new form of local government behavior regarding land finance in China.

Finally, our paper relates to literature on the effects of the stimulus package and the economic outcomes thereof. Some of this literature has examined the positive effect of the stimulus plan on industry development (Burdekin & Weidenmier, 2015) and economic growth (Diao, Zhang, & Chen, 2012; Fardoust, Lin, & Luo, 2012), while other studies have examined the negative or unintended effect of the stimulus plan on resource misallocation. For example, Bai et al. (2016) suggested that local governments set up local finance vehicles to distort financial resources to their favored private firms, which decreases capital allocation efficiency. Similar to studies by Deng et al. (2011), and Bai et al. (2016), our study focuses on the implications of "government intervention" via the stimulus plan in the land market, which local governments accelerate to inflate land prices by LGFVs after the stimulus plan.

Our study contributes to the literature on government intervention and land market by providing new empirical evidences on the effects of local government intervention on the land market in the Chinese context. Specifically, we explore a new type of land finance in China whereby local governments finance land through LGFVs to obtain revenue and mortgage loans. Our study also provides a new understanding of local governments' behavior, suggesting that the misaligned incentives of local governments distort land supply and inflate land prices.

The remainder of this paper is structured as follows. The next section reviews the background on China's LGFVs and local governments' behavior in the land market. Section 3 describes our empirical framework and data. Section 4 presents the empirical results and discussion. Section 5 explores the mechanism through which LGFVs overbid in the land market. Section 6 concludes.

#### 2. Background on local government financing programs and local government behavior in the land market

#### 2.1. Local government behavior in the Chinese land market

In China, land is heavily controlled by local governments. The institutional foundation for local governments exerting their control over the land market differs from those in Western countries. First, China's urban and rural land markets are segmented. Urban land is owned by the state, while rural land belongs to rural collectives (Ding, 2003). Rural land cannot be traded or converted to urban land for non-farm development without the permission of local government. Second, local governments monopolize the land supply. They have monopoly rights to convert rural land and lease it to potential developers.

Local governments can intervene in the land market by controlling the quota, price and leasing format of land (Yang et al., 2015). They can lease out land to potential developers via four transaction methods, including negotiation (xieyi), tender (zhaobiao), auction (paimai) and listing (guapai). The first method is a non-market transaction, while the other three are market transactions. In 2004, the Chinese Ministry of Land and Resources published Document No. [2004]71, which required that all land for business use be leased out via market transaction methods. Local governments prefer the listing method since it offers more room to control the land market (Cai, Henderson, & Zhang, 2013).

Land is an important finance tool for local governments to fund urban construction and infrastructure (Ding, 2003; Wang, Zhang, Zhang, & Zhao, 2011). Local governments lease out commercial and residential land to gain extra-budget revenue (Tao et al., 2010). They also use land as collateral to borrow from banks. Infrastructure investment is mainly financed by land leasing revenue and bank borrowing, especially following the stimulus plan of 2009–2010 (Bai et al., 2016; Ong, 2014).

Local governments' land finance behavior is related to fiscal pressure. The 1994 centralized fiscal reform radically changed local governments' revenue structure (Xu, 2011). Local governments' budgetary revenue decreased substantially, but their expenditure responsibilities did not decrease, and even increased due to rapid urbanization (Guo, 2009; Lu & Landry, 2014; Zhan, 2013). Under the increasing fiscal pressure, local governments began to favor land leasing as a new finance tool for funding expenditure and infrastructure construction (Gao, Feng, & Tao, 2008; Feng, 2013; Chen & Kung, 2016). During normal times, local governments' land leasing revenue dominates local extra-budgetary revenues (about half of local budget income), which could help to balance the local fiscal deficit (Lu & Sun, 2013; Su & Tao, 2017). Land leasing revenues even exceed the local budget revenue in some coastal areas of China (Tao et al., 2010).

#### 2.2. Local government financing vehicles and the stimulus plan

LGFVs, which are established by local governments to finance municipal infrastructure investment, first emerged at the end of the twentieth century, but became popular after 2008 as a result of the stimulus plan. In March 2009, China's central bank and the Banking Regulation Commission jointly published a document that allowed local governments to use LGFVs to finance their

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