



# The business cycle implications of land financing in China



Shen Guo <sup>a,\*</sup>, Lezheng Liu <sup>a,1</sup>, Yan Zhao <sup>b,\*\*</sup>

<sup>a</sup> China Academy of Public Finance and Public Policy, Central University of Finance and Economics, 39 South College Road, Beijing, China, 100081

<sup>b</sup> School of Business, East China University of Science and Technology, 130 Meilong Road, Shanghai, China

## ARTICLE INFO

### Article history:

Accepted 9 December 2014

Available online 23 January 2015

### Keywords:

Land financing

Government spending

DSGE model

China

## ABSTRACT

In the past decade, the Chinese government was increasingly relying on revenues from land sales to finance the public spending. This paper examines the impacts of land financing on business cycle fluctuations in China in an estimated DSGE model. The simulation results indicate that the overall effect of land financing is to increase the business cycle fluctuations by 12.6%. However, the impacts of land financing on business cycle fluctuations depend on shocks hitting the economy. The policy implication of this paper is that cutting the direct linkage between the government expenditure and the land sales could mitigate the business cycle fluctuations.

© 2014 Elsevier B.V. All rights reserved.

## 1. Introduction

In China, land is publicly owned and no private ownership is allowed. Land users are only granted land-use rights for a fixed period of time. Local governments are monopolistic suppliers of land in their own jurisdictions. In the past decade, proceeds from granting land-use rights were accounting for increasing share of subnational governments' revenue, from 10.19% in 1998 to 47.29% in 2012 (*China Land and Resources Statistical Yearbook, 1999–2013*). Meanwhile, most of these land-based revenues were used to finance the public investment in infrastructure. With the rapid urbanization and the booming real estate market, the fast increase in land price and the immense demand for urban land have provided abundant financial resources for the local government. In particular, the land-based revenues played a significant role in financing the 4 trillion RMB stimulus package designed to cope with the global financial crisis in year 2008. However, the demand for land has abated and the uprising trend of land price has been curbed since the government implemented tight monetary policy and administrative approaches to control the fast-rising housing prices. Consequently, subnational government's land-based revenues declined by 27.5% in the first half of 2012 (Ministry of Finance Report, June 2012), which significantly impaired the ability of subnational governments to invest in infrastructure.

Urban land markets are highly volatile, especially in developing countries. Land prices can undergo swings of 50% in either direction,

and in times of crisis even more, as demonstrated during the Asian financial crisis of the 1990s [Mera and Renaud \(2000\)](#) and again during the market collapse starting in 2008. Observing the huge swings in the land market, [Peterson and Kaganova \(2010\)](#) warned that extreme reliance on land assets to finance urban capital budgets creates risks of its own. Volatile land prices and swings in developers' demand for land combine to create volatility and uncertainty in this source of capital finance. [Zhang and Barnett \(2014\)](#) pointed out that local government's reliance on land sales for financing could result in a negative feedback loop: overheating of the land market may result in a market correction and economic downturn. Local governments would have to cut spending as proceeds from land sales fell, which could exacerbate the slowdown.

Although researchers and policy makers have realized the risks involved in land financing, the study on its implication on business cycle fluctuations is still scarce in the literature. This paper endeavors to fill this gap by examining the impacts of land financing on business cycle fluctuations in China quantitatively in an estimated DSGE model. In the model economy, the government finances the public expenditure by selling land to housing producers. Following [Leeper et al. \(2010\)](#) and [Wang and Wen \(2013\)](#), the public expenditure not only boosts the demand, but also increases the productivity of the private sector. The model economy is hit by six structural shocks: total factor productivity (TFP) shocks, investment-specific shocks, monetary policy shocks, government expenditure shocks, housing preference shocks and labor supply shocks. These shocks generate fluctuations in the demand for land and land prices that are further imparted to government expenditures and output due to the government's reliance on land financing. The model parameters are either calibrated or estimated via the Bayesian maximum likelihood method. Then, we discuss the model's business cycle implications quantitatively based on the estimated parameters.

\* Corresponding author. Tel.: +86 10 62288776.

\*\* Corresponding author. Tel.: +86 21 64250051.

E-mail addresses: [sguo.cufe@gmail.com](mailto:sguo.cufe@gmail.com) (S. Guo), [lezhengliu@gmail.com](mailto:lezhengliu@gmail.com) (L. Liu),

[yanzhao@ecust.edu.cn](mailto:yanzhao@ecust.edu.cn) (Y. Zhao).

<sup>1</sup> Tel.: +86 10 62288776.

In order to demonstrate the model's propagation mechanism, we compare impulse responses and simulated business cycle moments under two different government expenditure rules: the baseline model with government spending directly reacting to land sales and the counterfactual economy in which the government spending does not respond to land sales directly. Our results show that the overall effect of land financing is generating an output fluctuation which is 12.6% greater than that in the counterfactual circumstance. However, the impacts of land financing on business cycle fluctuations depend on shocks hitting the economy. In particular, the land financing generates 13.2%, 12.0%, 43.2% and 7.8% more fluctuations in output when the TFP shock, the monetary policy shock, the housing preference shock and the labor supply shock hit the economy respectively; for the government spending shock and the investment-specific productivity shock, land financing leads to 5.3% and 7.2% less output volatility.

This paper combines two related strands of the literature. The first strand examines the contribution of housing/land market to business cycle fluctuations. For example, [Iacoviello and Neri \(2010\)](#) explore the spillover effect of housing market to the broader economy using U.S. data in an estimated DSGE model. [Liu et al. \(2013\)](#) build a model that can explain the observed positive comovement between land-prices and business investment. However, this line of literature does not consider the links between housing/land market and government spending, a key point highlighted in the current paper.

This paper is related to a second strand of the literature that studies the effect of fiscal stimulus. For instance, [Leeper et al. \(2010\)](#) examine the effects of government investment in an estimated neoclassical growth model. They find that implementation delays for building public capital and expected fiscal adjustments to deficit-financed spending have significant impacts on the macroeconomic effect of fiscal stimulus. [Davig and Leeper \(2010\)](#) analyze the macroeconomic impacts of government spending under alternative monetary–fiscal policy combinations. Our paper differs with this strand of literature in that we consider the situation in which the government finances its public expenditures through land sales, which are not taken into account in the aforementioned papers.

The rest of the paper is organized as follows. [Section 2](#) provides a brief introduction of the institutional background of land financing in China and some empirical facts on Chinese business cycles. [Section 3](#) presents the model. [Section 4](#) describes the calibration and the estimation of the model. [Section 5](#) compares impulse responses and simulated business cycle moments under different government expenditure rules. The last section concludes.

## 2. Background

In this section, we first present a brief introduction of the institutional background of land financing in China, then we provide some empirical facts on Chinese business cycles.

### 2.1. Institutional background of land financing in China

In China, urban land is owned by the state while the rural land is owned by collective economic organizations. Land users do not own the property of land; instead, they are granted land-use rights for a fixed period of time. The term of land-use rights varies depending on different land use purpose. For instance, land buyer can use the land for residential purpose for 70 years, business purpose for 40 years and industrial purpose for 50 years.

Local governments have monopolistic power in the supply of land. Under the current law, owners of rural land (rural collective economic organizations) are not allowed to make a private transfer of their land rights for urban use. Therefore, almost all the land used for urban purposes has to be acquired by the local government first. Many local governments have set up “Municipal Land Management and Reserve Centers” to acquire land and transform the raw land to the processed

one where basic infrastructure has been put in place. The land-use rights are then granted to land users through either one-to-one negotiation or public auction.

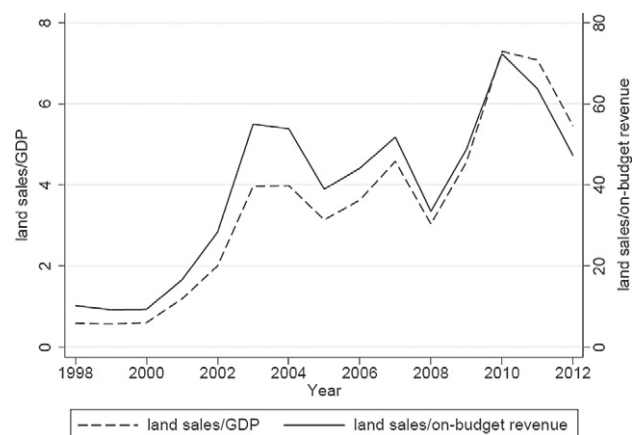
The proceeds from land sale accrue to government-managed funds, which is recorded off-budget. The land sales proceeds are then used to finance land requisition and development, urban and rural infrastructures, public housing for low income households and education.

Land sales also provide a considerable boost to on-budget fiscal revenue. [Zhang and Barnett \(2014\)](#) estimate that direct taxes from land such as urban land usage tax, arable land occupancy tax and deed tax account for about 10% of total fiscal revenue. Indirect taxes such as sales and corporate income taxes generated from construction and real estate companies amount to over 50% of total fiscal revenues in some cities.

[Fig. 1](#) demonstrates that the scale of land sales is increasing and land financing has become a major source of revenue for local governments in China. In particular, the proceeds from land sales as a percentage of GDP rose from 0.59% in 1998 to 5.46% in 2012; meanwhile, the proceeds from land sales as a percentage of local government on-budget revenue rose from 10.19% in 1998 to 47.29% in 2012.

The prevalence of land financing in China is boosted by the fast urbanization. Between 1998 and 2012, the official urbanization rate (the share of the urban population in the total population) rose from 33.4% to 52.6% (*China Statistical Yearbook, 1999–2013*). During the process of urbanization, local governments acquire the land in rural or suburb area from farmers (via rural collective economic organizations) at relatively low price and then sell the land-use rights to urban land users. Land sales, thus, become a major source of revenue for local governments as the urbanization advances. The land sales proceeds are then used to finance infrastructure investment to further support the urbanization process. Moreover, higher infrastructure spending also supports growth directly as well as indirectly by catalyzing other investment. With strong growth perceived as an important metric for promotion, local government officials have an incentive to continue selling land to keep the land sales–investment–growth cycle going.

Local governments' reliance on land financing can also be partially explained by the intergovernmental fiscal relations in China. Following the 1994 intergovernmental fiscal reform, the local government's share of total fiscal revenue decreased from 78% in 1993 to around 50% in 2012, while its share of total government expenditure increased from 72% in 1993 to about 85% in 2012 (*China Statistical Yearbook, 1994–2013*). Local governments are now responsible for much of infrastructure investment, service delivery, and social spending. Meanwhile,



Data source: China Land and Resources Statistical Yearbook, 1999–2013 and China Statistical Yearbook, 1999–2013.

**Fig. 1.** Proceeds from land sales (in percent of GDP and on-budget revenue). Data source: China Land and Resources Statistical Yearbook, 1999–2013 and China Statistical Yearbook, 1999–2013.

Download English Version:

<https://daneshyari.com/en/article/5053783>

Download Persian Version:

<https://daneshyari.com/article/5053783>

[Daneshyari.com](https://daneshyari.com)