



Contents lists available at ScienceDirect

Research in International Business and Finance

journal homepage: [www.elsevier.com/locate/ribaf](http://www.elsevier.com/locate/ribaf)

## Credit constraints and firm productivity: Microeconomic evidence from China<sup>☆</sup>

Yao Amber Li<sup>a,\*</sup>, Wei Liao<sup>b</sup>, Chen Carol Zhao<sup>a</sup>

<sup>a</sup> Department of Economics, Hong Kong University of Science and Technology, Clear Water Bay, Sai Kung, New Territories, Hong Kong Special Administrative Region

<sup>b</sup> International Monetary Fund, United States

### ARTICLE INFO

#### JEL classification:

O1  
G2  
D24

#### Keywords:

TFP  
TFP growth rate  
Credit constraint  
Internal financing  
External finance dependence  
Financial market development

### ABSTRACT

We use a panel of over 600,000 Chinese firms (1998–2009) to investigate the effects of credit constraints on firm productivity. We find that both internal finance through a firm's own cash flow and external credit supply significantly promote firm productivity and productivity growth rates. Specially, there is a substitution effect between internal finance and external credit supply: the marginal effect of internal finance on firm productivity is weaker when firms have sufficient external credit. Also, internal finance is more important for firms in those financially vulnerable industries. Finally, we observe that marginal effect of both external credit supply and internal finance on firm's productivity is weaker for SOEs than non-SOEs.

### 1. Introduction

The existing literature notes that inadequate financial development impedes firm investments in productivity-enhancing activities (Ayyagari et al., 2010). If firms face difficulties in obtaining external liquidity, e.g., bank loans, they might have to depend on internal financing, i.e., cash flows, to cover fixed investment costs. As a result, firms with sufficient cash flow have an advantage in technology improvement and, hence, in productivity, while firms with insufficient cash flow face binding financial constraints in productivity improvement (Brown and Petersen, 2009; Nickell and Nicolitsas, 1999; Fazzari et al., 1988).

The fact that either internal or external financing constraint plays a role in shaping firm's productivity is well documented by prior studies. However, few studies have combined internal and external financing together to explore their interactive effects and the impacts of them on firm productivity improvement. In fact, the degree of constraint caused by insufficient cash flow varies across firms with different demand for and access to external finance. Therefore, it is important to examine the interaction effect between internal and external financing in improving firm's productivity which has been largely overlooked by previous literature.

To address the interaction between internal and external financing, this paper includes both types of financing constraints and documents a substitution effect between the two in improving firms' productivity. Our findings suggest that when firms face an abundant supply of external credit or lower demand for external finance, internal financing constraints are less critical. The marginal effects of internal financing constraint varies, depending on different external factors, e.g., locations, ownerships and sector-level

<sup>☆</sup> Yao Amber Li gratefully acknowledges financial supports from the Research Grants Council of Hong Kong, China (General Research Funds and Early Career Scheme GRF/ECS Project No. 646112).

\* Corresponding author.

E-mail addresses: [yaoli@ust.hk](mailto:yaoli@ust.hk) (Y.A. Li), [liaoweicarol@gmail.com](mailto:liaoweicarol@gmail.com) (W. Liao), [zhaochen@connect.ust.hk](mailto:zhaochen@connect.ust.hk) (C.C. Zhao).

<http://dx.doi.org/10.1016/j.ribaf.2017.07.142>

Received 23 February 2017; Accepted 6 July 2017

0275-5319/ © 2017 Elsevier B.V. All rights reserved.

credit demand.

In China, due to underdeveloped financial institutions and immature credit markets, external credit allocations are distorted along several dimensions: within and across regions and ownership types. To be specific, companies located in municipal cities or coastal regions (or in special economic zones) are at a tremendous advantage in accessing to bank loans; the privileged group of state-owned enterprises (SOEs) can access credit more easily than those domestic private enterprises, especially for loans from the major state-owned banks. Moreover, different sectors demand various amounts of upfront investment cost for technology upgrading, and thus sectoral heterogeneity of external financing dependence exists. China offers an ideal laboratory to test those factors to study to what extent they determine the marginal effect of credit constraints on shaping the level and growth of firm productivity.

Our sample is an unbalanced panel of more than 600,000 firms from 1998 to 2009, drawn from the annual surveys of Chinese manufacturing firms conducted by the National Bureau of Statistics of China (NBSC). The survey reports firm-level production data and covers all SOEs and non-SOEs with annual sales of at least 5 million RMB (the Chinese currency). The approximate number of firms covered by the NBSC database ranged from 152,000 in 1998 to 317,000 in 2009. As we have rich information on both public and private firms with a wide range of firm characteristics, this dataset is ideal for studying the effects of structural financial distortions on enterprises in China.<sup>1</sup>

We obtain the following key findings. First, both internal financing (through a firm's own cash flow) and external financing significantly increase the productivity of the firm and the growth rate of firm productivity. Second, there is a substitution effect between internal financing and external credit: the marginal effect of internal financing on firm productivity is weaker when firms have a sufficient external credit supply. Thus, firms face different degrees of internal financing constraint conditional on their external credit supply. Third, firms in industries with higher external credit demand (i.e., those in more financially vulnerable industries) have lower productivity level and smaller growth rate of productivity, and internal finance is more important for firms in those financially vulnerable industries. In general, SOEs exhibit both lower productivity levels and slower productivity growth, and the internal financing constraint is less important for those SOEs. Moreover, the positive effect of the external credit supply on firm productivity is weakened for SOEs.

The results imply that internal financing (cash flow) is critical in determining productivity and growth rates. But when firms have access to external finance, their internal financing constraint is weaker, and they display greater potential to increase productivity. An external financing constraint greatly hinders firm productivity upgrading if cash flows are insufficient. Constrained firms are usually located in financially underdeveloped areas and, in general, are more likely to be private firms. These firms have to utilize their own profits or other resources to self-finance investments in productivity-enhancing projects. Thus, the financially disadvantaged firms, relative to those financially privileged ones, face more severe and challenging financial constraints which impede their productivity improvement within an underdeveloped financial system.

The remainder of this paper is organized as follows: Section 2 discusses related literature. Section 3 provides background information on credit supply in China. Section 4 introduces the data and measurements. Section 5 presents baseline specifications and estimation methodology, as well as the main empirical findings and robustness tests. Section 6 discusses policy implications and then concludes.

## 2. Related literature

This paper is related to several branches of the literature. First, previous studies aim to find the link between financial development and economic growth. At the macro-level, [Cheng and Degryse \(2010\)](#) finds a positive link between the two, while others find no link, e.g., [Boyreau-Debray \(2003\)](#). At the micro-level, some works utilize firm-level data to explore this issue in detail. For example, [Ayyagari et al. \(2010\)](#), [Cull et al. \(2013\)](#) and [Chen et al. \(2016\)](#) show that poorly developed financial systems indeed hinder the fast growth rates of Chinese firms, especially non-state-owned firms.

However, even in the fragile Chinese financial system, firms without access to external financing have still grown quickly over the past two decades. To better understand this puzzling phenomenon, studies have turned to firms' internal financing for answers, and they argue that firms can use cash flow to increase productivity. Those studies include [Chen and Guariglia \(2013\)](#), [Allen et al. \(2005\)](#) and [Guariglia et al. \(2011\)](#). [Allen et al. \(2005\)](#) notes that although loans to private firms are easily refused by typical banks in China, these firms successfully utilize their own profits or other resources to self-finance investments in productivity-enhancing projects. Thanks to their high ability to generate cash flow, Chinese firms, especially private firms, have been able to upgrade quickly, leading to tremendous economic growth over the past two decades.

Our study is also related to previous research on variation in external credit dependence across industries, e.g., [Kletzer and Bardhan \(1987\)](#), [Beck \(2003\)](#) and [Rajan and Zingales \(1998\)](#). The classic study is [Rajan and Zingales \(1998\)](#), which shows that industries that require more external financing are also more constrained in countries with unhealthy financial systems. We employ an external finance dependence indicator<sup>2</sup> and find that the constraint effects are heterogeneous across sectors.

Finally, our study is related to others that explore financial frictions in the Chinese context.<sup>3</sup> For example, [Guariglia and Yang \(2016\)](#), [Bai et al. \(2006\)](#) and [Chen et al. \(2016\)](#) study unbalanced financing access among state-owned and non-state-owned firms and

<sup>1</sup> Although it is easier to collect data on listed firms' financing situation, there are only approximately three thousand listed firms in China, which is a small fraction of all firms in China. Thus, we choose to use the annual survey of manufacturing firms rather than listed firms to conduct our study.

<sup>2</sup> This index is widely used in the existing literature, e.g., [Manova \(2013\)](#).

<sup>3</sup> Other studies explore financial constraints using data from other emerging countries, such as [de Sant'Anna et al. \(n.d.\)](#) for Brazil, [Sasidharan et al. \(2015\)](#) for India, [Molinari \(2013\)](#) for Italy, and [O'Toole and Newman \(2012\)](#) for Vietnam.

Download English Version:

<https://daneshyari.com/en/article/7413733>

Download Persian Version:

<https://daneshyari.com/article/7413733>

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