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China Economic Review



Asymmetric reform bonus: The impact of VAT pilot expansion on China's corporate total tax burden

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ARTICLE INFO

Article history:

Received 6 July 2016

Received in revised form 17 January 2017

Accepted 10 February 2017

Available online xxxx

Keywords:

VAT pilot expansion

Corporate total tax burden

Asymmetric reform bonus

ABSTRACT

China's VAT pilot program began in Shanghai and was extended to eight provincial-level regions in 2012. We develop a simple model to explore whether and how the VAT pilot expansion affects corporate total tax burden. We find that it will reduce corporate total tax burden of small-scale taxpayers, while for general taxpayers, total tax burden change is uncertain. Using unique company-level half-yearly panel data and general setting for DID analysis for multiple groups and multiple periods, we find that the average treatment effects of the VAT pilot expansion on corporate total tax burden of general taxpayers are insignificant in the pooled sample. Furthermore, the VAT program shows no heterogeneity between the transportation and modern services industries. However, we find that the pilot effect varies by deductible items. In particular, the reduction tax effect is stronger in companies with higher intermediate input rates, and the largest effect is 60.4%. These results are consistent with our conceptual framework.

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1. Introduction

The sluggish development of China's services industry has attracted considerable attention. As shown in Fig. 1, the ratio of added value of the services sector to gross domestic product (GDP) has remained stagnant at around 41.8% since 2002. One popular explanation for China's stagnant services sector is that the sector's tax burden, especially the modern services sector, is still too heavy (Ping, Liang, Hao, Zhang, & Mao, 2009; Ping, 2011). As a result, the Chinese government has exerted extensive effort to implement the value-added tax (VAT) pilot expansion to optimize and upgrade industrial structure, and to accelerate transition of the mode of economic growth.

For tax reform of the services industry, a milestone event occurred on January 1, 2012, with the introduction of the VAT pilot program for the transportation and certain modern services industries in Shanghai. Then, the pilot program was implemented sequentially in another eight provinces in the same year and was expanded to the entire nation on August 1, 2013. A specific intention of this program is to avoid double taxation and therefore, to reduce corporate the tax burden in the services sector.

Does the VAT pilot program really reduce corporate tax burden? This study evaluates the effects of the program on corporate total tax burden—an issue that has not been investigated systematically up to now. A substantial body of literature exists studying VAT reform effects, most of which focus on welfare effects (Blomquist, Eklöf, & Newey, 2001; Emran & Stiglitz, 2005; Whalley & Zhang, 2005; Carbonnier, 2007), government revenue impact (Nichèle & Robin, 1995; Jenkins & Kuo, 2000; Moore, 2014), and

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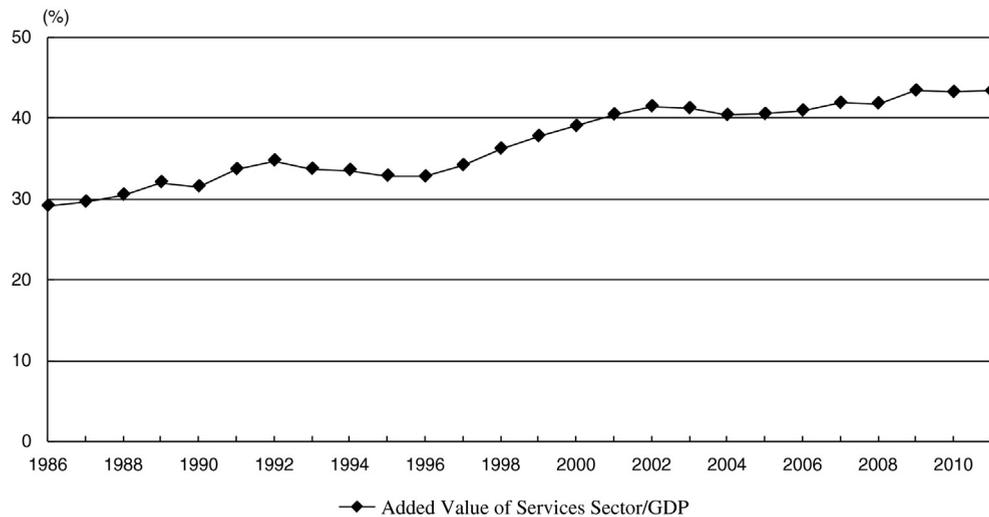


Fig. 1. Ratio of added value of services sector to GDP.

corporate responses (Shoup, 1969; Onji, 2009). Although some studies analyze the tax burden effect (Nellor, 1987; Furchtgott-Roth, 1990; Keen & Lockwood, 2010), they focus on the ratio of tax revenue to GDP, which is a macro-tax burden rather than a micro-tax burden. In the Chinese context, Lin (2008) first constructs an overlapping-generations model to analyze the effects of China's 2004 VAT reform of removing investment from the tax base on capital accumulation and the welfare of the rich and poor in three alternative ways, that is, a change in the consumption tax, a change in the labor income tax, and a change in transfers to the poor, in order to make up for the loss of tax revenues. Lin (2008) draws some valuable conclusions. Then, most of the empirical literature has shown that the 2004 VAT reform has a positive and significant impact on firm investment (Nie, Fang, & Li, 2010; Chen, He, & Zhang, 2011; Liu & Lu, 2015), but Cai and Harrison (2014) find that while the reform was effective in reducing the VAT paid by firms, its effect on firm investment was limited, and only positively significant for state-owned enterprises. Furthermore, Wang (2013) investigates the impact of China's nationwide VAT reform in 2009 on enterprise fixed-asset investment and employment, and finds that it significantly increased business investment in fixed assets, but had no obvious effect on employment. It is noteworthy that these empirical studies evaluate only the effects of earlier VAT reform in manufacturing industries rather than that of the recent VAT reform of replacing the business tax system with a VAT system in transportation and services industries. Moreover, most of the previous studies do not identify whether the VAT reform has indeed affected firm behavior through reducing firms' tax burden.

Regarding the effects of the recent VAT pilot reform in transportation and services industries, some empirical literature focus on firm investment impact (Li & Zhang, 2015; Yuan, Liu, Wang, & Liu, 2015; Zhao, 2015), R&D and TFP impact (Yuan et al., 2015; Li & Zhang, 2015), industry specialization effect (Chen and Wang, 2016; Liang & Ye, 2016). Although several empirical studies simulate the effect of the recent VAT pilot program on the average tax burden of certain industries using a general taxpayer conceptual framework (Pan, 2012, 2013; He, Wang, & Huang, 2013), deficiencies still exist in several aspects as follows. First, these studies ignore that in the whole industry, a large number of small-scale taxpayers exist, which is not applicable to this framework. Second, these studies simulate only the long-term effect when the program is implemented in all regions and covers all services industries. This approach assumes that all intermediate inputs are deductible, but this is not the case. Last, these studies use input-output tables before the VAT pilot program to simulate the reform effect, ignoring possible change of the intermediate input structure after the program. In order to avoid these problems as far as possible, recent studies have used listed companies data to identify the turnover tax burden effect (Tong, Su, & Wei, 2015; Cao & Li, 2016), but deficiencies still exist as follows. First, they use a company-level annual panel dataset to identify the effect of the VAT pilot program. Considering the unevenly gradual process of this program in Table 1, using a company-level annual panel dataset is not a good choice. Second, they use DID analysis for two groups and two periods rather than a general setting for DID analysis for multiple groups and multiple periods (Galiani, Gertler, & Schargrodsky, 2005; Imbens & Wooldridge, 2007; Angrist & Pischke, 2009; Beck, Levine, & Levkov, 2010; Allegretto, Dube, & Reich, 2011; Chaurey, 2016; Li, Lu, & Wang, 2016). Considering that this program in Table 1 was implemented in different places and periods, using DID analysis for two groups and two periods might suffer from serious misspecification problem. Finally,

Table 1

Pilot regions and starting dates.

| Regions | Shanghai | Beijing | Jiangsu | Anhui | Fujian | Guangdong | Tianjin | Zhejiang | Hubei |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Starting dates | Jan 1, 2012 | Sep 1, 2012 | Oct 1, 2012 | Oct 1, 2012 | Nov 1, 2012 | Nov 1, 2012 | Nov 1, 2012 | Dec 1, 2012 | Dec 1, 2012 |

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