Firm investment and exporting: Evidence from China’s value-added tax reform

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ARTICLE INFO

Article history:
Received 5 August 2013
Received in revised form 3 July 2015
Accepted 14 July 2015
Available online 30 July 2015

JEL classification:
G31
C23
F10
G31

Keywords:
Value-added tax reform

1. Introduction

“The key unanswered question is how firms obtain the characteristics that allow them to easily enter the export market.” Bernard and Jensen (2004)

A robust finding from recent firm-level analyses is that exporters are more productive than non-exporters (for a review of empirical evidence, see Bernard et al., 2012). The leading explanation is that firms with better characteristics (such as productivity) self-select into export markets (for a review of firm heterogeneity theories, see Redding, 2011). However, a question that continues to intrigue researchers is how firms obtain superior characteristics to facilitate their entrance into the export market, as exemplified in the above quotation.

Recent literature has emphasized the importance of firm investment in technology upgrading for successful exporting (see, for example, Damijan et al., 2008; Cassiman et al., 2010; Iacovone and Javorcik, 2012). However, there is an inherent empirical challenge to establish the causality from firm investment to exporting; that is, investment and exporting decisions are jointly determined. For example, Atkeson and Burstein (2010), Lileeva and Treﬂer (2010), Aw et al. (2011), and Bustos (2011) all model the simultaneous selection of investment in technology upgrading and exporting. Meanwhile, another complication in the identification is that there could be reverse causality from exporting to investment. For example, Criscuolo et al. (2010) find that among several thousand U.K. enterprises across all industries in 1994–2000, those engaging globally spend more resources on innovation.

This paper contributes to the literature by using a quasi-natural experiment to identify the causal effect of firm investment on exporting behavior. In 2004, China started to reform its value-added tax (VAT) system in six broadly deﬁned industries in the three northeastern provinces.1 Under the new taxation system, the purchase of fixed assets can be deducted from the tax base, which substantially lowers the cost of fixed assets (e.g., by 13 to 17%) and hence generates substantial tax incentives for ﬁrms to invest. Previous studies (e.g., Chen et al., 2011) have shown that the VAT reform indeed increased firm investment.

Our empirical analysis uses regional variations generated by the 2004 VAT reform, that is, the reform was ﬁrst piloted in only 3 of 31 provinces, as an instrument for firm investment. Meanwhile, to further improve our identiﬁcation, we adopt a plausibly exogenous instruments framework developed by Conley et al. (2012), which relaxes the strict

⁎ We are grateful to Nina Pavcnik (co-editor) and two anonymous referees for their very helpful comments and suggestions which substantially improve the paper. All remaining errors are our own. Lu acknowledges the support of a research grant from the National University of Singapore (the Ministry of Education AcRF Tier 1 FY2014-ERC2-001). ⁎⁎ Corresponding author.

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1 Chandra and Long (2013) use another feature of the 2004 VAT reform (i.e., the sharing rule between local and central government in providing export rebates) to identify the effect of the export tax rebate on exporting performance.
A decade after the 1994 reform, the overall economic environment in China had changed significantly. On the one hand, through a series of fiscal centralization policies, the fiscal position of the central government improved substantially: from 1995 to 2004, budgetary revenue increased from 10.8% to around 20% of GDP. On the other hand, the macroeconomic austerity policy since mid-1993 effectively controlled the crisis of overheating and hyper-inflation. The new question faced by the Chinese reformists was how to deepen the economic reform, such as by providing a level playing field and improving the competitiveness of firms.

As a way to stimulate investment and promote an equitable market environment, the central government started to consider reforming its VAT system. On September 12, 2004, the Chinese Ministry of Finance and the State Administration of Taxation officially announced that China would reform its VAT system in six broadly defined industries (i.e., equipment manufacturing, petroleum and chemical manufacturing, metallurgy, ship building, automobile manufacturing, and agricultural product processing industries) in three northeastern (NE) provinces (i.e., Liaoning, Jilin, and Heilongjiang). The new VAT regime was applicable to transactions from July 1, 2004 onward. The crux of this VAT reform was to change the previous production type VAT to the standard consumption type VAT. Under the new VAT system, the purchase of fixed assets could be deducted from the tax base, which would substantially lower the cost of fixed assets (e.g., by 13 to 17%). Three years later, the reform was expanded to include another 26 cities in six central provinces and mining and electricity industries. Finally, the new VAT policy became applicable to all provinces and all industries in January 2009.

Table 1 lists eligible as well as ineligible manufacturing industries in the VAT pilot reform in 2004. The majority of manufacturing industries are eligible and the inclusiveness in classification makes it particularly difficult for firms to switch industries to take advantage of the tax incentive, ensuring that the same firm was either eligible or ineligible both before and after the pilot reform. Meanwhile, as shown by Chen et al. (2011), the distribution of eligible and ineligible firms is balanced between NE and non-NE cities and before and after the pilot reform, which makes concerns about the industry selection problem less severe.

2. Conceptual framework

2.1. Value-added tax reform in China

The VAT is a widely-used type of tax. For example, more than 130 countries (including both developed and developing countries) have adopted VAT and raised about 20% or more of their tax revenues from it. The advantage of the VAT lies in its simplicity and efficiency due to the low administration cost and less economic distortion. A commonly used type of VAT is the consumption type, that is, the tax is levied based on the difference between firms’ total sales of their products and their purchases of all inputs (including fixed assets).

China introduced the VAT nationwide in its 1994 fundamental tax reform. The standard tax rate was 17%, while for some goods, such as agricultural products, the tax rate was 13%. Since its introduction, the VAT has become the major source of tax revenue for the Chinese government. For example, VAT revenue in 2007 accounted for about 31% of total tax revenue. However, before the reform in 2004, China’s VAT was different from the standard consumption type VAT in other countries, as firms’ investment in fixed assets was not deductible from the tax base. Therefore, fixed assets were taxed twice: once directly when firms purchased the assets and once indirectly when consumers bought goods produced with these assets. Such double taxation raised the cost of fixed assets and discouraged firms’ investment in fixed assets. The adoption of the so-called production type VAT was an outcome of China’s economic conditions at the time when the VAT was introduced. In 1994, China’s economy was experiencing overheating and the central government faced stringent budget constraints. As a result, the production type VAT was conceived as a way for the central government to raise tax revenue and restrain investment in fixed assets.2

2 Metcalf (1995) discusses the basic concept and administration issues of the VAT. Using data from OECD countries, Dougan and Zhang (2010) show that the VAT is neutral to private saving, whereas income taxation has a substantial negative impact on private saving. See also Auerbach (2009) and references therein.
5 See, for example, Lileeva and Treﬂer (2010) for the similar assumption.
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