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The Impact of Regional and Institutional Factors on Labor Productive Performance—Evidence from the Township and Village Enterprise Sector in China

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Summary. — This paper investigates the impact of regional and institutional factors on labor productivity in China's Township and Village Enterprise (TVE) sector, one of the pillar industries of the economy. Employing a balanced provincial panel dataset, we find a significant variation in the factors determining regional labor productivity between the three macro-regions. The factors of capital investment intensity, foreign intensity, and export intensity behave differently with a significant regional diversity. Only human capital, the real wage, and firm size are identified as the common determinants across regions. A strong self-reinforcing effect has been found with a high degree of persistence in the behavior of, and hence slow or negligible convergence in labor productivity between regions. We find that the labor efficiency gains have been generated more from internal rather than external economies of scale across regions as well as the country as a whole. We also find that the government privatization reforms have had both a short run and increasingly long-term positive impact on the TVE labor productivity across the regions. This finding may indicate that institutional privatization can be an effective tool in promoting industrialization and labor productive performance in China as well as in other transitional economies.

Key words — regional variation, labor productivity, institutional factor, privatization, China

1. INTRODUCTION

The primary objective of economic policy in China over the last three decades has been to raise national prosperity via a series of economic reforms designed to achieve faster industrialization and increased marketization of the economy (Naughton, 2007; Ward, 2016). Within this overall objective, regional inequality between the three macro-regions (Eastern, Central, and Western) has been regarded as one of the three main problems (along with corruption and pollution) for China's further sustainable growth (Chen, 2010; Fredrik, Andersson, & Edgerton, 2013; Ke, 2015; Li & Gibson, 2013). In recent years considerable weight has been placed on the desirability of promoting faster growth within the poorer provinces, particularly in the Central and Western regions, to ensure that increased national prosperity is eventually associated with reduced regional disparities (Chen, 2010; Ward, 2016; Zheng, 2011). A key element within this overall strategy has been the development of Township and Village Enterprises (TVEs), which are seen as a driving force for faster growth and especially for reducing inequality between urban and rural sectors across the three macro-regions (Shen & Tsai, 2016). Given the focus on regional concerns in the development of national economic policy, and given the perceived role of TVEs as an important vehicle for raising growth, it is important to understand the factors that determine productivity in the TVEs and how they can play a part in promoting reduced regional inequality.

The rapid growth of the TVE sector has attracted considerable academic attention (Kung & Lin, 2007) and a number of studies have examined TVE productive performance (for example, Fu & Balasubramanyam, 2003; Ito, 2006; Wang & Kalirajan, 2002). However, many of them have focused on the analysis of total factor productivity (TFP) at the national aggregate level. Less attention has been paid to labor productivity or regional variations in its determinants, and it remains unclear how regional and institutional factors affect labor performance across the three regions in the TVE sector. Our research motivation is, therefore, to investigate regional variations in the determinants of labor productivity in the TVE sector, including the regional impact of national institutional factors. The focus on labor productivity is particularly pertinent given that the vast majority of TVEs are small and medium-sized enterprises (SMEs), and the sector is much more labor intensive in comparison with the state-owned enterprises (SOEs), which are typically larger in size and more capital intensive. Our objective in this paper is to contribute to the literature by providing not only a detailed understanding of the regional determinants of labor productivity but also the sources of regional variations in labor performance. In addition, our paper will reveal the impact of the institutional factor—the Chinese government privatization reforms on the TVE labor productive performance.

We consider three related issues. First, we identify the factors that influence national and regional TVE labor productivity. Secondly, we investigate whether the identified factors are heterogeneous across the regions and whether this heterogeneity explains regional variations in TVE labor productivity. Thirdly, we examine how the institutional factor of privatization affected TVE labor productivity over the time period of the study. The findings of the study should provide useful information for policy-makers about how to improve TVE labor efficiency and how to reduce regional inequalities in regional performance. Our hope is that the study also carries policy implications for other developing economies in Africa and Asia, about the ways in which industrialization and pro-

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ductivity improvements can be promoted, particularly in rural areas. The remainder of the paper is structured as follows. Section 2 examines the nature of regional variations in TVE labor productivity. Section 3 discusses the analytical framework and identifies the specific questions to be examined. Section 4 discusses the statistical methodology, and section 5 presents the empirical results. The final section 6 provides a summary with concluding comments.

2. THE TVE SECTOR AND REGIONAL PRODUCTIVITY VARIATIONS

The TVEs are industrial enterprises operated in rural areas (Putterman, 1997; Zhan, 2015). The vast majority of the TVEs are characterized as SMEs in labor-intensive manufacturing industries producing textiles, toys, clothing, and food processing (Fu & Balasubramanyam, 2003; Shen & Tsai, 2016). They are either collectively owned by local township and village governments (also known as commune and brigades enterprises) or privately owned by rural households (Ito, 2006; Putterman, 1997; Tong, 1999). However, most of the collectively owned TVEs were privatized during the rural industrial reforms for market liberalization in 1996–2001 (Dong, Putterman, & Unel, 2006; Zhan, 2015). Due to credit and financing constraints, the TVEs have limited access to formal financing sources such as banks or credit cooperatives (Beck, Lu, & Yang, 2015; Fu & Balasubramanyam, 2003). They are more self-financed through informal financing sources, such as their own profits or even individual family members or friends, which are seen as an essential financing channel for privately owned TVEs (Beck *et al.*, 2015).

The TVE sector experienced a dramatic development following China's economic reforms in 1978 (Tong, 1999). The sector had an even more rapid expansion and became a major driving force for China's remarkable economic growth after 1984 when the Chinese government approved the "Report on creating a new situation in commune and brigade-run enterprises" (Fleisher & Wang, 2003; Tong, 1999). China further launched its deepening economic reforms in the middle of the 1990s, including rural economic reforms for privatizing the TVE sector (Shen & Tsai, 2016).

The rapid growth of TVEs in rural areas has been one of the great successes of the economic reforms implemented by China in the 1980s and has played an important role in the transition from central planning to a more market-oriented economy (Huang, 2008; Jefferson, 1998; Kung & Lin, 2007; Naughton, 2007). The development of TVEs has been a key factor in the development of industrialization and urbanization in China's rural regions (Ding, Ge, & Warner, 2004; Kung & Lin, 2007; Shen & Tsai, 2016). TVEs contribute a third of the country's total GDP and half of its exports (Au & Henderson, 2006; Ding *et al.*, 2004; Naughton, 2007). Employment within the sector grew from 28 million in 1978 to a peak of 146.8 million in 2006, accounting for 30 percent of the employment of the rural workforce (China TVE Yearbook, 2007). The TVE sector is seen as a more dynamic and efficient alternative to the state-owned enterprise (SOE) sector (Kung & Lin, 2007; Naughton, 2007; Shen & Tsai, 2016). The strong employment performance of the TVE sector has been important in the implementation of China's SOE reforms, providing manufacturing jobs (Zhan, 2015), and absorbing not only surplus labor from rural sector but also the labor released from the SOE sector (Chang, McCall, & Wang, 2003; Dong *et al.*, 2006; Fu & Balasubramanyam, 2003; Li & Rozelle, 2004).

As a result of their collective or private ownership, TVEs generally have higher managerial autonomy and flexibility compared to SOEs (Chang *et al.*, 2003; Kung & Lin, 2007; Weitzman & Xu, 1994). Partly as a result of this flexibility, and because they typically face tighter budget constraints than the SOEs (Beck *et al.*, 2015), it is generally recognized that TVEs operate in a more market-orientation manner and respond more effectively to economic incentives. As a consequence of their more outward exporting orientation and greater managerial autonomy, TVEs have also attracted a considerable amount of foreign direct investment (FDI) (Shen & Tsai, 2016), acting as an "efficient conduit" for the transfer of capital, advanced technology, and managerial skills (Au & Henderson, 2006; Buckley, Clegg, Zheng, Siler, & Giorgioni, 2007; Fu & Balasubramanyam, 2003). The result is that TVEs are generally more productively efficient and have achieved higher total factor productivity growth than SOEs (Dong *et al.*, 2006; Fu & Balasubramanyam, 2003; Ito, 2006; Jefferson, 1998; Kung & Lin, 2007; Weitzman & Xu, 1994; Woo, Hai, Jin, & Fan, 1994).

Despite the overall strong performance of TVEs, there is considerable inequality between the three macro-regions of the country. Dong and Putterman (1997) report significant differences in TVE total productivity across the provinces with an average gap of almost 2:1 between the highest and lowest ranking provinces. Tong (1999) finds similar regional disparities between coastal and non-coastal regions in TVE total productive efficiency. The extent of regional disparities in performance is illustrated by Table 1, showing TVE labor productivity variation between the three macro-regions in 1994 and 2008. In 1994, average labor productivity in the Eastern region at 5.13 was over twice the 2.82 level of the Central region and just under twice the 2.35 level of Western Region. By 2008, labor productivity had increased across all regions, but the 34.15 figure for the Eastern region was still almost twice the 17.80 and 17.20 figures recorded respectively for the Central and Western regions. The implication is that while output and labor productivity were rising across all three regions, there was hardly any change in the overall disparity in regional TVE performance.

3. ANALYTICAL FRAMEWORK AND HYPOTHESES

The traditional approach to the analysis of productivity takes as its starting point a statement of the nature of the production process (see Zhang, Li, & Li, 2014). With capital (K) and labor including human capital (L) as the productive inputs, and technology (A) as the factor determining the productivity of those inputs (equivalent to TFP), the production process can be represented by the general production function:

$$Y = Af(K, L) \tag{1}$$

Table 1. *China TVE labor productivity variation by region (Unit: 10,000 yuan)*

	1994	2008
Eastern	5.13	34.12
Central	2.82	17.80
Western	2.35	17.20
Total	4.01	27.85

Note: TVE labor productivity is calculated as the ratio of TVE sector gross output to the number of employees.
Source: calculated from China TVE yearbooks (1995 and 2009).