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Labour productivity and export performance: Firm-level evidence from Indian manufacturing industries since 1991

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Abstract

This paper examines the productivity of firms and their ability to enter the export market, i.e., the self-selection hypothesis and the determinants of labour productivity at the firm level for India's major exporting manufacturing industries during 1991-2009. The paper also examines whether export intensity at the firm level differs between domestic-controlled and foreign-controlled firms, and between private and public firms. Applying a 2SLS model, the authors find evidence in favour of the self-selection hypothesis. The authors also find found that domestic firms are more export-intensive than foreign firms, and that private firms are more export intensive than public firms. Regarding the determinants of labour productivity at firm level, firm size and raw material intensity are found to be two significant determinants in this regard while the ownership status of the firms has no role here.

JEL Classification: F14, J24, L25

Keywords: Labour productivity, firm size, export performance, Indian manufacturing firms

Contents

1. Introduction

Since 1991, India has been initiating comprehensive reforms in pursuit of higher growth and development. The wide-ranging reforms have included a major shift from a policy of inward-looking industrialization towards outward orientation in order to generate higher export growth and achieve higher rates of gross domestic product (GDP) and development. During the post-reform period, from 1990/91 to 2010/11, the manufacturing goods sector remained the most important principle commodity group in India as it contributed the largest share of India's total merchandise exports (table 1). Despite a sharp decline from 77 per cent of total exports in 2000/01, the sector accounted for about 66 per cent of the country's total merchandise exports in 2010/11 even though the performance of the sector continuously deteriorated. The engineering goods sector has remained the most important manufacturing subsector followed by gems and jewellery in terms of exports, especially during the past decade. The variations in export performance across the different manufacturing subsectors are clearly shown in table 1.

Table 1. Shares of different principal commodity groups in India's total exports

(Unit: Per cent)

Principal commodity group	1990-91	1995-96	2000-01	2005-06	2010-11
Primary products	**23.83**	**22.82**	**15.99**	**15.89**	**13.90**
Agriculture and allied products	18.49	19.13	13.40	9.91	9.71
Ores and minerals	5.34	3.70	2.59	5.98	4.19
Manufactured goods	**71.62**	**74.69**	**77.05**	**70.39**	**66.08**
Leather and manufactures	7.99	5.51	4.36	2.62	1.49
Chemicals and related products	9.52	11.31	13.21	14.33	11.39
Engineering goods	12.40	13.81	15.30	21.07	27.04
Textiles and textile products	23.93	25.26	25.33	15.91	9.16
Gems and jewellery	16.12	16.59	16.57	15.06	16.03
Handicrafts (excluding handmade carpets)	1.23	1.36	1.48	0.45	0.09
Other manufactured goods	0.43	0.84	0.80	0.95	0.87
Petroleum products	**2.88**	**1.43**	**4.20**	**11.29**	**16.48**
Others (all commodities)	**1.67**	**1.06**	**2.76**	**2.44**	**3.55**

Source: Reserve Bank of India.

Looking at the export behaviour of manufacturing subsectors at the firm level can help in revealing the responsible factors behind such performance. Existing literature identifies factors causing such variations in productivity at the firm level. A number of studies have found that expenditure on upgrading technology, such as research and development (R&D) as well as royalties has had a positive effect on labour productivity (Griliches, 1958 and 1998; Griliches and Mairesse, 1981 and 1995; Nadiri and Mamuneas, 1994; Lichtenberg, 1993; and Lichtenberg and Siegel, 1991). Inward foreign direct investment (FDI), capital intensity, firm size and human capital have been found highly significant in labour productivity at the firm level in a study made by Liu and others (2001), in the context of Chinese electronics industry.

Similarly, firm-level export performance underpins the export success at the national economy level. The existing literature has recognized labour productivity[1] as one of the main determining factors of whether to export or not (Melitz, 2003; Ghironi and Melitz, (2007); and Arnold and Hussinger, 2005) together with other factors such as the size of firms (Raut, 2003), share of wages, share of sales expenses (Bhavani and Tendulkar, 2001). There are other factors such as firm-level R&D expenditure, and non-R&D type innovative activities affecting firm-level export performance (Wakelin, 1998; and Sterlacchini, 1999). Despite an overlap in the vector of determinants across studies, the international evidence on export intensity determinants at the firm level is mixed. Results from different industries and countries point to different directions.

Firm level empirical studies on India mostly focus on the effect of firm size and R&D expenditures on export performance (see, for example, Kumar and Siddharthan, 1994; Patibandala, 1995; Hassan and Raturi, 2003, and Raut, 2003). A study by Bhavani and Tendulkar (2001) showed that access to capital, turns out to be a key determinant for both the export decision function (i.e., to export or to sell in the domestic market), and the export performance function (i.e., the share of exports in output for the garment producing units in Delhi, India). A study made by Abraham and Sasikumar (2010) identified increasing share of low labour cost as an important factor for good export performance for Indian firms who are

[1] Labour productivity comprises several economic indicators including economic growth, competitiveness, efficiency etc.

in Textile and Clothing industry. Upender (1996) calculated the elasticity of labour productivity in Indian manufacturing firms from 1973/74 to 1989/90.

Addressing the need for country-specific and industry-specific evidence, this paper investigates the self-selection hypothesis (i.e., whether the more productive firms become exporters or not), and the determinants of labour productivity at the firm level in India by focusing on the operation of four major Indian manufacturing industries during 1991-2009.

The same self-selection hypothesis question is asked in many studies in the literature. However, this paper makes another extension by examining whether export intensity at the firm level differs between domestic-controlled and foreign-controlled firms, and between private and public firms. A 2SLS estimation procedure is used in this study. A sample of 686 exporting firms is used for this analysis. The source of data was the Centre for Monitoring Indian Economy (CMIE) and the Annual Survey of Industries (ASI) published by the Central Statistical Organization. In constructing the dataset the authors selected firms in the cosmetics, drugs and pharmaceuticals, readymade garments, and gems and jewellery subsectors, which are major manufacturing industries that sell most of their output in foreign markets (see annex).

In section 2 a review is provided of existing literature concerning the modelling on firm-level labour productivity and export intensity. Section 3 explains the data and methodology used in this study. Section 4 presents the descriptive statistics. Section 5 presents the empirical results and interpretation while the conclusion is provided in section 6.

2. Review of literature