



International trade and performance of firms: Unraveling export, import and productivity puzzle



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ABSTRACT

This article explores the linkage between trade participation and productivity performance for a sample of Indian manufacturing firms over the period 1994–2006. We consider two yardsticks of productivity, namely total factor productivity (TFP) and labor productivity for analysis purpose. As far as the labor productivity is concerned, the results indicate that exporters, importers and both way traders are more productive than others. Although, overall our results are somewhat mixed and indicate for a weak interlink between trade and productivity, but the result appear to be more favorable for the export channel of trade as it clearly indicates that exporting leads to productivity improvement over time. There are also some statistical evidences to conclude that more productive firms self-select themselves in the exporting as well as importing market. The learning effects of importing on productivity growth turn out to be more favorable for labor productivity than TFP. Finally, the results clearly highlight the positive effect of R&D efforts of firms on labor productivity in the Indian manufacturing.

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1. Introduction

What is the nature and direction of economic link between trade participation and productivity growth? Is it only the export of goods and services that makes firms more productive or is also the import of high quality intermediate goods crucial for firms' productivity performance? Is there any economic linkage between imported raw materials and firms' productivity? These empirically verifiable questions have attracted huge attention of researchers primarily for the reason that policy makers of developing countries have shown strong faith in the export-led growth policies for their economic development after late 1960s (Bhagwati, 1988). And in some cases the export promotion trade policies have indeed helped developing countries in achieving higher growth rates. Recent empirical studies, while focusing on the economic linkage between export and firm performance, have highlighted the merits of export participation for firms. The results clearly suggest that participation

in international trade through export makes firms more productive over time (Bernard & Jensen, 1995; Bernard, Jensen, Redding, & Schott, 2007; Bernard, Jensen, Redding, & Schott, 2012).

As far as the impact of import channel of trade at micro-level is concerned, the issue is still unsettled in the literature. However, some recent studies, for instance, i.e. Castellani, Serti, & Tomasi (2010), Vogel and Wagner (2010), Smeets and Frederic (2013), Sharma (2014)¹ have highlighted the crucial role of imported inputs. The importance of this study lies in the fact that this is one of the first attempts to investigate the role of imported intermediate inputs and exports in Indian manufacturing industry. India is a developing country and it is a fact that every year it imports a huge quantity of raw materials and capital goods from developed countries like the United States of America and the countries of the European Union. Thus some impact of these high quality inputs on the productivity of firms cannot be completely ruled out. And if it is found to be true, then the high rate of growth of imports should not be a big cause of concern for the economy in

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¹ More importantly, some of these studies have found that importing is more important than exporting for firms in terms of learning.

the long-run as the use of high quality imported raw materials and capital goods along with increasing the total cost of production also increase the productivity and efficiency of firms. Imported inputs bring with themselves the new technologies from the foreign countries and by adopting imported advance technologies developing countries can benefit from technological innovations achieved in foreign countries and can improve their efficiency (see Kasahara & Rodrigue, 2008). Theoretically, therefore, there appears to be a strong link between imports and productivity performance of firms in developing countries that heavily rely on imported raw material and capital goods for the production of final products for domestic consumption and export. A major contribution of the present study is that it aims to empirically investigate import and firm productivity link in Indian manufacturing industry.

A salient feature of the Indian economy during the pre-reform period (1947–1991) was that it was highly regulated and the domestic firms were highly protected from the foreign competition. Import substitution strategy had been a key element of India's development plan during the pre-reform era. During this period the industrial policies were mainly designed to protect domestic industries from foreign competition through various tariff and non-tariff barriers and subsidies (see Pattanayak & Thangavelu, 2005; Sharma & Mishra, 2011).² While these protective policies helped India to expand its industrial structure, technical and professional manpower, they also resulted in accumulation of considerable inefficiencies in the Industrial sector (Bhagwati & Desai, 1970; Bhagwati & Srinivasan, 1975). Consequently, the history of Indian industrial development has very few stories of efficient and highly competitive firms to discuss that have been able to successfully penetrated in international market and have established their trading empire across countries during the pre-reform era.

In the backdrop of the balance of payment crisis in 1991, a set of economic reforms was initiated in India to open the external sector of the economy to interact with world economy. This reform process aimed to deregulate industries that had hitherto confined themselves in a highly protected domestic market, and therefore, were not exposed to intense foreign competition. As a result, there has been a spectacular change in the overall economic scenario of India at the macro level and some effects of trade liberalization are now clearly visible. For instance, a sharp upward shift in trade growth and foreign exchange reserves is observed in the recent past which has resulted in considerable improvement in India's balance of payment position (see Fig. 1A of Appendix A).

However, the impact of trade (*i.e.* export and imports) on productivity performance of firms is still unclear and debatable in the post-reform era. It is also unclear as to what extent the fiscal incentive for export promotion has helped firms in achieving higher export growth and improvement in their productivity performance. For a developing country like India the policy relevance of the impact of import channel of international trade is considerably high. This is mainly because of the fact that the magnitude of total expenditure on imports is bigger than the total exports earnings, and as a result, the balance of payment on current account continuously displays negative surplus. For example, the share of capital goods imports increased from 10.5% in 2000–2001 to 13.6% in 2010–2011, and further increased to 14.1% in 2011–2012 (see International Trade, 2013). This clearly indicates that over time the volume of imports has increased considerably and now it plays

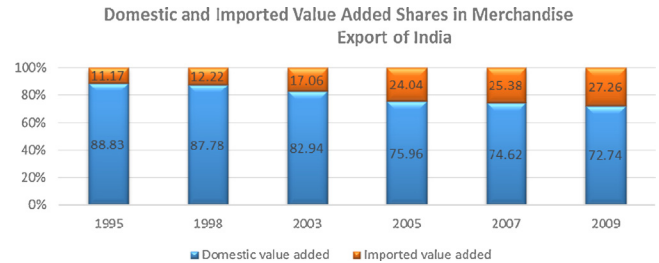


Fig. 1. Domestic and imported value added shares in merchandise export of India. Source: Computation based on input-output tables taken from world input-output database (WIOD).

equally crucial role in the development of the economy like exports. In the reform period, dependency of export on imported inputs has also increased significantly and reached to around 27% of total value added (see Fig. 1).

Against the aforementioned background, the present study is set to examine the relationship between trade participation (both export and import) and productivity performance for a sample of Indian manufacturing firms in the post-reform era (1994–2006). In doing so, we contribute to related literature in a variety of ways. First, we attempt to test the empirical validity of learning-by-exporting and self-selection hypotheses. Subsequently, we also test both the hypotheses for import market as well. This is important because with few exceptions the issue of imports at firm-level is widely ignored in the context of developing countries. Second, along with TFP, we also consider labor productivity as a measure of firms' performance. This is for reason that majority of firms in the Indian manufacturing follow labor intensive production technique and export labor intensive goods. Third, we also attempt to investigate the impact of export and import participation on the performance of firms during various phases of transition *i.e.* from non-exporter to exporter and from non-importer to importer. Finally, in the existing literature only a few studies have investigated this issue for the Indian economy, and therefore, this study makes a careful and detailed attempt to bridge this gap.

The rest of the article is organized as follows: Section 2 deals with data description and discusses productivity estimation. Section 3 discusses some stylized facts of traders and non-traders. Section 4 analyzes the issue of exports and imports premia of the sample firms. Section 5 attempts to answer the question whether firms become more productive after entering in International Trade. Section 6 attempts to answer the question whether more productive firms self-select into exporting and importing. Section 7 provides evidence related to the role of capital and intermediate imported input. The final section concludes the study and discusses policy implications of the findings.

2. Data description and productivity estimation

2.1. Data description

To accomplish our objectives we utilize firm level data collected from the Prowess³ database which is provided by Center for Monitoring Indian Economy (CMIE). Our dataset contains yearly

² In the pre-reform period, industrial licensing scheme under the Industries Development and Regulation Act (IDRA) of 1951 was frequently used to protect and regulate domestic industries and market. These regulations not only controlled entry into an industry and expanding capacity of firms, but were also used for controlling the import content.

³ The Prowess Database is an online database provided by the Center for Monitoring Indian Economy (CMIE). The database covers financial data for over 23,000 companies operating in India. Most of the companies covered in the Database are listed on stock exchanges, and the financial data includes all the information that operating companies are required to disclose in their annual reports. The companies covered in Prowess account for 75% of all corporate taxes and over 95% of excise duty collected by the Government of India.

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