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EXPORTING FIRMS, PRODUCTIVITY AND PROFITABILITY: A SURVEY OF THE EVIDENCE FROM MANUFACTURING INDUSTRIES

Abstract:

It is believed that export firms are more productive than non-export firms. The reasons for that exporting firms have to endure additional cost because of transport costs, marketing research, advertising, local regulations etc. Export firms are also inclined to pay higher wages than non-export firms, because they use a higher skilled and more productive labours. Hence, export firms have to be more productive due to these additional costs. The aim of this study is to explain whether the productivity advantage of export firms does lead to a profitability advantage of exporters compared to non-export firms. For this reason, this paper attempts to summarise previous empirical studies on the firm level data considering the relationship between exporting firms, productivity, and profitability.

Keywords:

Productivity; Profitability; Exporting Firms; Manufacturing Sectors; Firm Level Data.

JEL Classification: D22, F14, L60

1. Introduction

Besides the theoretical models, there is large body of empirical study on the effect of firm level productivity on export decision. In recent years many empirical studies dealing with export firms and productivity have been done. In 1995 Bernard and Jensen produced the first series of papers. They utilise large comprehensive longitudinal data from surveys performed by U.S. official statistics to examine the differences between exporting firm and non-exporting firms in several properties of firm performance, involving productivity. The extent and cause of productivity differentials between exporters and non-exporters was one of the popular topics in the area of international trade since then (Wagner, 2005).

There are two alternative hypotheses to explain why export firms are more productive than non-exporting firms. The first one is that self-selection firm is more productive in the export market. Exporting firms has to carry additional costs including market research, adoption to the local regulations, and transport costs etc. These costs can easily construct an entry barrier for the less productive firms. Moreover, firms could be forward-looking behaviour. Firm's export desire for the near future could force the firm to improve its productivity to day to be competitive in the export market.

Second hypothesis indicates the function of learning by exporting (LBE). Firms joining to the foreign markets are revealed severe competition. That's why, those firms have to enhance their productivity faster than the domestic firms'. Briefly, export activities put pressure on firms to be more productive.

A main method to examine "the differences in productivity between exporters and non-exporters is introduced by Bernard and Jensen (1995, 1999). This type of studies use longitudinal data for plants to document differences in levels and growth rates of productivity between exporters and non-exporters. First step is observing differences in average labour productivity or average total factor productivity between exporters and non-exporters". (Wagner 2005)

The second step is the calculation of so-called exporter premia, "defined as percentage difference of labour productivity between exporters and non-exporters. The export premia are estimated from a regression of log labour productivity on the current export status dummy and a set of control variables (usually including industry, region, firm size measured by the number of employees, and year)". (Wagner 2005)

$$\ln LP_{it} = a + \beta \text{Export}_{it} + c \text{Control}_{it} + e_{it} \quad (1)$$

Where i is "the firm index, t is the year, LP is labour productivity, Export is a dummy variable for current export status (1 if the firm exports in year t , 0 else), Control is a vector of control variables (like four-digit industry dummies, dummies for regions, firm size, and year dummies), and e is an error term. The export premium, calculated from

the estimated coefficient β indicates the average percentage difference between exporters and non-exporters controlling for the characteristics included in the vector Control” (Wagner 2005).

Then, differences in productivity growth between exporters and non-exporters are examined. Following Wagner (2005), the related empirical model can be specified by

$$\ln LP_{it} - \ln LP_{i0} = a + \beta_1 \text{Start}_{it} + \beta_2 \text{Both}_{it} + \beta_3 \text{Stop}_{it} + c \text{Control}_{i0} + e_{it} \quad (2)$$

where Control is a vector of plant characteristics in year 0, and the dummies for export status are defined as follows:

$$\text{Start}_{it} = 1 \text{ if } (\text{Export}_{i0} = 0) \text{ and } (\text{Export}_{it} = 1)$$

$$\text{Both}_{it} = 1 \text{ if } (\text{Export}_{i0} = 1) \text{ and } (\text{Export}_{it} = 1)$$

$$\text{Stop}_{it} = 1 \text{ if } (\text{Export}_{i0} = 1) \text{ and } (\text{Export}_{it} = 0)$$

The regression coefficients β_1 , β_2 and β_3 “are estimates for the increase in growth rates of labour productivity for export starters, exporters in both years, and export stoppers relative to non-exporters in both years”. “Here we look at β_2 to compare exporters and non-exporters” (Wagner 2005).

“To test the empirical validity of the first hypothesis (good firms go abroad), the pre-entry differences in productivity between export starters and non-exporters are examined. If more productive firms become exporters then we should expect to find significant differences in performance measures between future export starters and future non-starters several years before some of them begin to export” (Wagner 2005). For this reason, following empirical model is estimated.

$$\ln LP_{it-3} = a + \beta \text{Export}_{it} + c \text{Control}_{it-3} + e_{it} \quad (3)$$

“The pre-entry premium, computed from the estimated coefficient β shows the average percentage difference between today’s exporters and today’s non-exporters three years before starting to export. To examine the related question whether productivity increased more in export starters in the years before the start than in firms that continue not to export” (Wagner 2005), following empirical model is applied

$$\ln LP_{it-1} - \ln LP_{it-3} = a + \beta \text{Export}_{it} + c \text{Control}_{i0} + e_{it} \quad (4)$$

“The estimated coefficient β indicates the extent in which future exporters outperformed the non-exporting firms in the years prior to entry” (wagner 2005).

“To test for the second hypothesis (exporting promotes productivity) the post-entry differences in productivity growth between export starters and non-exporters are investigated. This is done by looking at β_1 from equation (2) to compare the productivity growth performance of export starters and non-exporters” (Wagner 2005).

In the next section, this paper surveys the results of the previous empirical studies that apply firm level data to examine the relationship between export, productivity, and profitability.

2. Literature Review

Melitz (2003) “shows only the more productive firms to enter the export market (while some less productive firms continue to produce only for the domestic market) and will simultaneously force the least productive firms to exit. Entry into the export market is also costly, but the firm’s decision to export occurs after it gains knowledge of its productivity”. In other words, firm productivity is the most important factor for the export decision. Similar results are also achieved in Bernard et al. (2003) and Melitz and Ottaviano (2008).

Girma, Gorg, and Strobl (2004) “compares the performance of non-exporter firm, exporter firms and multinational firms. They apply a non-parametric approach based on the principle of first order stochastic dominance. They find that the distributions for multinationals dominate that of domestic exporters and non-exporters, while they do not find clear differences in plant performance between exporters and non-exporters”.

In study of Girma, Greenaway, and Kneller (2004), they examine exporting and firm performance for a large panel of UK manufacturing firms, applying matching techniques. “The authors find that exporters are more productive and they do self-select. In contrast to other evidence, however, exporting further increases firm productivity”.

Kim, Gopinath, and Kim (2009) examine “whether exporting is a cause or an effect of high productivity of firms’ in the Korean manufacturing sectors. For this purpose, the panel data set is constructed with 1335 firms from eight Korean manufacturing industries. They find an evidence that high productivity causes exporting for three industries. This is referred to as self-selection. However, they do not find support for the hypothesis that high “productivity is affected by exporting, except in one industry. Sunk-cost or previous-export-experience effect on the current export status is statistically significant across industries unlike that of firms’ productivity and size”.

Fryges and Wagner (2010) paper “presents the first comprehensive evidence on the relationship between exports and profitability. It documents that the positive profitability differential of exporters compared to non-exporters is statistically significant, though rather small, when observed firm characteristics and unobserved

firm specific effects are controlled for. In contrast to nearly all empirical studies on the relationship between productivity and exports they do not find any evidence for self-selection of more profitable firms into export markets. Due to the sampling frame of the data used they cannot test the hypothesis that firms which start exporting perform better in the years after the start than their counterparts which do not start. Instead, they use a newly developed continuous treatment approach and show that exporting improves the profitability almost over the whole range of the export-sales ratio. Only firms that generate 90 percent and more of their total sales abroad do not benefit from exporting in terms of an increased rate of profit. This means, that the usually observed higher productivity of exporters is not completely absorbed by the extra costs of exporting or by higher wages paid by internationally active firms”.

Wagner (2011a) provides the evidence for the “relationship between profitability and three types of international trade activities (exports, imports and two-way trade) using representative data for manufacturing industries from Germany. He shows that any productivity advantages of trading firms are eaten up by extra costs related to selling and buying on foreign markets”.

Grazzi (2012) concentrate on the relationship “between export and profitability. His evidence on Italian exporting firms shows that exporting activity is not systematically associated to higher firm’s profitability. This is shown both by means of non-parametric methods and by regression techniques that try to identify an export premium”.

Tamminen, and Berg (2013) investigate “the trade status, firm size and profitability, employing four different profit measures for Dutch and Finnish firm level data. They find that exporting activities are not correlated with the productivity. Their results from ‘propensity score matching analysis’ present tiny evidence supporting the assumption that exporting promotes profitability. On the other hand, they find some evidence suggesting that exporting Dutch firms in manufacturing sectors can realise higher profits.”

Gabrielczak and Serwach (2014) tests whether there are differences in productivity between exporting firm and domestic firms among the Polish manufacturing firms. They apply the Olley-Pakes algorithm to estimate the total factor productivity (TFP) of firms using microeconomic data from the Central Statistical Office of Poland. Then apply that data to probit and logit estimations for export status and examine TFP increments of export starter. They did not find strong evidence for firm self-selection. However, they found weak and restricted evidence for the existence of Learning by Exporting (LBE) effect,

Lehman and Costa (2015) paper “aims to find out if there are significant performance differences between exporters and non-exporters in Portugal. They apply OLS and Pooled OLS regressions for productivity and profitability using the sample of Portuguese manufacturing firms and considering the years between 2008 and 2012”. The result for productivity is that exporting firms are more productive than their non-

exporting firms. In other words, productivity has positive effect on exporting firm. On the other hand, the result for profitability confirms their hypothesis. But, they are not as consistent as those for the other measure.

Many “firm-level studies find that average wages in exporting firms are higher than in non-exporting firms from the same industry and region. Schank, Schnabel, and Wagner (2006) paper uses a large set of linked employer-employee data from Germany to analyse this exporter wage premium. They show that the wage differential becomes smaller but does not completely vanish when observable and unobservable characteristics of the employees and of the work place are controlled for”.

3. Conclusion

It is believed that export firms are more productive than non-export firms. The reasons for that exporting firms have to endure additional cost because of transport costs, marketing research, advertising, local regulations etc. Export firms are also inclined to pay higher wages than non-export firms, because they use a higher skilled and more productive labours. Hence, export firms have to be more productive due to these additional costs. The aim of this study is to explain whether the productivity advantage of export firms does lead to a profitability advantage of exporters compared to non-export firms. For this reason, this paper attempts to summarise previous empirical studies on the firm level data considering the relationship between exporting firms, productivity, and profitability.

The topic of the relationship between exporting firm and productivity has been discussed more severely in the context of international trade and firm behaviour literature. However, the attainable proofs are rather scattered and divided in terms of productivity and profit measures and research methods employed. Overall, the relationship between exporting firm and productivity is still not well recognised and inconsistent results are usual.

Moreover, most of the empirical studies ignore the role of profitability. They simply concentrate on the relationship between exporting firm and productivity. In fact, investigating relationship between exporting firm and profitability instead of productivity is much more reliable. Even if there is a positive correlation between profitability and productivity, productivity is not only crucial factor the profitability. The factors of Research and Development activities, firm size, firm age, country of origin of the firm and product diversification can also affect profitability. The reason for the using productivity in the empirical studies instead of profitability is data set which can be easily observable.

As a conclusion, the main problem of the reliable empirical studies for the relationship between exporting and firm’s productivity generally occurs as a result of data limitations.

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