对外经济贸易大学研究生科研创新成果汇编（2010—2012）

对外经济贸易大学党委研究生工作部 编

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前言

研究生教育作为国家教育体系中高层次的教育，肩负着为国家培养高素质、创新型人才的重任，也必将成为我国建设国家创新体系的重要基础力量。近年来，我国的研究生教育在规模上得到了快速发展，但研究生的培养质量，尤其是在研究生创新能力的培养方面，还存在着一些不足。在“研究生教育创新计划”、“高等学校自主创新工程”等活动取得较好成果之后，2012 年 3 月 16 日，教育部再一次颁布《教育部关于全面提高高等教育质量的若干意见》（教高［2012］4 号），其中，对研究生教育，尤其是研究生科研创新教育工作，提出了新的更加具体的要求。

中国共产党第十八次全国代表大会对新时期的教育工作提出了新要求，坚持教育优先发展，坚持全面实施素质教育，深化教育领域综合改革，着力提高教育质量，培养学生社会责任感、创新精神、实践能力。按照党的十八大的精神为指导，我校全面实施“人才强校”战略、“国际化工程”战略和体制机制创新战略。学校全面贯彻落实《十二五规划发展纲要》、《十二五学科建设发展规划》总体部署，扎扎实实地推进学校的科学发展。

研究生科研能力的培养与提升是学校研究生教育的重要目标。学生科研能力的培养不仅需要学术环境，也需要系统激励手段。学校近年来，狠抓学科建设，尽可能多地为研究生的科研提供条件。为尽快达到国家创新型人才培养的相关要求，提高我校研究生科研创新的热情和动力，我校于 2010 年 3 月，通过了《对外经济贸易大学研究生科研创新项目管理办法（试行）》（以下称为《管理办法》），启动了研究生科研创新项目活动，每年划拨专项经费即研究生科研创新基金 50 万元予以支持研究生科研活动。《管理办法》推出之后，得到了广大研究生以及导师们的积极响应和大力支持，效果显著。

呈现给读者的这本《对外经济贸易大学研究生科研创新成果汇编（2010-2012）》就是继《管理办法》出台之后的学校部分研究生科研创新成果的汇编。其收录的文稿内容是 2010 年至 2012 年我校研究生经过初期立项、中期审查和后期结项 3 个环节之后的部分最终成果。本书由对外经济贸易大学党委研究生工作部组织编辑。我们希望本书的出版能够激发广大博士研究生和硕士研究生对学术科研的兴趣，引导并推动更多的研究生积极参与到我校科研创新项目中来，最终实现我校研究生科研创新能力的提升。

校长：施建军

2012 年 12 月 6 日

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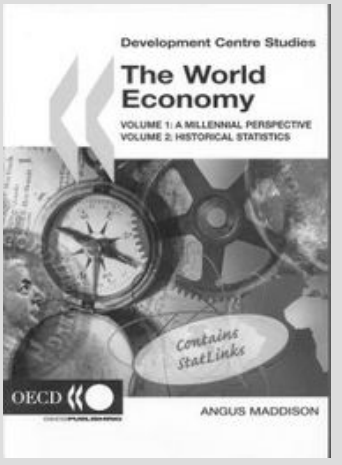

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孙晓男，国际经济贸易学院国际贸易专业 2009 级硕士研究生，在校期间参与多项研究生科研活动，毕业后以突出的科研能力申请到出国留学机会，目前于英属哥伦比亚大学商学院攻读博士学位。

心得体会

跟很多刚开始尝试着做学术研究的同学一样，最初参加科研创新项目申请的时候，并不了解严谨的学术研究应该如何进行。只是抱着对阅读文献过程中发现的问题的一丝好奇，也希望能拿自己所学的经济学知识小试牛刀，开始了这个不断提出问题、试着解决问题的研究过程。正是在这个过程中，学会批判性思考（critical thinking），学会筛选与借鉴文献，学会如何找到有价值的论题以及严谨的研究方法。更重要的是，在与导师以及其他研究相关领域的教授的不断讨论与交流中，逐渐摸索理论学习与应用的契合，体会他们严谨的学术态度，学习他们的治学精神。

Exports, Ownership and Firm Productivity: Evidence from China

Xiaonan Sun Junjie Hong

Abstract: This paper examines the linkage between exports, ownership and firm productivity. Based on a panel dataset which covers over 70 000 Chinese firms from 2001 to 2005, the estimation results provide strong evidence that exports play an important role in enhancing firm productivity. Foreign ownership improves firm performance, but foreign-owned exporters benefit less from exporting activities, compared to domestic exporters. These results are robust to a variety of methods used, and consideration of endogeneity issue. We also find that the productivity gain from exporting is greater for new entrants into the international market, and the benefit declines when firms become more experienced. Firms that involve more in exports are more likely to develop new product, suggesting that export-market participation promotes innovation.

Keywords: Export, Productivity, Learning Effect

1. Introduction

During the last three decades, pervasive forces of globalization has made the world economy more integrated, and observations from both developed and developing economies have shown economic booms with rises in export expansions. Although there is supportive evidence that firms that participate in the export market are more productive, the causal relationship between exports and firm performance has received continuous debate. A number of studies (e.g., Bernard and Jensen, 1999; Aw et al., 2000; Baldwin and Gu, 2004; Blalock and Gertler, 2004; Fryges and Wagner, 2008) have been conducted to examine this issue.

Two questions are frequently asked regarding the mechanisms that can explain the positive correlation between exports and productivity: are more productive firms self-selected into the export market, and does export-market participation further enhance firm productivity due to learning-by-exporting process? Most of

the previous studies lend support to the self-selection hypothesis while evidence underpinning the argument that exports serve as a conduit for technology transfer and spillover remains ambiguous (Wagner, 2007). As pointed out by Bernard and Jensen (1999), the most interesting direction of causality runs from exports to firm performance. Besides learning effects, three additional mechanisms are proposed to explain the effect of exports on productivity gain. First, the most straightforward benefits to enter export market is associated with scale economy (Baldwin and Gu, 2004; Van Biesebroeck, 2005). Second, firms that export are forced by greater competition to increase their efficiency in order to survive in the international market. Third, at the industry level, increased exposure to trade leads to additional inter-firm resource reallocation towards more productive firms, which contributes to the aggregated productivity growth (Melitz, 2003).

As a specific case, China has emerged rapidly as a major player in the global economy as a result of economic reform and trade liberalization since 1978. Over the past thirty years, China has achieved annual average GDP growth rates of around 9%. That opportunities offered by the world market have played a significant role in economic growth in China is beyond dispute, especially from the mid 1980s (Rodrik, 2006). As shown in Figure 1, China's share of world merchandize export rose from less than 1% to almost 9% in 2008, making it the second largest export power with shipments worth US$ 1.43 trillion (World Trade Organization, 2009). China's exponential growth of export value index together with the trajectory increase in the share of high-tech exports, shown in Figure 2 and Figure 3 respectively, indicates the climbing up process of production and export ladder. More specifically, regions initially involved in labor-intensive assembly of electronic components have

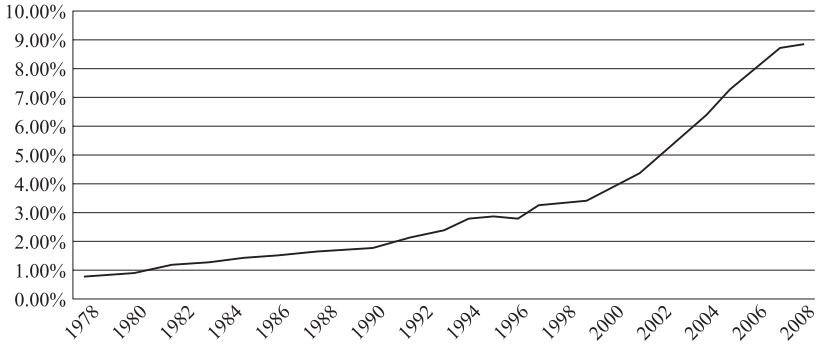

Figure 1 China's Share of World Merchandize Export (%)

Source: World development indicators database (World Bank)

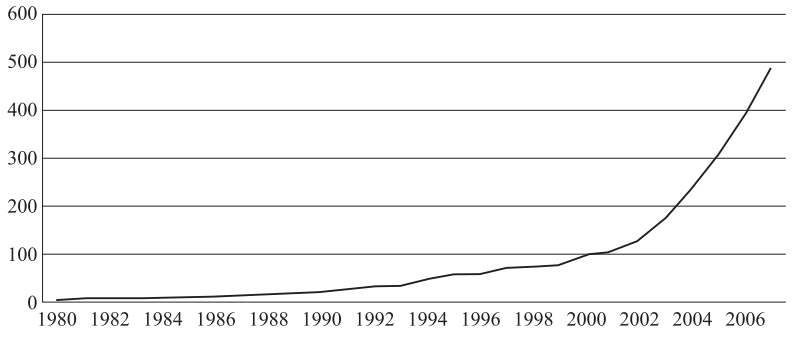

Figure 2 Export Value Index (year 2000=100)

Source: World development indicators database (World Bank)

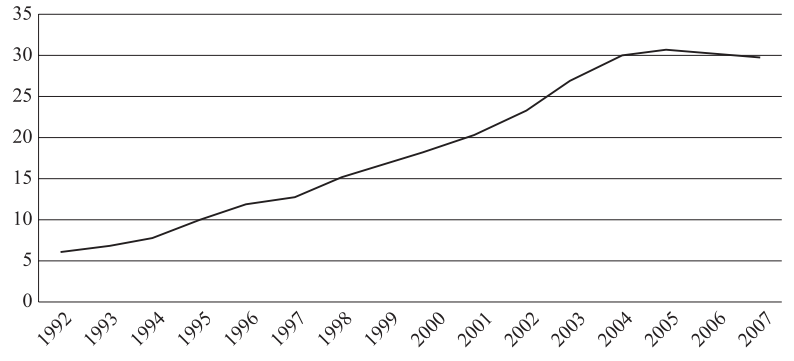

Figure 3 High-technology Exports (% of manufactured exports)

Source: World development indicators database (World Bank)

gradually developed into suppliers of electronic parts and components, for example, at the Pearl River Delta area (Greenaway et al., 2008).

Although China's opening up process is often cited by researchers as one of the key factors responsible for its growth, little research has been done to investigate the effects of trade on economic performance, especially at the firm level. Also, in spite of the argument that foreign ownership enhances firm productivity in developing countries, its influence on export premium is to be tested. As pointed out by Rodrik (2006), the relationship between China's successful integration into the global market and its accomplishment of economic performance is worth examining, not only because China is the stellar example for other developing countries to emulate, but also because the formulation of its own future trade policies may depend on these experiences.

This paper contributes to the literature by providing new evidence to unravel the debate over exports-productivity relationship. Controlling for other factors, we specifically focus on the impact of export behavior on firms' productivity by employing a comprehensive firm-level dataset from 2001 to 2005 in China. Unlike

most of the early studies which use export dummy and shifts of producers in and out of the export market as main methods, this paper uses export intensity and examines its promotion of firm productivity. We will also test the influence of firms' ownership on export premium, examine learning effects of exporters, and investigate the impact of exporting activities on new product development.

The remainder of this paper is organized as follows. The next section briefly reviews the existing theoretical and empirical literature. Section 3 describes the data source and introduces econometric model. In section 4, we report and discuss the estimation results, and section 5 concludes.

2. Literature Review

The relationship between export behavior and firm performance has been extensively studied since the mid-1990s. Bernard and Jensen (1999) investigate whether productive firms become exporters or whether exporting improves firm performance based on U.S. database. Similar discussions with slightly different emphases extend to a variety of regions and time periods, including Columbia, Mexico and Morocco (Clerides et al., 1998), China (Kraay, 1999; Fu, 2005), Canada (Baldwin and Gu, 2003), Taiwan (Aw et al., 2000 and 2007), Indonesia (Blalock and Gertler, 2004), Japan (Kimura and Kiyota, 2006), UK (Greenaway and Kneller, 2003; Crespi et al., 2008), Sweden (Hansson and Lundin, 2004; Greenaway et al., 2005), Germany (Arnold and Hussinger, 2005; Fryges and Wagner, 2008), Spain (Farinas and Martin-Marcos, 2007), Sub-Saharan area (Van Biesebroeck, 2005), and most recently Thailand (Cole et al., 2010).

A number of regularities are revealed by comparing the results of previous studies. First, the number of firms participating in the export market has increased over time as a result of pervasive forces of globalization. Second, almost all the studies, except that of Greenaway et al. (2005), find that firms that export are larger, more productive, more capital intensive, more technology intensive, and pay higher wages. Most studies report that the productivity differences exist even before firms' entry into the export market, or that firms increase their productivity with the purpose of becoming exporters, either of which is in support of the self-selection hypothesis. On the contrary, little evidence is found on the additional effects of exports on productivity, leaving the learning-by-exporting mechanism open to doubt[①]. Third, most empirical studies employ export dummy to examine how does a firm's export status of today

① See Wagner (2007) for more explicit summary of the main results of previous empirical studies.

affect subsequent performance, while only a few of them adopt continuous variable to measure export activities (e.g., Blalock and Gertler, 2004; Castellani, 2002; Hansson and Lundin, 2004).

Based on the empirical evidence, a number of theoretical work has emerged suggesting possible mechanisms for exports to achieve productivity growth. By developing a dynamic general equilibrium model, Melitz (2003) shows that exposure to trade will induce more productive firms to enter the export market while simultaneously force the least productive ones to exit. Therefore, the aggregate industry productivity is improved due to inter-firm resource reallocation. This theory is supported by Bernard et al. (2003) who ascribe the aggregate productivity rises to employment shifts among firms, that is, less productive firms are driven out by import competition while the released labor forces are absorbed by more productive exporters.

Recently, with the newly developed statistic and econometric methodology, another wave of empirical studies is conducted aiming at separating firms' pre-entry and post-entry productivity gains through export activity. More specifically, by using system generalized method of moments, Baldwin and Gu (2003) and Van Biesebroeck (2005) attempt to solve the endogeneity problem and find superior labor productivity growth for exporters compared with non-exporters, suggesting learning effects of exporting activities. By using matching technique (Greenaway and Kneller, 2003; Arnold and Hussinger, 2005; Wagner, 2007; Loecker, 2007; Fryges, 2009), researchers are able to control pre-entry firm characteristics and explore the linkage between exports and productivity more accurately. However, results presented by using matching technique are still unable to converge. Although the learning by exporting hypothesis is supported by Greenaway and Kneller (2003) with the case of UK, Arnold and Hussinger (2005) deny it using German data. Further, several preconditions are raised for the achievement of productivity gain, such as Greenaway and Kneller's (2007) finding that learning effect depends on industrial characteristics, and Fryges and Wagner's (2008) argument that certain export intensity must be satisfied beforehand. A comprehensive Meta analysis is conducted by Martins and Yang (2009), and they find that the impact of exporting activities on productivity is higher for developing than developed economies.

3. Data and Method

The data used in this research are drawn from annual surveys of manufacturing firms of China during the period of 2001 to 2005. The surveys were conducted by

the National Bureau of Statistics of China (NBS)[①], covering all state-owned enterprises, and those non-state-owned enterprises with annual sales of five million Chinese Yuan or more. This is one of the most comprehensive firm-level datasets in China, and has been used by some of previous studies (e.g., Lu et al. 2010). The dataset provides detailed information on firms' identification, location, year of entry, ownership, employees, total sales, exporting sales, sales of new products, and the like. In this study, we only consider manufacturing firms that are observed for all five years from 2001 to 2005, and hence 72022 firms and 360110 observations (72202 firms×5years) are selected. After dropping some observations with abnormal values (such as negative state or foreign capital, the year of entry later than 2005, export intensity greater than 1, etc.), we obtain 340547 observations, which will be used as the sample of this study. Based on the database, over 24000 firms export at least part of their products each year during the study period.

The regional and industrial distribution of exporters is shown in Table 1. Among the 26,847 exporters in 2005, 80% are located in the coastal area. Among them, more than half cluster in Guangdong, Zhejiang and Jiangsu province, followed by Shanghai and Fujian. Export intensity is relatively high in the top five provinces, indicating the export-orientation of firms in the areas where firms can easily access to international markets. Table 1 also reports industrial distribution of exporters. It shows that about 40% of exporting firms are from the top five industries, these are, textile wearing apparel, footwear and caps, textile, metal products, general purpose machinery, communication equipment, computers and other electronic equipment. Noticeably, the top two are textile-related industries, and only one of the top five is high-tech industry (i.e., communication equipment, computers and other electronic equipment).

Table 1 Regional and Industrial Distribution of Exporters in 2005

Regional distribution (Top five concentrated regions)

Region	No. of exporters	% of all exporters	Average export intensity
Guangdong	5 952	22.17	0.742 6
Zhejiang	5 407	20.14	0.626 0
Jiangsu	3 066	11.42	0.539 3

① NBS is responsible for organizing, directing and coordinating the statistical work in China. According to the Statistical Law of P.R.C., leading mem bers of local authorities, departments or unit s should take legal responsibility for the accuracy of the data reported to NBS.

Shanghai	2 224	8.28	0.561 5
Fujian	1 986	7.40	0.778 5

Industrial distribution (Top five concentrated industries)

Industry	No. of exporters	% of all exporters	Average export intensity
Textile Wearing Apparel, Footwear and Caps	2 773	10.33	0.835 1
Textile	2 528	9.42	0.586 4
Metal Products	1 753	6.53	0.638 4
General Purpose Machinery	1 751	6.52	0.413 7
Communication Equipment, Computers and Other Electronic Equipment	1 721	6.41	0.563 4

Note: The export status of some firms varies over time. For instance, a firm might not export in 2001, but began to export since 2004. Therefore, although our research is based on a panel data, the number of exporters is different over time. To save space, the above table only reports regional and industrial distribution of exporters in 2005.

Table 2 shows the differences between exporters and non-exporters for three selected years. Column (a) of each year presents the mean values of these characteristics for firms that export, while column (b) reports the difference in mean values between exporters and non-exporters. In order to deal with the bias that firm performance may differ simply due to industrial or regional characteristics, the results in column (c) incorporate 2-digit industrial and regional dummies into the model to make further comparisons.

Table 2 Export Premium and Characteristics of Firms

	2001			2003			2005		
	1a	1b	1c	2a	2b	2c	3a	3b	3c
	Exporter	Differences	Controlled	Exporter	Differences	Controlled	Exporters	Differences	Controlled
No. of employees	565.355	314.832 5	418.290	590.167	338.195	418.698	611.829	363.158	412.529
Output value	132.770	85.915	107.900	190.327	127.697	161.808	264.148	172.016	224.796
Total asset	157.169	103.405	153.054	189.585	124.506	184.197	234.040	155.239	225.738
Capital intensity	90.011	17.858	26.765	92.979	13.279	24.343	104.180	7.570[d]	20.075

Average wage rate	13.028	1.327[e]	2.636[e]	14.056	2.729	2.266	17.678	2.539	2.251
Share of Foreign ownership	0.422	0.328	0.256	0.411	0.319	0.249	0.405	0.308	0.252
Share of New product	0.053	0.021	0.027	0.052	0.025	0.033	0.070	0.039	0.044

Note: 1. The export premium is calculated from the following specification,

$$Y_i = \quad + \quad D_{export} + \quad D_{industry} + \quad D_{region} + \quad ,$$

Where Y_i indicates various firm characteristics, D_{export} is an export dummy which takes the value of 1 if a firm participates in the export market. Industry and region dummy are included when reporting the results in column (c), but not included when reporting the results in column (b).

2. Output value and total asset are in million Chinese Yuan, while all other monetary values are in 1 000 Chinese Yuan. Capital intensity = total capital/no. of employees; Average wage rate=total wage/no. of employees; Share of foreign ownership=foreign and Hong Kong, Macao and Taiwan capital/total capital; Share of new product=sales of new product/total sales.

3. All results reported in the table are significant at 5% level except for numbers with superior note d (significant at 10% level) and e (insignificant at even 10% level).

According to Table 2, exporters and non-exporters are significantly different in almost all attributes. Exporting firms are much larger than non-exporters in terms of employment, total assets, and output value. They are more capital intensive, and pay higher wages. During the study period, we observe an increasing difference in total output and assets while the employment gap remains almost the same over time. These findings are quite consistent with the previous studies (i.e., Bernard and Jensen, 1999). More interestingly, as we compare column (b) and (c), we find that the gaps are even larger when industrial and regional fixed effects are controlled for. This indicates that the differences between exporters and non-exporters are greater within the same industry and region than the country average. The composition of ownership also differs as exporters consist of around 25% more share of foreign capital and the pattern is quite stable over time. In addition, exporters show greater capacity in innovation since they have higher new product intensity than non-exporters and the gap has been enlarged over time.

Figure 4a shows the distribution of export intensity of all exporters. It reveals that more than 13% of exporters choose to be fully involved in the export market. To further explore the exporting pattern of different firm ownerships, we classify exporting firms into two categories, namely foreign owned firms[①] and

① Foreign owned firms are defined according to their capital composition. According to the official definition, a firm is regarded as foreign-owned if the share of foreign (including Hong Kong, Macao and Taiwan) capital is more than 25%.