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A longitudinal study of the relationship between export activity and innovation in the Spanish firm: The moderating role of productivity☆

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ABSTRACT

Does innovation lead the firm to export more products, or does a firm's export propensity induce it to innovate? How does a firm's productivity level change this relationship? After confirming that exporters develop more innovations than non-exporters, this study attempts to answer these questions by studying two effects. First, we analyse the impact of innovation on a firm's export activities while addressing potential endogeneity concerns. Second, we examine the impact of export activity on a firm's innovation performance. We must address both questions when considering firm productivity. To this end, we conduct a longitudinal analysis of 14,142 observations of an annual average of 1767 Spanish firms within the manufacturing sector during the period from 2001 to 2008. The results suggest that the self-selection hypothesis adequately explains the observed phenomena. That is, innovation induces firms to increase their export activities. This finding is robust to endogeneity. Nevertheless, firms do not experience any learning-by-exporting effects on the obtaining of product or process innovations. Productivity does not modify any of these relationships.

1. Introduction

In recent years, the economic crisis has driven firms to sell their goods and services abroad. Because of the decrease in domestic demand, firms have found that their products are more difficult to sell to their local markets. As a result, scholars must understand the determinants of a firm's export activities to study how these factors affect and, more important, enable the firm's exporting behaviour. The literature specifically focuses on two factors, innovation and productivity, as the main determinants that promote the export performance of the firm (Leonidou, Katsikeas, Palihawadana, & Spyropoulou, 2007; Wagner, 2007).

Previous research examining the relationships among innovation, productivity, and export activity at the micro level has attracted little attention, especially among small- and medium-sized firms (Acs & Audretsch, 1990; Henderson & Clark, 1990; Lefebvre, Lefebvre, & Bourgault, 1998; Nassimbeni, 2001). From a theoretical point of view, the conventional wisdom on innovation has suggested that only large firms can execute innovative activities – related with some level of productivity – because SMEs lack the knowledge assets and critical resources needed to adequately manage the innovation process that will produce higher productivity levels and export performances (Majocchi & Zucchella, 2003; Ramaswamy, Kroeck, &

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Renforth, 1996). Additionally, from a practical point of view, the lack of firm-level data on SMEs has hampered previous investigations of these issues (Wignaraja, 2007).

The consensus in the literature is that exporters are more productive than non-exporters (Aw & Hwang, 1995; Bernard & Jensen, 1999; Fariñas & Martín-Marcos, 2007). Moreover, numerous empirical studies have confirmed that innovation increases the likelihood of positive export results for a firm (Hitt, Hoskisson, & Kim, 1997; Leonidou et al., 2007; Roper & Love, 2002; Wakelin, 1998). However, no studies have connected these two theoretical arguments. There is no evidence with regard to whether more productive and innovative firms perform better in terms of their export behaviours than less productive and innovative firms.

In this context, a study of Spanish firms can help extend the existing knowledge in this stream of research. Although Spain is among the world's top ten economies, its international presence through exports is relatively weak. Spanish firms engage in a limited number of export activities because of their size; as most of these firms are small, they prefer to sell their products in domestic markets or choose the least risky mode of entry into the international markets (i.e., exporting) (Fernández & Nieto, 2005). However, some recent studies have shown that Spain's low level of exports is due to a lack of technological innovation whereas other scholars have attributed Spain's export habits to the country's low level of productivity in comparison with those of other EU countries, such as France, Germany or the Netherlands (Delgado, Fariñas, & Ruano, 2002; Fariñas & Martín-Marcos, 2007; García & Avella, 2008). However, none of these studies investigate whether Spain's low level of export activity is jointly caused by its low levels of innovation and productivity.

To fill this gap, the present study examines the relationship between a firm's innovative activity and its export performance. We aim to study how a firm's productivity level affects this connection as well. Specifically, the study explores whether a high level of innovative activity enables a firm to obtain better access to export markets, as predicted by the self-selection hypothesis, or whether a firm's export activities induce more frequent and intense innovation behaviour, as suggested by the learning-by-exporting hypothesis (Solvay & Sanglier, 1998). We conduct a longitudinal study to analyse both effects by considering the productivity levels of a panel of Spanish manufacturing firms during the period from 2001 to 2008.

This paper contributes to the literature in several ways. First, this study applies two widely analysed hypotheses on the causal link between productivity and exports (Wagner, 2007) to the relationships among innovation, productivity, and exports. Since the strategic importance of being innovative to improve the international competitiveness, and since exporting is crucial for the Spanish firm (especially nowadays, given the currently low domestic demand), exploring the interactions between innovation and exporting can provide policymakers with effective tools to help improve the performance of the Spanish firm. Second, for the empirical analysis, we test for innovation by using several proxies (i.e., R&D dummy, R&D expenditure and product and process innovations). In doing so, we enable a broader interpretation of each firm's innovation activities. Moreover, analysing all of these relationships in a longitudinal study allows us to identify the effects of specific policies on the export performance of Spanish firms. Finally, we consider the potential endogeneity concerns related to both effects, especially when we study the export-innovation link (Lachenmaier & Wößmann, 2006) following an instrumental variable strategy.

Our results are consistent with most of the existing studies on self-selection and learning-by-exporting (Wagner, 2007). We found evidence showing that innovation increases a firm's export activities, but we did not find that exporting renders a firm more likely to develop product or process innovations. Moreover, the interactions among productivity, innovation, and export propensity do not change the direction or intensity of these two effects.

This paper is structured as follows. The next section reviews the existing literature on the relationships among productivity, innovation, and the international activities of firms. Next, we provide the theoretical framework, which leads to the research hypotheses. Then, we explain the methodology by describing the model and the measurements of the variables used in this study. This section is followed by an exposition of the results. Lastly, we discuss the evidence and provide the final conclusions.

2. Literature review

We start reviewing the literature on the link between productivity and exports before focusing on the main question of this paper: How does innovation affect exports, and vice versa?

2.1. Productivity and the export activity of the firm

According to theoretical reasons, one may expect exporters to be more productive than non-exporters. Traditional models explain the relationship between productivity and export behaviour in terms of macroeconomic variables, but such models fail to account for the different results that firms obtain, even with the same conditions (e.g., the same country or industry). This finding raises the question of why exporters are more productive than non-exporters if they both come from the same environment.

From a microeconomic perspective, the relationship between productivity and export activity is principally explained by the heterogeneity of resources (Wernerfelt, 1984) or by the knowledge that a firm accumulates through international activities (Johanson & Vahlne, 1977). Specifically, the literature provides two fundamental theories to explain why exporters are more productive than non-exporters (Wagner, 2007). First, the self-selection hypothesis argues that more productive