

1. Introduction

Why do we care about innovation? Because innovation is central to business strategy. Realized innovations help firms establish and sustain competitive advantage. And as one might expect, innovation has implications for firms' profitability. Thus, exploring the determinants of innovative productivity provides fruitful insight for scholars and managers alike.

In this book I explore innovative productivity and extend previous empirical literature by focusing on how a particular input to the innovation process affects innovative output. Specifically, I demonstrate that exporting – as a means of accessing knowledge inputs that reside abroad – makes firms more innovative. By entering export markets, firms gain access to valuable external knowledge inputs that helps them achieve innovation. Further, I explore how interactions among inputs to the innovation process affect innovative outcomes.

Empirical results attained in the international business literature suggest that, under certain circumstances, firms may acquire technologies and increase their innovative productivity by investing abroad. However, we know very little about whether firms can absorb knowledge outside their national boundaries without making such cross-border investments. This book explores this very question by examining whether any *ex post* innovative benefits accrue to the firm engaged in export activity.

In order to establish innovative productivity as the dependent variable of interest, I begin with a review of the literature on the economics of innovation. Scholars in this tradition generally treat innovative productivity as an input–output model – that is, as a function of innovative inputs and innovative effort. I distinguish between innovative inputs, innovative effort and innovative output. I examine what drives firms' innovative productivity (output), including industry conditions, accumulated knowledge and heterogeneous firm capabilities. I then narrow the focus to the external drivers of innovation – those that reside outside firm boundaries, such as customers, suppliers and competitors. Scholars have suggested that external agents are often overlooked as an input to the innovative productivity function, and can be a valuable source of the knowledge necessary to achieve innovation.

A stream of the international business literature I review in the subsequent section draws on this notion of externally driven innovation to argue

that firms deliberately internationalize in order to tap external knowledge sources. Scholars exploring reverse internalization (as this stream has been labeled) maintain that firms invest in foreign locations in order to tap foreign knowledge bases so as to acquire knowledge, technologies, technological skills and other capabilities. This argument rests on the assumption of spatially bound knowledge – that a firm cannot access knowledge from a particular location unless it actively participates in that location.

The third section reviews the extant macro- and micro-level exporting literatures and assesses the applicability of the reverse internalization argument to exporting. While exporting is the strategy most widely employed by firms expanding internationally, it remains relatively under-studied in the international business literature. Scholarly inquiry to this point has generally investigated the antecedents of exporting – to explain what causes firms to export in the first place. Very little research addresses its consequences – the firm-level outcomes of engaging in such activity.

In this book I argue that one advantage is that foreign market contact via exporting provides firms with exposure to some of the same external knowledge inputs acquired by firms that engage in foreign direct investment (FDI). For instance, exporters interact with customers in the host environment. Similarly, they compete with host country firms in their industry. While firms that engage in FDI may be better suited to benefit from locally embedded knowledge because of their proximity to the knowledge residing in the host country, exporting firms also gain access to that knowledge. As such, exporters may benefit from some of the same advantages afforded firms that make direct foreign investments (FDI).

Exporters use knowledge residing in the foreign environment to inform innovations in two distinct ways. First, firms acquire market information about consumer preferences that helps them innovate to meet the particular needs of those customers. Second, exporting firms may benefit from technological knowledge through competitive knowledge spillovers.

Building upon the basic assertion that foreign market contact (via exporting) provides exposure to external knowledge that informs innovative output, I propose a positive relationship between exporting and innovation. However, since knowledge may not spill over uniformly, export firms with greater *ex ante* competences and capabilities should realize greater innovative benefit. I also explore the conditions under which exporting leads to innovation. For instance, exporters that reach the foreign market themselves, rather than relying on export brokers, should innovate more, as they keep more direct ties with their information sources. Similarly, firms that participate in more export markets and export to more innovative regions should experience innovative boons. These effects will also be conditioned upon whether firms possess adequate *ex ante* capabilities to assim-

ilate the knowledge they acquire. Finally, engaging in exporting provides firms, especially firms in technologically inferior industries, with the opportunity to benefit disproportionately from knowledge spillovers. Because firms in technologically inferior industries lag behind the technological state of the art, there should be greater opportunities for them to learn from exporting than there are for those in technologically superior industries, where firms are already at, or near, the technological frontier.

The research base for this analysis is a sample of 3060 Spanish firms surveyed from 1990 to 1997. The data were collected by the Fundación Empresa Pública with the financial support of the Spanish Ministry of Industry. Data from this source are particularly suitable to study these phenomena for several reasons. First, these data provide a comprehensive and detailed view of economic activity within a country over time. Information on exporting, innovation and other firm characteristics was collected for each firm year. Second, the panel data make it possible to isolate better how the variables being examined influence innovation versus other sources of firm heterogeneity. Moreover, the panel structure allows me to explore more reasonably the causal links between exporting and innovation.

The dependent variable of interest is innovation, measured using several widely employed proxies including innovation counts, innovation indicators and patent counts. Empirically, I model innovation as a function of lagged exporting, firm characteristics and other relevant controls. Findings suggest that current exporting behavior encourages future innovation. They also suggest that it takes a significant amount of time to capture innovative spillovers. In some cases the knowledge acquired in foreign markets takes three to four years to manifest as tangible innovations for the focal firm. Further, exporting strategies influence innovative outcomes in complex ways. Some strategies unequivocally stimulate innovation, while the results for others are mixed. I also find evidence that firms in technologically inferior industries learn more from exporting than those in technologically superior industries. The findings were inconsistent with regard to *ex ante* knowledge assimilation capabilities.

The results of this study are particularly relevant to managers, scholars and government policymakers. They can inform managers of the innovative benefits of exporting and particular exporting strategies. The results contribute to the extant research on international business, strategy, innovation and economics. Finally, these findings could inform government policy, in that they are consistent with the notion that engaging in trade benefits the exporting nation. The prescription, then, would be that governments should encourage trade openness.

The remainder of this book proceeds as follows. Chapter 2 reviews the economics of innovation literature and the impact of external knowledge

sources on innovation. Chapter 3 reviews the results attained by scholars in the asset-seeking (reverse internalization) tradition. I show that firms acquire and actually use knowledge residing in the host nation to innovative ends. Chapter 4 reviews the exporting literature and assesses the applicability of the arguments set forth in the prior chapters to exporting. Chapter 5 presents the data that will be used in empirical analyses. Chapters 6 through 8 integrate the disparate literatures to advance testable hypotheses and present results. Chapter 9 summarizes the major findings and concludes.