



Offshoring Intermediate Manufacturing: Boost or Hindrance to Firm Innovation?



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ABSTRACT

This paper analyses the possible effect that offshoring intermediate manufacturing activities may have on innovation. The theoretical arguments predict contrasting effects. While some of the characteristics of the process of transferring manufacturing activities abroad may induce innovation, others might have deleterious consequences. We aim to add to this debate by testing empirically if companies that offshore their parts and components manufacturing activities obtain better or worse innovation results. Using data from 989 Spanish manufacturing firms from 2006 to 2011, we find a positive association between the offshoring of intermediate manufacturing and ex post innovation output, proxied by the number of patent applications. Our results suggest that offshoring of intermediate production may be beneficial for innovation, allowing firms to gain access to greater knowledge, skills and experience, and to achieve sound organizational learning, all of which are key inputs in the innovation process.

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1. Introduction

The current world scene, characterized by dynamic, global competition and fast technological change, leads firms to consider how to combine their resources and capabilities with those available in other countries. On the one hand, a more globalized world provides firms with opportunities to access unique resources and capabilities. On the other hand, continuous technological change removes barriers associated with physical, geographical, cultural and temporal dispersion (Kedia and Mukherjee, 2009). As a result, many firms decide to modify the organization and location of the activities in their value chains, transferring some of them abroad. In other words, greater integration of world markets has brought with it disintegration and global dispersion of the production process, in which manufacturing or service activities performed at home are combined with those carried out in the most suitable destinations worldwide (Dicken, 2011; Feenstra, 1998; Ferdows, 1997; Jones et al., 2005). This transfer of activities to overseas locations is known as offshoring.

Offshoring has become a widespread practice and a growing trend among firms worldwide. As a consequence, many scholars from a variety of disciplines (economics, international business, strategic management, operations management) have examined offshoring in recent years, focusing on different relevant aspects (e.g., antecedents, current trends, benefits and drawbacks). Among all the topics covered in the offshoring literature –for an exhaustive review, see Schmeisser (2013), its effects or consequences on firm performance, and regional or national economic conditions are an especially relevant one. Although scholars have thoroughly analyzed the impact of offshoring on issues such as costs and productivity

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(e.g., Fariñas and Martín-Marcos, 2010; Olsen, 2006), employment and wages (e.g., Besson et al., 2013; Crinò, 2009; Feenstra and Hanson, 1999, 2003), our understanding of its effect on other relevant business variables is relatively limited. Consequently, there have been calls in the literature for additional theoretical and empirical research (Doh, 2005; Mol et al., 2004; Ricart, 2011; Stack and Downing, 2005).

Specifically, we still know relatively little about how offshoring influences firm-level innovation. Given that innovation has long been suggested to be not only at the core of the growth of economies (Baumol, 2002; Grossman and Helpman, 1994), but also to be central to firms' competitive advantage (Afuah, 1998; Geroski et al., 1993; Schilling, 2008), understanding the impact of offshoring on firm-level innovation is important for managers and policymakers alike.

Although some studies so far have analyzed the offshoring–innovation link (for a summary see Table A.1 in the Annex), these are characterized by a diversity of approaches. For example, not all of these studies analyze every possible offshoring mode (outsourcing relationships, strategic partnerships and owned subsidiaries overseas). In fact, many focus on a single type, primarily offshore outsourcing. Similarly, a wide variety of offshored activities is analyzed. Some studies focus solely on manufacturing; others follow the latest trend of focusing on the offshoring of service activities (such as R&D or information systems); and yet some others make no distinction between different types of activities, taking them all together or indistinctly. Moreover, studies performed at the firm, industry and country levels may be found.

Not only do the approaches vary, but also these studies do not reach similar conclusions as to whether the association between offshoring and innovation is positive or negative. In fact, extant theory predicts contrasting effects regarding the impact of offshoring on innovation (Inkpen and Ramaswamy, 2006; Kotabe, 1990; Mihalache et al., 2012; Naghavi and Ottaviano, 2009). While some of the characteristics of the offshoring process clearly favor on-going firm innovation, others might lead to a reduction in innovation ability. In this vein, one line of research suggests that offshoring allows firms to gain access to valuable resources and knowledge overseas, which are key inputs in the innovation process (e.g., Berger, 2006; Fernández, 2007; Kedia and Mukherjee, 2009; Kenney et al., 2009; Leonard-Barton, 1992, 1995; Venkatraman, 2004). Another line of reasoning, however, emphasizes the risks that offshoring entails for innovation activity; mainly, complicated coordination and knowledge transfer due to enhanced geographical, cultural and institutional distance (e.g., Ceci and Prencipe, 2013; Chesbrough and Teece, 1996; Cramton, 2001; Kumar et al., 2009; Larsen et al., 2013; Sole and Edmondson, 2002; Stringfellow et al., 2008), as well as excessive dependence on external knowledge sources (Berger, 2006; Cohen and Levinthal, 1990; Kotabe and Murray, 2004; Teece, 1987).

In this paper, we aim to address this debate by focusing on manufacturing offshoring and, more specifically, on the offshoring of intermediate manufacturing activities; that is, the production of parts, components and related services that are subsequently incorporated into the production process in the firm's home country. Much of the research on the relation between offshoring and innovation focuses on the offshoring of service activities, mainly R&D (e.g., Couto et al., 2007; Lewin et al., 2009; Nieto and Rodríguez, 2011). However, as Agnese and Ricart (2009: 1) state, “while services offshoring is on the rise, it still represents a small fraction of total offshoring”. On the other hand, the research that focuses only on manufacturing offshoring, with a few notable exceptions (e.g., Kotabe, 1990 or Naghavi and Ottaviano, 2009), does so by analyzing its impact on variables other than innovation (namely, productivity, employment or wages). Finally, other scholars choose to analyze whether innovation is influenced by the offshoring of manufacturing and service activities together, without distinguishing between them (e.g., Fifarek et al., 2008; Mihalache et al., 2012).

So, in spite of the undoubted relevance of innovation for firm competitiveness, and the frequent trend for companies to transfer manufacturing abroad, there seems to have been little interest in analyzing the single effect of manufacturing offshoring on innovation. This may be because companies initially started offshoring manufacturing, both final and intermediate, in order to take advantage of lower production costs in other countries. The goal was to cut costs and, thus, deal with the competitive pressure coming from globalization, rather than to improve innovation capability. However, constant progress in most industries towards a modular production model, in which the different elements of a product may be separately designed and then re-used and combined in different projects, has led companies to start considering offshore manufacturing, especially intermediate manufacturing, as a strategy not only to reduce costs but also to enhance innovation performance.³ The key lies in manufacturing some parts or components in offshore locations that, not only offer cheap labor, but also master the latest technologies for its production. This way, by combining the skills they already have with those they can acquire abroad, companies can quickly develop greater potential for creating innovative products. Innovation, a priority for companies today, thus is no longer incompatible with the objectives of efficiency and competitive pricing. For the above reasons, we consider that focusing on the offshoring of intermediate manufacturing could amount to an important contribution to the research that relates offshoring with innovation.

Furthermore, whereas one of the limitations of extant research has been the use of cross-sectional data (Kotabe, 1990), we take advantage of the panel nature of our data to conduct longitudinal analyses. Thus, using data from 989 Spanish manufacturing firms from 2006 to 2011, we examine whether and how decisions to offshore intermediate manufacturing activities influence firm innovation. We find that offshoring of intermediate production is positively related to Spanish firms' ex post patent activity. These results contribute to the extant offshoring literature by providing additional evidence

³ It seems that the offshoring of final manufacturing (i.e., end products), rather than intermediate manufacturing, is still being used more as a cost-cutting strategy than to enhance innovation. In fact, the former is sometimes argued to damage innovation, especially in the medium and long terms. The scarce evidence in this regard makes the analysis of this link (final manufacturing offshoring and innovation) an interesting and complementary topic. However, since the necessary data to study this relationship are not available, we limit our research to intermediate manufacturing offshoring.

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