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FDI and Technology as Levering Factors of Competitiveness in Developing Countries ☆

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ABSTRACT

Technology creation and absorption are two relevant processes that affect the role that multinational enterprises (MNE) may play in the competitiveness improvement of the developing economies. The importance of internal factors in local contexts, the increasing integration in the industrial international value chain and the access of firms from these countries to diverse external learning sources, constitute a suitable framework for the analysis of competitiveness shift. In this paper, we study how the integration of firms from developing countries in sophisticated high-tech markets can be defined by the combined action of MNE and the ability for technology absorption and creation. Our empirical analysis with panel data shows how the different dimensions of internal and external factors affect international competitiveness in high-tech industries.

1. Introduction

The competitive possibilities of developing economies in the most dynamic international markets depend on a fan of advantages that are defined at firm and national levels, being their productive and commercial specialization intermediated by the combination of technological capabilities and also by the influence of external factors. This paper develops the joint action of innovation and multinational enterprises (MNE) to explain the process of levering competitiveness in high tech industries with a special focus on developing economies.[1] Beyond the pioneering discussions of the concept of competitiveness and its application

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[1] The developing economies considered in this paper are included in the group of Middle-Income Countries (MIC): Accordingly to the criteria of *GDP* per capita, the *World Bank* classifies countries into three main groups: High, Middle and Low-income countries. Our target group of developing economies is integrated only by middle-income countries (from $936 to $11,455), group that is divided into upper-middle and lower-middle income groups. Serious data availability problems limit the inclusion of low income countries in the analysis.

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at the aggregated level (Krugman, 1994), the determinant factors of it are defined by the individual behavior, mainly by the firms' management and technology abilities in a given country.[2] For these reasons, our understanding of the competitive position of countries in this paper is closely linked to firm-level factors such as MNE strategies, technology and the integration level in the high-tech industries' international value chain (Cantwell, 2005; Luo et al., 2011).

The relative presence of developing countries in dynamic high-tech markets depends on the evolution of their industrial structure and the factors affecting their commercial and technological specialization, a process that is influenced by a more complex set of elements tied to the environment or national systems of innovation (Narula and Wakelin, 1995). In developing economies, upgrading is at least in the first stages of development (industrialization) mainly focused on the adaptation and use of the already available technologies (Lall, 1996, 2000); although the efficient use of them can be transformed into sustainable growth in the long run, it depends on the generation of absorption capabilities as well as in the adaptation of firm catch up strategies to the evolution of the environment (Kumaraswamy et al., 2012). These arguments justify that we adopt an approach at aggregated level with useful insights to develop firm-level theory in connection with the body of management and IB literature that uses the country context to develop arguments at the firm level.

The speed of economic internationalization process in last decades affects markets and hierarchies, and although the benefits among countries have not been equally distributed worldwide, we have assisted to the emergence of dynamic economies among the group of countries traditionally considered as developing. Although openness does not necessarily mean growth and development per se (Fagerberg and Srholec, 2008; Rodrik, 1999), the process of building capabilities is often graduated and reinforced by external factors as well. MNE play a crucial role in such a process, not only in the configuration and increase of international investment's flows but also in the definition of competitiveness conditions in both home and host economies. Foreign firms may contribute to the competitive results of developing countries due to technology transfer, the fact that foreign subsidiaries in some cases enhance the competition in local host systems, they can become very active export players, or because they contribute to promote specialized suppliers through intra-industry trade. On the other hand, data show not only the raise of FDI inflows into developing economies in last decades (UNCTAD, 2005, 2007) but also the emergence of outward FDI from these countries (Cuervo-Cazurra, 2007; Gammeloft et al., 2010; Meyer, 2004). The idea is that home-based MNE in developing economies can also play a relevant role to define their competitive patterns; a salient reason for this is how MNE arbitrage the diversity of location across countries, comparative advantages (national level) and competitive advantages (firm level), generating higher returns than pure domestic or non-specialized companies (Luo et al., 2011; Meyer et al., 2011). For these reasons, an updated look to competitiveness should integrate the role of MNE taking explicitly the argument of the international industry value chain in combination with technology. Differences across developing countries are more notable when the dynamism of the so-called emerging economies and those lagging behind is jointly considered in the analysis, being predicted that influential factors levering competitiveness differ not only between developed and developing economies but also inside the latter group.

Our proposition is to study competitiveness by means of the complex relationship between technology and MNE, trying to disentangle the diversity of influential factors that affects the different position of developing countries in the international high-tech markets and their dynamic possibilities to upgrade. This analysis tries to fill a literature gap related to the role that MNE from emerging economies play on the explanation of their internationalization in dynamic high-tech industries. It is expected that the catch up strategies in the world market of technology-intensive goods depend on a set of factors that would determine the threshold level of both the external orientation of MNE (outward FDI) and the internal technological possibilities of them, according to the national systems of innovation approach. Therefore, although the analysis is performed at aggregated level, the basic process is foremost defined at the firm level.

In the next section, the literature review will be based on the factors that affect competitiveness' levels, with a focus into developing countries, and the process model that explain how MNE can be key contributors for upgrading. In the third section, we develop our hypothesis integrated into a conceptual framework based on the relationship between MNE (host and home positions) and technology (absorption and creation). In the fourth section, we proceed with some simple data description and with the presentation of the main relationships among the variables included in the empirical model which, under a dynamic perspective, analyses the impact of both technological indicators and external factors of competitiveness shifts, making use of data from the World Bank and the UNCTAD for 1996–2010. The discussion of the results is found in section fifth and some concluding remarks are in section sixth.

2. Literature background

Competitiveness is a concept very discussed among academics and it has been applied to several levels of analysis; the most pertinent applications of it is at firm level because it refers to a comparative notion of competition or market gains, but it has also been broadly applied at the national level in last decades (Fagerberg, 1996; Nelson, 1993; Porter, 1985; Roessner et al., 1996). A general definition of competitiveness relates to productivity and growth of countries (Krugman, 1994) while the more tractable one focuses on the ability of a country to compete by exporting (Fagerberg, 1996; Lall, 2001). The globalization process has changed the markets functioning and also hierarchies, while technology has reshaped international firms, industries and trade; therefore, it can be assumed that the definition of national structural competitiveness is related to the ability to enhance collective

[2] Nonetheless, the adaptation of the competitiveness concept to the country-level of analysis is also methodologically accepted (Porter et al., 2008; Sala-i-Martin et al., 2008).