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Impact of competition from unregistered firms on R&D investment by industrial sectors in emerging economies

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ABSTRACT

This research evaluates the impact of competition from unregistered firms on R&D investment by formal firms in emerging economies by considering their industrial sector and institutional factors, such as intellectual property rights. We performed a study using the propensity score matching approach and the World Bank Enterprise Survey of 16 Latin American emerging economies. We observed that the R&D investment response of formal firms varies according to the typology of industrial sectors. Supplier-dominated industries reduce investments in R&D when confronted with the informal sector. However, science-based, specialized suppliers and scale-intensive industries do not alter their investments. In addition, the level of intellectual property (e.g., IPRI) modifies the effect of the informal sector on R&D investment. Formal firms reduce their investments in R&D when the IPRI environment is underdeveloped. This reduction does not occur in highly developed IPRI environments. We also discuss the finding's theoretical and practical implications and suggest avenues for future research.

1. Introduction

Emerging economies are low income, rapid-growth countries that primarily use the economic liberalization strategy. They accounted for approximately 34% of the global economy[1] (Hoskisson et al., 2000; Hoskisson et al., 2013). Schneider (2002) suggests that 60% of the gross domestic product in emerging economies corresponds to the informal sector. The informal sector (unregistered firms) refers to economic activities in the production and trade of goods and services that are conducted by unregistered firms that operate outside of government regulation and taxation systems. Therefore, unregistered firms avoid the costs associated with regulatory compliance and taxes and thus gain an advantage over formal firms (Darbi et al., 2016; Ketchen et al., 2014). According to the World Bank,[2] in all countries around the world, 53.2% of formal firms compete against unregistered firms, and 27.1% identify the practices of their competitors in the informal sector as a major constraint.[3] For Latin American and Caribbean countries, 62.0% of formal firms compete against unregistered firms, and 30.6% identify the practices of their competition from unregistered firms as a major constraint. However, the informal sector is an underexplored variable. It has generally become important for the field of strategic management, especially in areas such as dynamic capabilities, absorptive capacity, property rights, innovation, non-market strategies and international management (Darbi et al., 2016; Iriyama et al., 2016; Mccann and Bahl, 2016; McGahan, 2012; Mendi and Costamagna, 2017). Unregistered firms are a new type of competitor that possesses cost advantages and higher flexibility regarding products, processes, and societal acceptance (Williams and Martinez-Perez, 2014). Consequently, unregistered firms will have a substantial effect on the strategic behaviors of formal firms (Darbi et al., 2016; Mendi and Costamagna, 2017).

The preliminary research by Mendi and Costamagna (2017) found that competition from unregistered firms has a negative effect on innovation outcomes (processes and products) in formal manufacturing firms from Latin American and Africa. The authors noted that the presence of competition from unregistered firms affects the innovation strategy of formal firms since they observe a weakening of returns from

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[1] http://www.imf.org/external/datamapper/NGDPD@WEO/OEMDC/ADVEC/WEOWORLD
[2] http://www.enterprisesurveys.org/data/exploretopics/informality
[3] Only surveys that were posted during 2010–2017 and that adhere to the Enterprise Surveys Global Methodology were used to compute these regional and "all countries" averages.

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innovation. Thus, formal firms are discouraged from introducing new products or processes. However, Mccann and Bahl (2016) concluded that competition from unregistered firms has a positive effect on new product development (NPD) in manufacturing firms from Eastern Europe and Central Asia. Therefore, we argue that much of this contradiction results from two contextual factors (industry sectors and institutional effects) that have not been taken into account to analyze the variation of the effect of unregistered firms on the R&D investments of formal firms. First, the previous research did not consider important contextual variables in organizational behavior (Johns, 2006), such as the different industrial sectors where formal firms developed (Bogliacino and Pianta, 2010; Pavitt, 1984). Second, the previous research did not consider the institutional factors such as the Intellectual Property Right Index (IPRI) (Zhao, 2006). If these two variables are considered, the effect of competition from unregistered firms on formal firms may deliver results that differ those previously found. Our study extends well beyond the previous research by considering the existing diversity across the manufacturing sectors. We move away from the idea that the competition from unregistered firms has the same impact across industrial sectors on innovation performance measurement as NPD or R&D.

Against this background, we want to address the following research questions. Do formal manufacturing firms that confront competition from unregistered firms invest differently in R&D than formal firms that do not? If the answer is yes, are formal firms' R&D investments affected by the industrial sector (i.e., science-based, supplier-dominated, scale-intensive, or specialized-suppliers) or the level of property rights? How do formal firms adapt to this competition from unregistered firms?

We examined the variability of the effect of competition from unregistered firms on the R&D investments by formal firms according to the industrial sectors and property rights in a sample of emerging Latin America economies (Hoskisson et al., 2013). We analyzed R&D investments since it is a highly significant input in the innovation process and has positive effects on innovation performance and on the propensity to innovate (Geldes et al., 2017; Helfat, 1997). Additionally, R&D explains a substantial part of productivity growth in emerging economies and the increasing social returns from employment, consumer confidence, and reducing poverty (Bravo-Ortega and García Marín, 2011). We derive our understanding from organizational ambidexterity to explain whether formal firms increase, decrease or do not modify R&D investments to adapt to the competition from unregistered firms (Darbi et al., 2016). Furthermore, this study contributes to the research on R&D investment by identifying the effect of a new variable (i.e., competition from unregistered firms) on formal firms' R&D investments using Pavitt Taxonomy industrial sectors and levels of property rights.

Based on propensity score matching through quasi-experimentation (Lee et al., 2017), we observed that a formal supplier-dominated industry that competes with unregistered firms invests less in R&D. However, other industrial sectors (science-based, scale intensive, and specialized suppliers) do not reduce their R&D investments. Furthermore, we found that the IPRI functions as a barrier for competition from unregistered firms. Formal firms that compete with unregistered firms invest less in R&D in a low-level IPRI environment. However, in a high-level IPRI environment, formal firms that compete with unregistered firms do not change their R&D investment decisions.

The remainder of this paper is organized as follows. In the following section, we present the theoretical framework and hypotheses. Following that, we outline the methodology of the research. Subsequently, we report the results, which are followed by a discussion. This paper ends by presenting the study's conclusions, implications, and ideas for future research.

2. Theoretical framework

2.1. Competitive dynamics and R&D investment in emerging markets

The effect of unregistered firms is a new variable that alters the competitive dynamics of the industry (Darbi et al., 2016; Vassolo et al., 2011). In this sense, formal firms decide whether to pay attention to the unregistered firms, and this influences the R&D investments of formal firms in emerging markets (Darbi et al., 2016; Garg et al., 2003; Ocasio, 1997; Su et al., 2010). The “parasite view” indicates that formal and unregistered firms compete when the firms have similar products and clients. However, according to the “dual view”, they do not compete since formal and informal firms are different (Distinguin et al., 2016). To explain how formal firms invest in R&D to respond to unregistered firms, we use the perspective of organizational learning ambidexterity (Raisch and Birkinshaw, 2008). It explains how firms adapt to changes in the environment factors (as competitive dynamics) by balancing the exploration and exploitation innovation activities to increase performance and be more sustainable (Raisch et al., 2009; Raisch and Birkinshaw, 2008).

Firms in emerging economies implement organizational learning ambidexterity by creating two business models, including one to serve premium customers and the other for low-income customers (Winterhalter et al., 2016). The exploration routine implemented by the firms occurs through increased R&D investments that allow them to learn through experimentation, innovation, and adaptability, with a particular interest in premium customers. Conversely, the firm exploits this by reducing R&D investments focused on the existing knowledge and the specific needs of the clients at the base of the pyramid, which correlates to price sensitivity (i.e., ultra-low cost) and is where the unregistered firms are predominate (Raisch and Birkinshaw, 2008; Subramaniam et al., 2015). To identify differences in R&D investment responses by sector due to competition from unregistered firms, we classify formal firms into four groups in accordance with the Pavitt Taxonomy that is recommended in a firm-level innovation study (Becheikh et al., 2006). These groups are as follows: supplier dominated, science base, scale intensive, and specialized suppliers. The Pavitt taxonomy allows us to identify a variety of patterns across industries (Becheikh et al., 2006; Bogliacino and Pianta, 2010; Pavitt, 1984). Moreover, we consider contingent factors (such as IPRI) that we expect to change the effect of competition from unregistered firms on R&D investment decisions.

2.2. Competition from unregistered firms on the R&D investment of supplier-dominated industries

Unregistered firms sell their products and services at low prices and experience a high acceptance rate by clients and societies in emerging economies where the “bottom of the pyramid” (BoP) has a daily income of approximately $2 a day and covers an average of 1 billion people (Chliova and Ringov, 2017; Mccann and Bahl, 2016; Subramaniam et al., 2015; Webb et al., 2014; Williams and Martinez-Perez, 2014). Moreover, unregistered firms enjoy cost advantages over formal firms. This advantage allows them to lower their prices and obtain increased market shares from formal firms (Distinguin et al., 2016; Farrell, 2004; Perry et al., 2007). Therefore, formal firms need to evaluate the competition from unregistered firms and its influences on a firm's decisions and actions, since the CEOs have limited time and scarce resources (Garg et al., 2003; Ocasio, 1997). According to certain views, unregistered firms are considered unproductive businesses (Distinguin et al., 2016). ‘The parasite view’ considers unregistered firms direct competitors of formal firms since both compete for the same customers, products, and resources (Distinguin et al., 2016; McGahan, 2012; Mendi and Costamagna, 2017). In supplier-dominated industries, small firms are prevalent with low fixed costs, moderately differentiated products and low entry barriers. Additionally, supplier-dominated industry