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Business group effects on the R&D intensity-internationalization relationship: Empirical evidence from India☆

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ABSTRACT

We complement the resource-based view of the firm with agency theory in order to explore the link between R&D intensity and degree of internationalization of firms affiliated to Indian business groups. Results from the two-stage least squares panel regression estimation indicate research intensity is positively associated with the firm's degree of internationalization. The relationship is strengthened by the concentration of ownership by family and affiliated business group firms, the board of directors' professionalization, the wedge between voting and cash-flow rights, and the board interlocks of professional directors; but weakened by the board interlocks of family directors. Implications are discussed.

1. Introduction

Emerging market firms, particularly those affiliated with business groups, are increasingly using research and development (R&D) as a platform for international expansion. Consider the case of Dr. Reddy's Laboratories Ltd., a major Indian pharmaceutical company. The firm increased its R&D expenditure over 30-fold in less than a decade and has developed formulations which are now being licensed out to partners from developed countries (Bedi, Bedi, & Sooch, 2013).

R&D-driven internationalization is attractive, because it allows firms to generate rents on a global scale. It is also fraught with challenges, because emerging market firms are latecomers to global competition (Gaur & Delios, 2015; Mathews, 2006) and the output from their research effort is often not of a caliber high enough to provide them with a source of sustainable advantage against capable competitors from developed economies (Guillén & García-Canal, 2009; Li & Kozhikode, 2009; Singh & Gaur, 2013; Yi, Wang, & Kafouros, 2013). Thus, a richer understanding of the mechanisms that help translate emerging market firms' R&D effort into international expansion is of both theoretical and practitioner interest.

Although the internationalization of emerging market firms has excited a great deal of attention in the past decade (Chittoor, Sarkar, Ray, & Aulakh, 2009; Cuervo-Cazurra, 2012; Gaur & Kumar, 2010; Guillén & García-Canal, 2009; Mathews, 2006; Ramamurti, 2012), there is still paucity of research on the phenomenon of R&D-driven internationalization. This is the gap that our study hopes to fill. By doing so, we respond to calls by Doh (2015) and Hambrick (2007) for phenomenon-based research in international business, where the "principal focus [is on] the ability to accurately and insightfully inform a real-world phenomenon or phenomena" (Doh, 2015, p. 1). More specifically, we turn our attention to the role of business groups in the R&D- driven internationalization of their affiliates.

Business group membership offers a number of advantages. Affiliated firms enjoy the benefits of economies of scale and scope, have access to the resources of the entire network, get preferential treatment from government agencies and domestic financial institutions (Guillén, 2000; Kumar, Gaur, & Pattnaik, 2012; Purkayastha, Manolova, & Edelman, 2012) and thus are able to undertake risky strategic commitments, such as internationalization based on R&D capabilities. However, business group membership does not confer equal benefits to all affiliates. Business groups exhibit substantial heterogeneity in ownership and governance structures (Bertrand, Mehta, & Mullainathan, 2002; George & Kabir, 2012; Singh & Gaur, 2013) and affiliates' strategic initiatives are shaped to a large degree by their position as a core or a peripheral member of the business group (Ayyagari, Dau, & Spencer, 2015). Hence, the core thesis of our paper is to investigate the heterogeneity within business groups with respect

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to ownership and governance structures and its effect on the R&D intensity-internationalization relationship for business group affiliates.

To unpack the effects of within-group heterogeneity, we pair the resource-based view of the firm (Penrose, 1956, 1959) with agency theory (Fama & Jensen, 1983). Integrative theoretical frameworks are particularly appropriate for the study of business group affiliates, because business groups exhibit complex linkages among resources, institutions, and industries (Gaur, Kumar, & Singh, 2014). In the context of the phenomenon of interest to our study, R&D-driven internationalization, the actions of firm principals (owners) and their first-order agents (boards of directors) have a significant effect on the process of resource deployment for international expansion (Mahoney & Pandian, 1992; Sirmon, Hitt, Ireland, & Gilbert, 2011). This effect is manifested through several interconnected mechanisms. First, ownership structures instigate principal–principal and principal-agent conflicts which affect the efficiency with which resources generated from R&D investment (such as new products or technologies) are deployed for expansion into foreign markets (Duran, Kammerlander, van Essen, & Zellweger, 2016). Second, boards of directors play an important resource-provisioning role, and their ability to provide complementary resources in the form of expertise, experience, and social contacts can support the translation of R&D investment into internationalization (Sirmon & Hitt, 2003; Sirmon et al., 2011). Relatedly, boards of directors fulfill important monitoring functions which can mitigate the threat of resource diversion by controlling (family) owners and opportunistic managers, and thus increase the efficiency of using R&D activity as a platform for internationalization (Chen, Li, Shapiro, & Zhang, 2014).

Our study makes three contributions. First, following previous studies that use a multi-theoretic approach to study business group affiliated firms (Douma, George, & Kabir, 2006; Gaur et al., 2014; Gaur & Delios, 2015), we combine agency theory with the resource-based view of the firm to explain the effects of ownership and governance structures within business groups on the link between research intensity and internationalization. We argue and find that ownership by the family and affiliated firms has a positive moderating impact, while family participation in governance has a negative moderating effect. Second, we extend the “capability development” strand of internationalization research, which rationalizes that emerging market firms internationalize with an asset-augmentation motive (Bonaglia, Goldstein, & Mathews, 2007; Mathews, 2006; Luo & Tung, 2007). We argue and find that when emerging market firms invest in R&D activities, they develop assets that are internationally exploitable. Thus, both asset augmentation and asset exploitation need to be taken into consideration for a proper understanding of their internationalization (Dunning, 2006). Finally, we contribute to the growing literature that examines the effect of business group heterogeneity on affiliates’ strategic conduct and performance (Carney, Gedajlovic, Heugens, Van Essen, & Van Oosterhout, 2011; Gaur & Kumar, 2009; George & Kabir, 2012; Kumar et al., 2012; Lamin, 2013; Lien & Li, 2013; Singh & Gaur, 2013). We extend this literature by unpacking the within-business-group heterogeneity, in our case the heterogeneity in ownership and governance structures.

The next section describes the theoretical underpinnings of the study, followed by a discussion of the empirical approach, results and conclusions.

2. Theory and hypothesis

2.1. The R&D intensity—internationalization relationship

The nascent stream of literature that looks at the R&D-driven internationalization of emerging market firms has adopted two principal lenses, an institutional lens, and a capability-development lens. Studies in the institutional tradition suggest that poor institutional safeguards of intellectual property rights make investments in R&D a high risk proposition. As a result, emerging market firms may attempt to leverage R&D benefits quickly by accessing a larger market through internationalization (Cuervo-Cazurra, 2012), or to relocate their activities to countries with more favorable institutional regimes in order to escape the voids in the home country institutional environments (Cuervo-Cazurra & Ramamurti, 2015; Witt & Lewin, 2007).

Our work extends the capability-development view. Studies in this stream of research argue that emerging market firms initially import technology by aggressively acquiring developed economy firms (Bhaumik, Driffield, & Pal, 2010; Chittoor & Ray, 2007; Gubbi, Aulakh, Ray, Sarka, & Chittoor, 2010). Through the absorption of technology spillovers and the experiential learning about inputs and markets, emerging market firms develop internal resources and capabilities which they can exploit to sustain the internationalization process, and in doing so they strategically reposition “from third-world copycats to emerging multinationals” (Chittoor et al., 2009; Li & Kozhikode, 2009; Mudambi & Swift, 2011; Singh & Gaur, 2013; Yi et al., 2013). Our study focuses on these later stages of the capability development process, when emerging market firms pursue international expansion based on their R&D capabilities.

The relationship between emerging market firms’ research intensity and degree of internationalization is stronger for business group affiliates. Business groups, defined as “firms which though legally independent, are bound together by a constellation of formal and informal ties and are accustomed to taking coordinated actions” (Khanna & Rivkin, 2001, p. 47), are a ubiquitous fixture of the emerging economies’ institutional landscape. Their scale, scope of operations and network structure can provide a number of advantages in the R&D-driven internationalization of their affiliates.

To elaborate, business group affiliated firms can benefit from the larger scale of operations of the entire group, as well as from its internal labor and capital markets. This results in both cost efficiencies and access to scarce resources that are instrumental in the exploitation of R&D capabilities for foreign expansion. Often times a single firm within the business group can get the strategic mandate to manage all international activities for the group, in which case affiliated firms can enjoy economies of scale not available to stand-alone firms (Gaur & Delios, 2015). Thus, business group affiliates are better able to undertake riskier and more resource-intensive strategies, such as R&D-driven internationalization, compared to unaffiliated firms (Guillén, 2000; Kumar et al., 2012; Purkayastha et al., 2012).

Further, highly diversified business group afford substantial economies of scope. Business group affiliates enjoy access to complementary resources that facilitate the deployment of R&D capability in international markets (Gaur et al., 2014). The diversified structure of a business group can serve as a basis of establishing initial contact with potential clients across different industries by referring clients to sister affiliates or introducing affiliates to potential clients.

In addition to cost advantages from economies of scale and scope and the secure access to complementary resources and capabilities, the network structure of the business group provides linkages which facilitate the transfer of technological knowledge, thereby improving and focusing the focal firm’s R&D capability (Mahmood, Zhu, & Zajac, 2011). Information about foreign markets and the effectiveness of the different R&D strategies in those markets can also be easily shared within the business group structure. Through interactions with sister firms within the business group network, affiliated firms are in a position to connect with foreign technology partners, suppliers, distributors