PLAYING DIRTY OR BUILDING CAPABILITY?
CORRUPTION AND HR TRAINING AS COMPETITIVE ACTIONS TO THREATS FROM INFORMAL AND FOREIGN FIRM RIVALS

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INTRODUCTION

Nearly 50 percent of the respondents in a survey conducted in India by Ernst & Young and FICCI said “their companies have lost business to their competitors due to the latter’s unethical conduct” such as engagement in corruption. (Singh and Singh, 2013: 19) Indian IT firms invest a substantial percentage of their revenue on human resource (HR) training, an investment that has been growing at double digit rates in percentage terms. However, there is also a wide variation among IT firms in the training they provide to their employees. (Bapna et al., 2013)

Competitive rivalry/dynamics research has focused predominantly on competitive actions in...
the product market space, such as product/service introductions, price cuts, and promotion activities (Chen and MacMillan, 1992). Recently, strategy scholars have started advancing theoretical understanding about firms’ nonmarket competitive actions in the political/governmental spaces (e.g., engaging in corruption, lobbying, pursuing lawsuits) and resource-market competitive actions (e.g., HR training, poaching employees from rivals) that they take to improve their competitive position against rivals (Capron and Chatain, 2008; Markman, Gianiodis, and Buchholtz, 2009). Yet, the field is still nascent and our knowledge on why and when these actions are taken is fairly limited.

Specifically, one of the questions in this research stream has to do with why competitive rivalry pushes some firms to engage in nonmarket actions, such as corruption, while it pushes other firms to engage in resource-market actions, such as HR training. While both corruption and HR training—competitive actions of interest in this study in the nonmarket and resource-market arenas, respectively—may be used to gain advantage over competitors, they are inherently different and even contradictory to each other. Corruption is generally illegal in many countries, and managers must consider the possibility of reputation damage and even imprisonment when they engage in corruption to gain competitive benefits by influencing government officials’ decisions in their favor (Mishina et al., 2010). In contrast, while HR training is legal, it often takes time to develop human resources and associated technological capabilities to gain competitive advantage over rivals (Dierickx and Cool, 1989). Further, both actions need investment of finite financial resources. Given this tension, it is important to ask: Under what conditions do firms choose nonmarket and/or resource-market actions to gain advantage over their rivals?

The present study addresses this question by focusing on corruption and HR training in the emerging economy context. These two actions are quite prevalent in emerging markets, but firms use them selectively, and not all firms engage in them as is evident from the vignettes above. We propose that firms tailor their nonmarket and resource-market actions in responding to competitive threats from different strategic groups. In emerging markets, firms typically face competitive threats from two unique and salient strategic groups in addition to domestic, formal sector rivals. First, they face competition from informal sector firms, that is, firms that are not formally registered with the state. They also typically compete with foreign multinational companies, that is, foreign firms. These two strategic groups constitute a significant portion of emerging economies (Schneider, 2002). Further, and interestingly, the two groups are also inherently different from each other. Informal firms either employ illegal means in their business and/or sell illegal products/services to their customers. Further, they are typically small entities with fewer resources and capabilities. On the other hand, foreign firms are not only legal entities, they typically enjoy deeper resources and capabilities as compared to local competitors in emerging economies (Dunning, 1980).

Based on the synthesized logics in the competitive rivalry and strategic groups literatures, we propose that firms in emerging markets engage in the nonmarket action of corruption to compete against informal firms, while they engage in the resource-market action of investing in HR training to compete against foreign firms. We argue that a focal firm identifies its rival firm group(s) based on market commonality and resource similarity between itself and the informal and foreign firms groups. Following the emulation logic in the strategic groups theory, the focal firm then engages in corruption or HR training based on whether the identified rivals are in the informal or foreign firms groups, respectively. However, as the literature on competitive rivalry suggests (Chen, 1996), a firm’s responses to similar competitor group threats may also be heterogeneous, contingent on its market commonality and resource similarity with its rival groups. We thus further propose moderating effects arising from firm diversification and technological capability on the relationships suggested by our main hypotheses. Less diversified firms have a greater degree of market commonality with informal firms, and are thus more likely to engage in corruption when perceiving threats from informal sector rivals. Firms with higher technological capability have a greater degree of resource similarity with foreign firms, and are thus more likely to invest in HR training when competing with foreign rivals. We test our hypotheses using data from a World Bank survey of Indian IT industry.

This study makes four contributions. First, we explicitly connect specific competitor threats and specific actions in nonmarket and resource-market arenas, and show that firms take different competitive actions in systematic ways depending on
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varying levels of perceived threats from multiple competitor groups simultaneously. Second, we also show that actions in response to threats from different competitor groups differ, contingent on firms’ resource and market profiles. Third, we extend the nonmarket strategy literature by examining illegal nonmarket actions of firms (i.e., corruption), and by studying the actions of domestic firms from developing countries against foreign competitors. Finally, we extend our understanding of strategic groups and competitive rivalry in the context of emerging markets.

BACKGROUND

Competitive rivalry and strategic group theory

Competitive rivalry centers on firms’ strategic or tactical actions against competitor threats (e.g., Chen, 1996; Chen and Miller, 1994). Prior research in this stream found that competitive actions enhance firm performance (Ferrier, 2001; Ferrier, Smith, and Grimm, 1999), although they may trigger rivals’ retaliatory actions (Derfus et al., 2008). Antecedents of competitive actions include a number of organizational attributes (Ferrier, 2001), of which inter-firm market commonality and resource similarity are perhaps the more established antecedents. Chen’s (1996) seminal study integrates the literatures on competitor analysis and inter-firm rivalry (Chen, Smith, and Grimm, 1992; Ferrier, 2001), and synthesizes the market-focused perspective (Gimeno and Woo, 1996; Porter, 1980) with the resource-based view (Barney, 1991; Conner, 1991) to develop two constructs—market commonality and resource similarity—as key predictors of competitive action. Later studies suggest that these constructs influence a firm’s awareness, motivation, capability, and competitive behavior with respect to a rival, which, in turn, influence the likelihood of competitive attacks and responses between the firm and its rival (Chen, Su, and Tsai, 2007; Yu and Cannella, 2007).

Since Chen (1996), scholars have furthered competitive rivalry literature in several aspects, two of which are important for the present study. First, while research in this area has predominantly focused on observable factors, such as market overlap and size asymmetry between firms, to capture competitive threats (e.g., Chen, 1996; Chen et al., 2007), recent studies have begun to use perceptual constructs such as competitive tension and competitive acumen to capture the perceptions of focal firm managers about their primary competitor (Chen et al., 2007; Tsai, Su, and Chen, 2011). Second, although the integrative competitive rivalry framework was originally developed to analyze the rivalry between two individual firms, it can be extended to the group level. Market commonality refers to the extent of market overlap among competitors, and resource similarity refers to the extent to which competitors possess comparable types and levels of strategic resources. These constructs are broad enough to examine rivalry at the group level. Building on this insight, Chang and Xu (2008) examine competitive rivalry among multiple groups of firms in China, including local firms group, HMT (Hong Kong, Macao, Taiwan) foreign firms group, and non-HMT foreign firms group. They suggest that examining competitive rivalry at the group level may actually increase the predictive ability of the model.

Another important research stream for this study—the strategic groups literature—posits that managers categorize competitors into groups that, in turn, shape managerial decision-making and firm actions. Whereas early studies focused on firms’ observable attributes (e.g., product lines) to determine strategic groups (Cool and Schendel, 1987; Porter, 1980), later scholars propose that managers have cognitive limitations and they simplify their competitive environments by partitioning competitors into groups (e.g., Clark and Montgomery, 1999; Ferrier, 2001; Hodgkinson and Johnson, 1994; Jayachandran, Gimeno, and Varadarajan, 1999; Porac and Thomas, 1990; Porac, Thomas, and Baden-Fuller, 1989, 2011; Reger and Huff, 1993). Peteraf and Shanley (1997), for instance, argue that managers structure a group of competitors into categories that provide information about strategic emulation. The recent conceptual study by Anand, Joshi, and O’Leary-Kelly (2013) furthers these ideas and develops the notion of strategic group configuration, arguing that firm managers identify with a particular strategic group when their beliefs about the firm’s central, enduring, and distinctive characteristics overlap with the identity of that strategic group. Specifically, the notion of strategic group configuration advances the literature in multiple ways, including that: (1) a firm doesn’t necessarily belong to a strategic group, although it can simply identify with it; (2) a firm can have multiple identities and that its different
identities may overlap with different competitor groups; and (3) a firm can also disidentify or ambivalently identify with multiple competitor groups.

Building on Anand et al.’s (2013) insights as well as overarching arguments in the strategic groups literature, we premise that a focal firm’s perceived threat from a competitor group is developed through its strategic group identification process. For instance, Porac and Thomas (1994) found that rivalry among firms within a category of firms is greater than rivalry among firms across different categories, implying that the degree of rivalry, or competitive threat a focal firm perceives, is associated with the extent to which the firm identifies itself with a particularly category of firms, that is, a competitor group. Porac et al. (1989) also find that Scottish knitwear firms do not recognize Japanese or Italian knitwear firms as competitors despite the obvious substitutability of the products, writing that: “The major competitive threats are viewed as coming from within the Scottish firms” (p. 409). This implies that a perception of competitive threats emanates from a firm’s identification process, that is, a firm identifying itself with Scottish versus a Japanese or an Italian firm. Accordingly, we premise that a firm perceives varying levels of threats from multiple competitor groups through its group identification mechanism.

Competitive actions in nonmarket and resource-market space

Despite the predominant focus in previous research on firm competitive actions in product markets (e.g., Armstrong and Collopy, 1996; Chen, 1996; Derfus et al., 2008; Ferrier, 2001; Ferrier et al., 1999; Gimeno and Woo, 1985; Porter, 1980), firms actually engage in actions in other spaces, including nonmarket and resource-market spaces, to improve or defend their competitive positions against their rivals (Capron and Chatain, 2008; Markman et al., 2009). Recent studies have started considering competitive actions in the nonmarket and resource-market arenas, such as employee poaching (Gardner, 2005; Rao and Drazin, 2002), enforcement of intellectual property rights (Ziedonis, 2004), lawsuits against competitors (Markman et al., 2009), and political lobbying (Capron and Chatain, 2008). Specifically, we investigate two competitive actions in nonmarket and resource-market space that are of particular salience in emerging market contexts: (1) engagement in corruption activities, and (2) investment in HR training. These two actions are an important part of the repertoire of firm actions (Capron and Chatain, 2008; Markman et al., 2009), but our understanding of competitive conditions under which firms undertake these actions is limited. As we discuss below, these actions represent important competitive responses in emerging markets.

Corruption as a nonmarket competitive action

Nonmarket strategy has become an established research area, and recent reviews summarize its theoretical underpinnings in institutional theory, industrial organization economics, and agency theory (Doh et al., 2003; Henisz and Zelner, 2012; Hillman, Keim, and Schuler, 2004). Scholars have accumulated theoretical and empirical insights in this domain considering various nonmarket activities, such as corporate political activity, public administration, and environmental obligations. In the corporate political activity arena, specifically, firms interact with politicians and government regulators and inspectors with the goal of shaping laws, policies, and regulations that are beneficial to the firms. Firms also make strategic decisions based on nonmarket factors. For example, banks in India seem to prefer locations where they can benefit from political pluralism and avoid locations with political hegemony as hegemony can result in lowered managerial discretion and lesser resource transfers (Kozhikode and Li, 2012). Further, these nonmarket actions of firms may also take an illegal form, including corruption (Dutta, Kar, and Roy, 2011). Recent evidence shows, for example, that high status banks in India engage in the nonmarket action of illegal loan recovery to improve their asset quality both vis-à-vis their past asset quality and vis-à-vis that of their high status peers (Krishnan and Kozhikode, 2015). Overall, research has shown that firms engage in nonmarket actions, including illegal actions to compete effectively in the marketplace.

Strategy scholars have examined corruption from multiple angles. First, some scholars examined firm behaviors in corrupt environments that may predispose firms to obtain certifications to signal their distinct capabilities (Montiel, Husted, and Christmann, 2012), discourage multinational corporations’ (MNCs’) foreign direct investment (Bardhan, 1997; Habib and Leon, 2002), and influence their
entry strategy (Rodriguez, Uhlenbruck, and Eden, 2005; Uhlenbruck et al., 2006). Second, researchers also sought to understand why some firms engage in corruption in a certain institutional context (Jeong and Weiner, 2012; Martin et al., 2007; Spencer and Gomez, 2011). Third, scholars investigated the impact of a firm’s corruption activities on its performance (Galang, 2012, for a review). Finally, they also examined the normalization of corruption, or collective corruption, whereby corruption becomes an integral part of organizational life and is perpetuated by organizational members in a routine and normal manner (Ashforth and Anand, 2003).

While a large body of literature has developed in the area of corruption, hardly any study recognizes corruption as a nonmarket competitive action. We posit that corruption is a nonmarket competitive action when conceptualized in terms of giving bribes to government officials to further one’s own interests as it is essentially a financial incentive given to government officials to influence policy-making and policy-implementing in a way that favors the demander’s interests (Capron and Chatain, 2008). For instance, bribes by a firm to government officials have the potential to confer a strategic or tactical advantage to the firm over its rivals by helping it obtain licenses in a speedy manner or having its violations of some regulations overlooked by government officials. Engaging in corruption is a distinct action in nonmarket strategies as it is usually illegal (Webb et al., 2009), and therefore, risky. Firms engaging in corruption run the risk of arrest of their executives and employees as well as reputation damage. Indeed, research on firms’ illegal actions has built on the general premise that firms engage in corporate illegality only when the upside benefits of doing so are perceived as outweighing the downside risks (Mishina et al., 2010). As a result, all firms do not engage in corruption, even in emerging markets where corruption may be otherwise rampant. Accordingly, we posit that firms engage in corruption as a competitive action to gain some advantage over their rivals.

**HR training as a resource-market competitive action**

We posit that HR training is a competitive action in a firm’s resource market. Literature has recognized the importance of HR development (Becker, 1964; Bruton, Dess, and Janney, 2007; Martin et al., 2007) as human resources are often valuable, rare, and inimitable resources, and a source of firms’ competitive advantage (Barney, 1991). In emerging markets, HR training serves as a resource-market action in two ways. First, it serves the more traditional role of internal resource building (Capron and Chatain, 2008). While firms obtain human resources with required qualifications by screening incoming employees, they also improve the quality of their current employees by providing training (Delaney and Huselid, 1996). Considerable evidence suggests that investments in employee training produce beneficial organizational outcomes and help firms improve their competitive positions over rivals (Bartel, 1994; Knoke and Kalleberg, 1994; Russell, Terborg, and Powers, 1985).

Second, HR training also serves as Capron and Chatain’s (2008) “resource preemption strategy” that is used to retain human resources within the firm who might otherwise run out to or be poached by competitors. This role of HR training is particularly apt in fast-growing sectors of emerging economies. In Indian IT industry, for instance, HR attrition rate was between 55 and 60 percent in the first six months of 2011 (PTI, 2012), and managers there recognize HR training as one of the strategic tools for preventing talented employees from being poached by rival firms. A recent survey finds HR training as one of the top five strategies for Indian companies to mitigate employee turnover (Yiu and Saner, 2011). Therefore, HR training can be considered a resource preemption strategy as well as a resource building strategy. HR training also entails risk, however. Developing human resources takes a long time, requires nontrivial financial resources, and the outcomes are uncertain in the short run (Dierickx and Cool, 1989; Foote and Folta, 2002). Moreover, due to their increased value, trained human resources may leave the firm, thereby diminishing the return on training investments to the investing firm. Accordingly, managers must carefully weigh the risks and benefits of this competitive action.

**Threats from competitor groups in emerging markets**

While firms may compete head-to-head at a firm-dyad level, literature also suggests that firm actions are often influenced by competitor groups (e.g., Chang and Xu, 2008). In an emerging economy, firms typically face threats from three different competitor groups: foreign competitors,
informal sector competitors, and domestic competitors in the formal sector. Further, firms in the two former groups are generally prevalent in emerging markets.

**Informal sector competitor group**

Following current literature, we consider the informal sector of an emerging country as consisting of firms that are not formally registered with the state, and therefore, do not pay taxes and other levies to the state (Marcelli, Pastor, and Joassart, 1999; Portes, 1994; Webb et al., 2009). Such firms either use illegal “means,” for example, employ undocumented workers or child labor (Raijman, 2001), and/or pursue illegal “ends,” for example, sell illegal products such as pirated software (Givon, Mahajan, and Muller, 1995). However, some social groups and stakeholders view both the means and the ends to be legitimate because of which such firms exist and even thrive in their respective entrepreneurial domains (Webb et al., 2009).

The presence of informal economy in emerging economies is pervasive. Schneider (2002) estimated that informal economy activities account for approximately 40 percent of GDP in developing countries. The National Sample Survey Organization (NSSO) estimates that only seven percent of the workforce in India in 2004–2005 belonged to the formal sector (Chidambaram, 2008; Dutta et al., 2011; Ratnam, 2006). In the 2006 World Bank survey of firms in 14 Latin American countries, 38.7 percent of manufacturing firms ranked competition from informal firms as one of their top three obstacles to doing business. Consequently, informal sector firms, as a distinct and salient competitor group, pose threats to formal sector firms in emerging markets.

**Foreign firms competitor group**

In emerging markets, the presence of foreign firms is pervasive. According to UNCTAD, 53 percent of the overall FDI flowed to developing and transition countries in 2010. As a result, local firms often compete with foreign firms in emerging markets, and both groups compete head-to-head in many instances. For example, local Chinese firms such as Haier compete with Western rivals such as Whirlpool and Electrolux in the appliances market in China (Zeng and Williamson, 2003). Chang and Xu (2008) indicate that competition between local firms and foreign firms in the Chinese market is intense when they share similar resources. In sum, firms in emerging markets face significant competitive threats from foreign firms.

**HYPOTHESES**

Given our focus on firms’ nonmarket and resource-market actions, and the two salient competitor groups in emerging markets, we now turn our attention to developing theoretical logics to connect them. Specifically, we develop synthetic logics by integrating the strategic groups literature with the competitive rivalry literature. We propose that a focal firm engages in appropriate competitive actions to act against those strategic groups that it identifies as its rivals.

First, the competitive rivalry literature posits that firms consider resource similarity and market commonality as key considerations in their competitor analysis (Chen, 1996) as they compete with their rivals in both the resource and product market arenas (Markman et al., 2009). Consequently, a firm is likely to identify a group of firms as its rival with whom it has a high degree of resource similarity, or market commonality, or both. In other words, resource similarity and/or market commonality play an important role in the firm’s identification process, a key notion in the strategic groups literature.

Second, the strategic groups literature notes that “firms are more likely to imitate the prevalent strategies, practices, and norms of the group members they identify with” (Anand et al., 2013: 7), and we propose this emulation mechanism as the key driver for competitive action. A focal firm’s perceived threat from a particular competitor group, developed through its identification process, inherently implies that the focal firm shares some current and potential stakeholders (e.g., customers, employees, investors) with other firms that also identify with that group. By buying from, working for, or investing in its competitors, the shared customers, potential employees, and investors signal to the focal firm some of the outcomes they value that are provided by the competitors in terms of low prices, high product quality, and speedy service. As a result, the focal firm may be inclined to emulate the processes and strategies, including actions in nonmarket and resource-market spaces, that are used by its competitors as they are known to produce the outcomes that the shared stakeholders value and
Further, managers of the focal firm hold beliefs that shared stakeholders view as legitimate the processes and strategies pursued by the competitors, and this may further motivate the focal firm to emulate the actions in both the nonmarket and resource-market spaces used by its competitors (Labianca et al., 2001; Panagiotou, 2007; Porac et al., 1989).

Influence of perceived threats from the informal sector competitors

An informal sector firm is generally recognized as a “fast and loose” entity that exploits market opportunities in a fast manner by circumventing the legal and bureaucratic governmental processes due to the acceptability of illegal means and ends in the informal institutional arena (Webb et al., 2009). While risky, engaging in corruption can help firms save time in obtaining government permits or licenses in a bureaucratic governmental regime, thereby accelerating their business activities and product/service launches. Furthermore, corruption may also reduce firms’ administrative and operation costs by helping them reduce or avoid payment of large government taxes, tariffs, license fees, or penalties for violations of government regulations.

Firms in the formal sector may perceive a threat from their informal sector competitors when their customers also buy products/services from these competitors. In such cases of market commonality, current and potential customers of a formal firm send it a signal that they value speedy actions and cheaper prices through their willingness to buy from competing informal sector firms. Equally important, a focal firm perceiving competitive threat from informal sector firms would tend to view illegal actions as being accepted by its current and potential customers based on the fact they also buy products/services from its competitors in the informal sector. Further, paying some informal gifts or payments to government officials may help a focal firm avoid time delays that would otherwise hamper the firm’s speedy response against fast-and-loose informal sector firms. Hence, consistent with studies on illegal actions (Mishina et al., 2010), focal firm managers perceive the upside benefits of illegal actions as outweighing the downside risks. Consequently, when a firm perceives a significant threat from rivals in the informal sector, it is likely to emulate the “illegal but fast” actions of its informal sector rivals and itself engage in such activities to serve the needs and preferences of that particular customer base (Anand et al., 2013). Accordingly, the focal firm is likely to engage in corruption to improve its competitive position vis-à-vis its informal sector rivals, when it perceives threats from such rivals.

Hypothesis 1: The greater the competitive threat a focal firm perceives from informal sector firms, the more likely it will engage in corruption activities.

Influence of perceived threats from the foreign sector competitors

There is broad consensus in international business research that foreign firms operating in emerging markets enjoy some inherent advantages over local firms that are usually sufficiently large to offset their liability of foreignness (Caves, 1971; Dunning, 1980). These advantages include superior technical resources, managerial capabilities, well-known brand names, and access to international networks. Moreover, such firms generally offer better products with advanced technology and high-quality services than do their local competitors. By exploiting their superior resources that are generally not available to local competitors, foreign firms are able to hit the ground running in emerging markets (Chang and Xu, 2008).

Therefore, a focal firm in emerging markets may identify foreign firms as a competitor group and may perceive threats from this group when it faces a situation of resource similarity with this group. In such a situation, the focal firm has to compete hard with foreign firms for similar resources with advanced knowledge, skills, and capabilities as they are typically scarce in emerging economies. Further, the focal firm realizes that it needs to offer advanced technology and high-quality products/services, or products/services at competitive prices with acceptable levels of quality to compete with its foreign rivals. If the products/services of this firm cannot reach the levels offered by its foreign competitors, the viability of the firm may become questionable as the customers and other stakeholders may not support the focal firm through purchase of its products/services and investments in the firm, and so forth.

Therefore, emulating its foreign competitors, the focal firm is likely to invest in activities that improve its human resource base in order to stay competitive.
in the products/services arena. In the face of scarcity of human resources due to resource similarity with foreign firms, training of current employees then becomes a reasonable action as advanced technical knowledge and managerial skills are the primary ingredients for innovative products, high-quality services, and productivity enhancements. In addition, as discussed above, HR training may also enable the focal firm to retain its talented employees and to prevent them from being poached by its foreign firm rivals. While HR development takes a long time and entails a high degree of uncertainty (Foote and Folta, 2002), these risks are offset by the pressures from customers and stakeholders who value foreign competitors’ products and services.

**Hypothesis 2:** The greater the competitive threat a focal firm perceives from foreign firms, the more likely it will invest in HR training.

Thus far, our theoretical arguments have focused on the influence of strategic group-level competitive threats on a focal firm’s actions. However, competitive rivalry literature also suggests firm-level heterogeneity of threat-action relationships due to increased rivalry between firms that results from their market commonality and resource similarity (Chen, 1996). Accordingly, we develop theoretical arguments for two firm-level contingencies—diversification and technological capability—on the relationships suggested by the above main hypotheses. These firm profiles are not only indicators of market commonality and resource similarity, respectively, but also well documented in the literature as sources of firm heterogeneity.

**Moderating effect of diversification**

Our theoretical logics leading to Hypothesis 1 are based on the notion of market commonality as the source of competitive rivalry. We now suggest that a firm’s level of diversification also serves as a source of contingency for the relationship between the firm’s perceived level of competitive threat from informal sector firms and its likelihood to engage in corruption. One of the key variables pertaining to market commonality is the degree of firm diversification. When a focal firm has multiple product/service lines, it means that it has alternative markets to compete in and win even when it faces a high level of threat in a certain market (Jayachandran et al., 1999). On the other hand, when a focal firm relies on one product/service line, it is essentially operating in a single market. It may be a question of survival for this firm if this market is threatened. Therefore, when an undiversified firm perceives competitive threats from informal sector firms, it implies that this firm has a high degree of market commonality with informal sector firms in terms of a large volume of shared current and potential customers with the informal sector firms (Chang and Xu, 2008; Chen, 1996). In addition, a diversified firm may have multiple identities as it competes in multiple markets. Strategic group configuration theory (Anand et al., 2013) suggests that a firm with multiple identities is likely to identify with multiple strategic groups. Consequently, the diversified firm may not perceive severe pressure from any one strategic group. In contrast, an undiversified firm has only a few identities, or even a single identity, and thus, identifies with only a few strategic groups, or even a single group. Therefore, an undiversified firm will perceive a greater level of threat from one strategic group.

Accordingly, when an undiversified firm faces heightened rivalry stemming from its market commonality with informal sector firms, it is then more likely to amplify its emulation of its informal sector rivals. As discussed before, an informal sector firm is a fast and loose entity and may even engage in corruption to circumvent the legal governmental processes due to the acceptability of illegal means in the market (Webb et al., 2009). Thus, to compete with its informal sector rivals, the undiversified focal firm would also need to act fast and quickly, even by taking illegal actions, including corruption, as otherwise it may not survive in that market.

**Hypothesis 3:** Less diversified firms are more likely than diversified firms to engage in corruption activities when faced with a certain level of threat from informal sector firms.

**Moderating effect of technological capability**

Our theoretical logics leading to Hypothesis 2 are based on the notion of resource similarity as the source of competitive rivalry. We now propose that the relationship suggested by Hypothesis 2 between a focal firm’s perceived threat from foreign firms and its likelihood to invest in HR training is contingent on the focal firm’s resource
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profile, specifically, its technological capability, which refers to a firm’s ability to employ various technologies (Zhou and Wu, 2010). A large body of literature suggests that a firm’s technological capability is a source of unique and innovative product/service offerings (e.g., Kelm, Narayanan, and Pinches, 1995; Kotha, Zheng, and George, 2011; Sears and Hoetker, 2014; Zhou and Wu, 2010). Furthermore, foreign firms are generally expected to develop high-end products/services due to their high technological capability (Dunning, 1980). Accordingly, from a resource similarity perspective, a focal firm with high technological capability will be more likely to consider foreign firms as key competitors than a firm with low technological capability. Moreover, such a firm is also more likely to perceive an elevated level of competitive threat from foreign competitors (Chang and Xu, 2008; Chen, 1996).

As a result, the focal firm is likely to amplify its emulation of foreign sector rivals and engage in a higher level of HR training when it perceives heightened rivalry with foreign firms stemming from its resource similarity with them. This response by the focal firm is a result of its recognition that foreign firms not only have high levels of current technological capability, but also they possess deep overall knowledge resources that they keep on developing further (Kirca et al., 2011). The focal firm thus realizes that its existing technological capability may not be enough to compete with foreign sector rivals, and that it will need to invest in HR training to exploit its technological capability to compete with its foreign rivals.

Hypothesis 4: Firms with higher technological capability are more likely than firms with lower technological capability to invest in HR training when faced with a certain level of threat from foreign firms.

METHODS

Sample and data

The World Bank conducts regular surveys of firms across major emerging economies such as China and India. Data from these surveys have also been used in prior academic research (e.g., Angelini and Generale, 2008; Cull and Xu, 2005). The main data for the current study also comes from a survey that was conducted by the World Bank in India in 2006 and consists of a sample of 360 firms in the Indian IT industry. All sampled firms are legally registered, that is, they are firms in the formal sector. The 360 firms in the sample come from seven states and union territories: Andhra Pradesh, Delhi, Haryana, Karnataka, Maharashtra, Tamil Nadu, and Uttar Pradesh. These firms belong to the following subindustries of the broader IT industry: telecom services (4%), software (59%), information technology-enabled services (ITES, 17%), and media and entertainment services (20%). Finally, 42 percent of the sample firms have nine or fewer employees, 34 percent have between 10 and 24 employees, and the rest, 24 percent, have 25 or more employees.

The survey was conducted by the World Bank in consultation with the Confederation of Indian Industries, and the Indian unit of an international market-research firm implemented the survey. The implementation involved personal interviews using a common survey questionnaire with sampled firms’ top-level managers. They were told that the information obtained from them would be held in strict confidence. The survey collected data on firm characteristics such as sales, operational costs, number of employees, access to public infrastructure, access to finance, and so on, as well as data on firm managers’ perceptions about various aspects of the business climate, including competitive threats. We believe that the design of the survey provides us with one of the most comprehensive firm-level data in an emerging country context to investigate firms’ nonmarket and resource-market actions. This dataset also allows us to include a large set of control variables in empirical analyses as compared to the existing studies in this area.

We inspected the dataset and dropped observations from our sample that had missing data for the study variables. Through this process, we obtained the final sample consisting of 157 observations for the corruption models and 269 observations for the HR training models.\(^1\) We also collected additional

\(^1\) There may be potential nonresponse bias in the corruption models as some interviewees may intentionally decline to answer questions about corruption. We compared the means of the subsample of firms that answered corruption-related questions with the subsample of firms that declined to answer those questions on key firm characteristics, including size, age, diversification, technological capability, advertisement intensity, and foreign ownership. Results of t-tests showed no significant differences between the two subsamples, indicating that our results from the corruption models do not suffer from any serious nonresponse bias.
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state-level GDP per capita data from other sources noted below.

**Dependent variables**

**Firm’s engagement in corruption activities**

Quantifying the precise level of a firm’s corruption activities (e.g., number of bribes paid) is intrinsically difficult due to an understandable reluctance on the part of the giver of bribes to share such information. Therefore, the World Bank surveys—including the one used by us—aim to indirectly identify whether a surveyed firm is likely to have recently engaged in corruption practices across various business contexts (Dabla-Norris, Gradstein, and Inchauste, 2008). The indirect phrasing of the corruption related questions, along with a “no response” option, was to ensure that respondents were not implicating themselves of wrongdoing of a criminal nature, and is consistent with the approach used in existing studies (e.g., Spencer and Gomez, 2011; Svensson, 2003). We used data from three questions on the survey to construct our measures for corruption. First, each respondent firm was asked whether or not “an informal gift or payment expected or requested” by government officials to obtain approval on applications for business licenses and/or infrastructure within the last two years. Second, each respondent firm was asked whether or not “a gift or informal payment ever expected/requested” by government officials from the tax, labor, and safety agencies during inspections by and required meetings with them during the last one year. Third, the survey also measured, using a five-degree Likert-type scale, a respondent’s perception about the extent to which corruption was an obstacle “to the current operations and opportunities for growth of this establishment.”

We created two alternative dichotomous measures for the corruption variable to ensure that our empirical results for the corruption model are robust. Our main measure for corruption is a conservative measure and attempts to precisely capture a firm’s proactive engagement in corruption activities. We first coded 1 for firms that answered “yes” for at least one of the question items that asked firms about whether or not they were expected or requested to give gifts or payments, and 0 otherwise. However, this may be a more expansive measure of corruption as it also includes those firms that may feel forced by government officials to pay informal benefits to them, rather than proactively making those informal payments. Therefore, we used the question that measures a respondent perceptions about corruption as an obstacle for his/her business. We consider that when firms do not perceive corruption as a serious obstacle to doing business, it implies that they may not be reluctant to pay bribes when asked to pay them. Accordingly, if such firms were “asked or expected to pay bribes,” then we can surmise that they did so more proactively than those who thought corruption was a severe obstacle to doing business. Thirteen of the focal firms in our sample fall in the “proactive corruption” group, and we coded 1 for these firms, and 0 otherwise, for our main corruption measure. We also used as an alternative measure of corruption the more expansive measure of all corruption activities discussed above that considers only firm responses on questions about whether or not they were expected or requested to give informal gifts or payments to government officials.

**Firm’s investment in HR training**

We captured firms’ investment in HR training using two questions in the survey. In one question, a firm was asked whether it ran “formal in-house training programs for its permanent, full-time employees” during the last one year. In another question, the firm was asked whether it sent “its permanent, full-time employees to formal training run by other organizations” during the last one year. We again created two alternative measures for the HR training variable to ensure that our empirical results for the HR training model are robust. Our main measure for HR training is a conservative measure that attempts to precisely capture a firm’s investment in HR training. The two types of training—in-house training versus that provided by another organization—are typically different in nature as the former provides trainees with firm-specific knowledge about firm’s products, technologies, and processes, while the latter provides trainees with generalized technical or business knowledge. Therefore, our main measure of HR training investment is a categorical ordered three-degree measure that codes 2 for firms that invested in both types of HR training, 1 for firms that invested in only one type of HR training, and 0 for firms that did not invest in any HR training. For

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2 We wish to thank an anonymous reviewer for this suggestion.
our alternative measure of HR training investment, we use a more expansive binary measure that codes 1 for firms that invested in any or both types of HR training, and 0 otherwise.

**Explanatory, moderating, and control variables**

For our main explanatory variables, we use questions from the World Bank survey that ask firms to describe competitive threats from three specific types of firms operating in India: (1) foreign firms, (2) domestic firms, and (3) informal sector firms. Specifically, the question asked: “Describe a few characteristics of your industry and the market on a scale from 1 to 5 (where 5 represents a specific type of firm as being a big threat and 1 represents that type of firm as being no threat).” This stem question was followed by three leaf questions that asked how big a competitive threat were those three types of firms for the responding firm. For example, with respect to foreign firms, the leaf question asked: “How big a competitive threat are foreign firms operating in India?” Similar questions were asked for domestic and informal sector firms. We used responses for these questions on foreign firms and informal sector firms as our explanatory variables. We also included the response on domestic firms as a control variable. Note that the time horizon for both our dependent and explanatory variables are contemporaneous, referring to the last fiscal years relative to the year in which the survey was conducted. For Hypotheses 1 and 2, we expect positive coefficients for the effects of perceived threats from informal sector and foreign firm competitors on corruption and HR training, respectively.

For testing the moderating effect of firm diversification suggested by Hypothesis 3, we calculated a diversification index based on the Simpson diversity index (Abdullah, Ku Ismail, and Nachum, 2015) using data from the survey about firms’ sales on their primary product/service (including software products) as a percentage of their total annual sales. Our diversification index was calculated as \((1 - p^2)\) where \(p_i\) is the proportion of a firm’s primary product/service sales to its total annual sales\(^3\). We multiplied this index with perceived threat from informal competitors to create an interaction term. Because Hypothesis 3 proposes that less diversified firms are more likely to engage in corruption activities for a given level of threat from informal sector competitors, we expect a negative coefficient for this interaction term. For testing the moderating effect of technology capability suggested by Hypothesis 4, we used questions on the survey that asked firms about their patent activity. Prior studies often employ firm’s patent activity as a proxy of its technological capability (Kotha et al., 2011; Sears and Hoetker, 2014). We coded 1 for this variable if the focal firm applied for, or was awarded any patents, in the last three years and 0 otherwise. We then multiplied this measure of technological capability with perceived threat from foreign competitors to create an interaction term. Because Hypothesis 4 proposes that firms with high technological capability are more likely to make HR training investments for a given level of threat from foreign sector competitors, we expect a positive coefficient for this interaction term.

We included a number of control variables in our models. Following previous studies, we controlled for firm age (log of number of years from establishment) and firm size (log of number of employees) (Martin et al., 2007; Spencer and Gomez, 2011). We also included a dummy variable to control for firm’s public status as public firms are typically more transparent than private firms and are thus less likely to engage in corruption activities. In addition, we controlled for foreign ownership share in the focal firm. While 81 percent of focal firms in our sample are purely domestic, 19 percent receive some investment from foreign investors. We also controlled for focal firms’ advertisement intensity using a dummy variable. For models of corruption, we also controlled for three corruption-related factors. The first variable—corruption as an obstacle—was measured on a five-point Likert-type scale using the survey question that asked firms to evaluate the extent to which corruption was an obstacle to the current operations and opportunities for growth of the focal firm. The second variable—regulatory and policy uncertainty—was measured on a five-point Likert-type scale using the survey question that asked firms to evaluate the extent of regulatory and policy uncertainty that can affect the current operations and opportunities for growth of the focal firm. The third variable—consistent regulatory interpretation—was measured on a

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\(^3\)The Simpson index is calculated as \(1 - \sum_{i=1}^{N} p_i^2\), where \(p_i\) is a firm’s proportion of sales of its i-th product/service sales to its total sales and \(N\) is the total number of products/services sold by the firm. We used only the proportion of a firm’s primary product/service sales to its total sales due to lack of availability of data in the survey about all of a firm’s products and services.
Table 1: Summary statistics

<table>
<thead>
<tr>
<th>Description</th>
<th>Mean</th>
<th>Std. dev.</th>
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<tbody>
<tr>
<td><strong>Dependent variables</strong></td>
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<tr>
<td>Proactive corruption activities (main measure)</td>
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<td>0.406</td>
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<tr>
<td>All corruption activities (alternative measure)</td>
<td>0.124</td>
<td>0.332</td>
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<tr>
<td>Ordered HR training (main measure)</td>
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<tr>
<td>Binary HR training (alternative measure)</td>
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<td><strong>Competitive threat variables</strong></td>
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<td>Diversification</td>
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<td>0.346</td>
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<td>Technological capability</td>
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<td>0.228</td>
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<td><strong>Firm level controls</strong></td>
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<td><strong>Other controls</strong></td>
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<td>Corruption as an obstacle</td>
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<td>1.377</td>
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<tr>
<td>Regulatory and policy uncertainty</td>
<td>1.213</td>
<td>1.234</td>
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<tr>
<td>Inconsistent regulatory interpretation</td>
<td>3.439</td>
<td>1.617</td>
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<tr>
<td>GDP per capita</td>
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<td>443.9</td>
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<td>Southern states</td>
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<td>0.472</td>
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<tr>
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<td>0.496</td>
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<tr>
<td>ITES industry</td>
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<td>0.375</td>
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<tr>
<td>Media &amp; entertainment industry</td>
<td>0.232</td>
<td>0.423</td>
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</table>

six-point Likert-type scale that asked firms about the extent to which government officials’ interpretations of the laws and regulations affecting the focal firm are consistent and predictable. We also controlled for income level of Indian states using GDP per capita, which we obtained from the Directorate of Economics & Statistics of the respective State Governments. We also included regional dummies for northern and southern states, with western states as the baseline. Finally, we included dummy variables for three subsectors in the IT industry—telecom services, software, and IT enabled services (ITES)—using the telecom services subsector as the baseline.

**RESULTS**

Table 1 shows the summary statistics on the variables. About 21 percent of the firms in the sample were engaged in corruption activities, and about 50 percent of the firms invested in both internal and external HR training, with about 26 percent investing in one of the two trainings. On average, firms
perceived the highest level of competitive threat from their domestic rivals, and the lowest level of threat from their informal sector rivals. We also ran t-tests and confirmed that all the three threat variables significantly differ from 1 (with a value of 1 signifying “no threat”). This suggests that, on average, firms in our sample perceive competitive threats to some degree from all the three types of competitor groups. Correlations among study variables are provided in Table 2. The VIFs of all study variables vary from 1.38 to 2.50, indicating that multicollinearity is not a serious concern in our analyses.

Since a firm’s engagement in corruption activities was measured as a binary variable, we employ the probit model for evaluating corruption models. Table 3 shows results for firms’ corruption activities. Models 1 and 2 in Table 3 provide results for the main corruption variable that uses the conservative measure for proactive engagement in corruption activities by the focal firm (Model 1 for controls only and Model 2 for the full model). Models 3 and 4 in Table 3 show results for the alternative corruption variable that uses the expansive measure for any engagement in corruption activities by the focal firm (Model 3 for controls only and Model 4 for the full model). In both Models 2 and 4, the coefficient for competitive threat from informal sector firms is positive and significant ($p < 0.001$ in Model 2, and $p < 0.01$ in Model 4), providing support for Hypothesis 1.

We also obtained a negative coefficient for the interaction term between competitive threat from informal sector firms and the focal firm’s diversification index, and it differs from zero ($p < 0.001$ in Model 2, and $p < 0.05$ in Model 4). This renders support for Hypothesis 3 as results show that a firm with a higher level of diversification is less likely to engage in corruption for the same level of perceived threat from informal sector firms as compared to a firm with a lower level of diversification. However, scholars have recently made notes of caution on the interpretation of regression coefficients for interaction terms in limited dependent variable regression models, and have proposed additional analyses to evaluate the specific range for which the interaction effects are significant (Hoetker, 2007; Wiersema and Bowen, 2009). Accordingly, following recent studies (e.g., Fortune and Mitchell, 2012; London et al., 2014), we ran an analysis using the technique recommended by Ai and Norton (2003) to determine the significance of the marginal effects of the interaction term involving competitive threat from informal sector firms and diversification index, and we graphed our results. Figure S1(a) illustrates the interaction effects plot for Model 2 in Table 2, demonstrating negative interaction effects for most data points (i.e., the observations are primarily below zero). Figure S1(b) is the $z$-statistic plot with three horizontal lines (lines at $z = 1.645$, 0, and $-1.645$), and it indicates that the interaction effects are generally significant for a range between 0.1 and 0.8 of the predicted probability of corruption. Overall, results from these additional analyses provide support for Hypothesis 3.

As discussed earlier, a firm’s investment in HR training was measured both as an ordered categorical variable (0, 1, and 2) as well as a binary variable. We employed the ordered probit model and the binary probit model, respectively, for these two measures of the HR training investment variable. Models 1 and 2 in Table 4 show results for the ordered categorical variable, and Models 3 and 4 in Table 4 show results for the binary variable. In both the models, competitive threat from foreign firms has a significant positive coefficient ($p < 0.05$ in Model 2, and $p < 0.10$ in Model 4), providing support for Hypothesis 2.

As for Hypothesis 4, the coefficient for the interaction term between competitive threat from foreign firms and the focal firm’s technology capability is positive and significant in both Model 2 ($p < 0.05$) and Model 4 ($p < 0.001$). These results are consistent with the prediction in Hypothesis 4 as they show that a firm with a higher level of technological capability is more likely to invest in HR training for the same level of perceived threat from foreign sector firms as compared to a firm with a lower level of technological capability. However, the results are more nuanced when we analyzed the specific range for which the interaction effects are significant using the approach by Ai and Norton (2003) as discussed above. The interaction effects for Model 4 in Table 3 are plotted in Figure S2(a). While this figure shows positive interaction effect for many observations, it also shows negative interaction effects for some observations. The $z$-statistic plot in Figure S2(b) shows that the interaction effects are generally significant when the predicted probability of HR investment is above 0.3 and below 0.7. Overall, these additional results provide at least a moderate level of support for Hypothesis 4.
Table 2. Correlation matrix

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
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<th>(8)</th>
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<th>(10)</th>
<th>(11)</th>
<th>(12)</th>
<th>(13)</th>
<th>(14)</th>
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</thead>
<tbody>
<tr>
<td>(1) Proactive corruption activities</td>
<td>1.000</td>
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<tr>
<td>(2) All corruption activities</td>
<td>0.768</td>
<td>1.000</td>
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<tr>
<td>(3) Ordered HR training</td>
<td>0.075</td>
<td>0.174</td>
<td>1.000</td>
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<tr>
<td>(4) Binary HR training</td>
<td>0.051</td>
<td>0.134</td>
<td>0.886</td>
<td>1.000</td>
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<tr>
<td>(5) Informal firm threat</td>
<td>0.038</td>
<td>0.115</td>
<td>0.054</td>
<td>−0.053</td>
<td>1.000</td>
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<tr>
<td>(6) Foreign firm threat</td>
<td>−0.028</td>
<td>0.091</td>
<td>0.232</td>
<td>0.216</td>
<td>0.315</td>
<td>1.000</td>
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<tr>
<td>(7) Domestic firm threat</td>
<td>0.036</td>
<td>0.181</td>
<td>0.234</td>
<td>0.195</td>
<td>0.442</td>
<td>0.460</td>
<td>1.000</td>
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<tr>
<td>(8) Diversification</td>
<td>0.168</td>
<td>0.238</td>
<td>0.171</td>
<td>0.110</td>
<td>0.071</td>
<td>0.233</td>
<td>0.250</td>
<td>1.000</td>
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<tr>
<td>(9) Technological capability</td>
<td>0.120</td>
<td>0.052</td>
<td>0.156</td>
<td>0.075</td>
<td>0.046</td>
<td>−0.020</td>
<td>−0.040</td>
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<td>(10) Age</td>
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<td>−0.145</td>
<td>−0.071</td>
<td>−0.030</td>
<td>−0.032</td>
<td>−0.151</td>
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<td>(11) Size</td>
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<td>0.086</td>
<td>0.140</td>
<td>0.148</td>
<td>−0.053</td>
<td>0.067</td>
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<tr>
<td>(12) Foreign ownership share</td>
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<td>0.122</td>
<td>0.143</td>
<td>0.091</td>
<td>−0.030</td>
<td>0.128</td>
<td>0.061</td>
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<td>(13) Advertisement</td>
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<td>0.304</td>
<td>0.260</td>
<td>0.017</td>
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<tr>
<td>(14) Public firm</td>
<td>−0.142</td>
<td>−0.085</td>
<td>0.115</td>
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<td>0.097</td>
<td>−0.015</td>
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<td>(15) Corruption as an obstacle</td>
<td>−0.012</td>
<td>0.337</td>
<td>0.237</td>
<td>0.187</td>
<td>0.270</td>
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<td>(16) Policy uncertainty</td>
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<td>0.304</td>
<td>0.262</td>
<td>0.113</td>
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<td>(17) Official’s uncertainty</td>
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<td>0.182</td>
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<td>(18) GDP per capita</td>
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<td>(19) Northern states</td>
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<td>−0.057</td>
<td>−0.016</td>
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<td>0.064</td>
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<td>−0.045</td>
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<td>(23) Media &amp; ent. sector</td>
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<td>−0.177</td>
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<td>−0.311</td>
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</table>

(8) Diversification | 1.000 |      |      |      |      |      |      |      |      |      |      |      |      |      |
(9) Technological capability | −0.044| 1.000|      |      |      |      |      |      |      |      |      |      |      |      |
(10) Age | −0.063| 0.002| 1.000|      |      |      |      |      |      |      |      |      |      |      |
(11) Size | −0.023| 0.018| 0.137| 1.000|      |      |      |      |      |      |      |      |      |      |
(12) Foreign ownership share | 0.082| 0.013| −0.043| 0.247| 1.000|      |      |      |      |      |      |      |      |      |
(13) Advertisement | 0.242| 0.080| −0.052| 0.198| 0.079| 1.000|      |      |      |      |      |      |      |      |
(14) Public firm | 0.064| 0.244| 0.151| 0.231| 0.037| 0.140| 1.000|      |      |      |      |      |      |      |
(15) Corruption as an obstacle | 0.243| −0.055| −0.114| −0.002| 0.143| 0.198| 0.207|      |      |      |      |      |      |      |
(16) Regulatory and policy uncertainty | 0.347| 0.012| −0.094| 0.237| 0.199| 0.237| 0.039|      |      |      |      |      |      |      |
(17) Inconsistent regulatory interpretation | 0.234| 0.161| −0.238| 0.007| 0.100| 0.281| 0.056|      |      |      |      |      |      |      |
(18) GDP per capita | −0.125| −0.115| 0.197| −0.015| −0.190| −0.107| 0.033|      |      |      |      |      |      |      |
(19) Northern states | 0.065| 0.101| 0.016| 0.045| 0.026| −0.013| 0.178|      |      |      |      |      |      |      |
(20) Southern states | 0.392| 0.154| −0.291| 0.162| 0.367| 0.269| 0.085|      |      |      |      |      |      |      |
(21) Software sector | 0.206| 0.187| −0.227| −0.032| 0.195| 0.100| 0.031|      |      |      |      |      |      |      |
(22) ITES sector | 0.018| −0.098| −0.151| 0.014| −0.011| 0.216| −0.004|      |      |      |      |      |      |      |
(23) Media & ent. sector | −0.249| −0.115| 0.370| −0.111| −0.232| −0.283|−0.095|      |      |      |      |      |      |      |
Table 3. Regressions results for firms’ engagement in corruption activities

<table>
<thead>
<tr>
<th></th>
<th>Proactive engagement in corruption activities</th>
<th>All engagement in corruption activities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>(-5.567^*)</td>
<td>(-5.426^\dagger)</td>
</tr>
<tr>
<td></td>
<td>((2.691))</td>
<td>((2.863))</td>
</tr>
<tr>
<td><strong>Diversification</strong></td>
<td>0.303</td>
<td>0.384</td>
</tr>
<tr>
<td></td>
<td>((0.472))</td>
<td>((0.456))</td>
</tr>
<tr>
<td><strong>Technology capability</strong></td>
<td>0.709</td>
<td>0.514</td>
</tr>
<tr>
<td></td>
<td>((0.625))</td>
<td>((0.593))</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>(-0.834^{***})</td>
<td>(-0.996^{***})</td>
</tr>
<tr>
<td></td>
<td>((0.095))</td>
<td>((0.094))</td>
</tr>
<tr>
<td><strong>Size</strong></td>
<td>0.142\dagger</td>
<td>0.223*</td>
</tr>
<tr>
<td></td>
<td>((0.086))</td>
<td>((0.088))</td>
</tr>
<tr>
<td><strong>Technology capability</strong></td>
<td>0.002</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>((0.006))</td>
<td>((0.006))</td>
</tr>
<tr>
<td><strong>Advisement</strong></td>
<td>0.856**</td>
<td>0.831**</td>
</tr>
<tr>
<td></td>
<td>((0.308))</td>
<td>((0.251))</td>
</tr>
<tr>
<td><strong>Public firm</strong></td>
<td>(-1.074^*)</td>
<td>(-1.352^*)</td>
</tr>
<tr>
<td><strong>Corruption as an obstacle</strong></td>
<td>(-0.303^*)</td>
<td>(-0.396^{**})</td>
</tr>
<tr>
<td></td>
<td>((0.144))</td>
<td>((0.123))</td>
</tr>
<tr>
<td><strong>Regulatory and policy uncertainty</strong></td>
<td>0.364*</td>
<td>0.450**</td>
</tr>
<tr>
<td></td>
<td>((0.175))</td>
<td>((0.202))</td>
</tr>
<tr>
<td><strong>Inconsistent regulatory interpretation</strong></td>
<td>0.060</td>
<td>0.061</td>
</tr>
<tr>
<td></td>
<td>((0.115))</td>
<td>((0.138))</td>
</tr>
<tr>
<td><strong>GDP per capita</strong></td>
<td>(0.294 \times 10^{-2})</td>
<td>(0.309 \times 10^{-2})</td>
</tr>
<tr>
<td></td>
<td>((0.138 \times 10^{-2}))</td>
<td>((0.140 \times 10^{-2}))</td>
</tr>
<tr>
<td><strong>Northern states</strong></td>
<td>(-3.276^*)</td>
<td>(-3.630^*)</td>
</tr>
<tr>
<td></td>
<td>((1.420))</td>
<td>((1.476))</td>
</tr>
<tr>
<td><strong>Southern states</strong></td>
<td>0.684</td>
<td>0.849</td>
</tr>
<tr>
<td></td>
<td>((0.469))</td>
<td>((0.539))</td>
</tr>
<tr>
<td><strong>Software sector</strong></td>
<td>(-0.0709)</td>
<td>(-0.152)</td>
</tr>
<tr>
<td></td>
<td>((1.022))</td>
<td>((1.083))</td>
</tr>
<tr>
<td><strong>ITES sector</strong></td>
<td>0.0415</td>
<td>(-0.0937)</td>
</tr>
<tr>
<td></td>
<td>((0.837))</td>
<td>((0.925))</td>
</tr>
<tr>
<td><strong>Media &amp; ent. sector</strong></td>
<td>0.203</td>
<td>0.291</td>
</tr>
<tr>
<td></td>
<td>((0.820))</td>
<td>((0.865))</td>
</tr>
<tr>
<td><strong>Domestic firm threat</strong></td>
<td>(-0.001)</td>
<td>(-0.135)</td>
</tr>
<tr>
<td></td>
<td>((0.142))</td>
<td>((0.203))</td>
</tr>
<tr>
<td><strong>Foreign firm threat</strong></td>
<td>(-0.171^{**})</td>
<td>(-0.243^{***})</td>
</tr>
<tr>
<td></td>
<td>((0.057))</td>
<td>((0.067))</td>
</tr>
<tr>
<td><strong>Informal firm threat</strong></td>
<td>(0.296^{***})</td>
<td>(0.330^{**})</td>
</tr>
<tr>
<td></td>
<td>((0.0589))</td>
<td>((0.109))</td>
</tr>
<tr>
<td><strong>Informal firm threat \times diversification</strong></td>
<td>(-1.052^{***})</td>
<td>(-0.703^{*})</td>
</tr>
<tr>
<td></td>
<td>((0.124))</td>
<td>((0.355))</td>
</tr>
<tr>
<td><strong>Log-likelihood</strong></td>
<td>(-43.218)</td>
<td>(-40.208)</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>157</td>
<td>157</td>
</tr>
</tbody>
</table>

***p < 0.001; **p < 0.01; *p < 0.05; †p < 0.1;  ‡p < 0.001

Robust standard errors in parentheses. Public firm dummy omitted for perfect correlation in Models 1 and 2.

Finally, several results for other variables in both corruption and HR training investment models are noteworthy. First, in the corruption models (Table 3), the coefficient for perceived competitive threat from foreign competitors is negative and statistically significant, suggesting that the higher the perceived threat from the foreign firms sector, the less likely a focal firm will be to engage in corruption. Similarly, in the HR training investment models (Table 4), the coefficient for perceived...
Table 4. Regressions results for firms’ investment in HR training

<table>
<thead>
<tr>
<th></th>
<th>Ordered HR-training</th>
<th>Binary HR-training</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>−0.718†</td>
<td>−0.770</td>
</tr>
<tr>
<td></td>
<td>(0.431)</td>
<td>(0.541)</td>
</tr>
<tr>
<td><strong>Diversification</strong></td>
<td>0.485*</td>
<td>0.398*</td>
</tr>
<tr>
<td></td>
<td>(0.201)</td>
<td>(0.199)</td>
</tr>
<tr>
<td><strong>Technology capability</strong></td>
<td>−0.0639</td>
<td>−0.647*</td>
</tr>
<tr>
<td></td>
<td>(0.276)</td>
<td>(0.264)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>−0.122</td>
<td>−0.128</td>
</tr>
<tr>
<td></td>
<td>(0.147)</td>
<td>(0.158)</td>
</tr>
<tr>
<td><strong>Size</strong></td>
<td>0.208*</td>
<td>0.192*</td>
</tr>
<tr>
<td></td>
<td>(0.082)</td>
<td>(0.084)</td>
</tr>
<tr>
<td><strong>Foreign ownership share</strong></td>
<td>0.0932 × 10⁻²</td>
<td>0.144 × 10⁻²</td>
</tr>
<tr>
<td></td>
<td>(0.232 × 10⁻²)</td>
<td>(0.279 × 10⁻²)</td>
</tr>
<tr>
<td><strong>Advertisement</strong></td>
<td>0.248*</td>
<td>0.336**</td>
</tr>
<tr>
<td></td>
<td>(0.115)</td>
<td>(0.119)</td>
</tr>
<tr>
<td><strong>Public firm</strong></td>
<td>0.595*</td>
<td>0.637*</td>
</tr>
<tr>
<td></td>
<td>(0.278)</td>
<td>(0.288)</td>
</tr>
<tr>
<td><strong>GDP per capita</strong></td>
<td>−0.263 × 10⁻³</td>
<td>−0.305 × 10⁻³</td>
</tr>
<tr>
<td></td>
<td>(0.196 × 10⁻³)</td>
<td>(0.232 × 10⁻³)</td>
</tr>
<tr>
<td><strong>Northern states</strong></td>
<td>0.088</td>
<td>0.024</td>
</tr>
<tr>
<td></td>
<td>(0.284)</td>
<td>(0.301)</td>
</tr>
<tr>
<td><strong>Southern states</strong></td>
<td>−0.036</td>
<td>−0.146</td>
</tr>
<tr>
<td></td>
<td>(0.223)</td>
<td>(0.221)</td>
</tr>
<tr>
<td><strong>Software sector</strong></td>
<td>−0.023</td>
<td>−0.054</td>
</tr>
<tr>
<td></td>
<td>(0.221)</td>
<td>(0.189)</td>
</tr>
<tr>
<td><strong>ITES sector</strong></td>
<td>−0.484</td>
<td>−0.523</td>
</tr>
<tr>
<td></td>
<td>(0.318)</td>
<td>(0.347)</td>
</tr>
<tr>
<td><strong>Media &amp; ent. sector</strong></td>
<td>0.063</td>
<td>0.054</td>
</tr>
<tr>
<td></td>
<td>(0.201)</td>
<td>(0.178)</td>
</tr>
<tr>
<td><strong>Domestic firm threat</strong></td>
<td>0.113</td>
<td>0.0666</td>
</tr>
<tr>
<td></td>
<td>(0.097)</td>
<td>(0.102)</td>
</tr>
<tr>
<td><strong>Informal firm threat</strong></td>
<td>−0.269***</td>
<td>−0.304***</td>
</tr>
<tr>
<td></td>
<td>(0.066)</td>
<td>(0.052)</td>
</tr>
<tr>
<td><strong>Foreign firm threat</strong></td>
<td>0.159*</td>
<td>0.180†</td>
</tr>
<tr>
<td></td>
<td>(0.0781)</td>
<td>(0.108)</td>
</tr>
<tr>
<td><strong>Foreign firm threat × technological capability</strong></td>
<td>0.309*</td>
<td>4.391***</td>
</tr>
<tr>
<td></td>
<td>(0.139)</td>
<td>(0.560)</td>
</tr>
<tr>
<td><strong>Log-likelihood</strong></td>
<td>−251.238</td>
<td>−248.350</td>
</tr>
<tr>
<td></td>
<td>269</td>
<td>269</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>269</td>
<td>269</td>
</tr>
</tbody>
</table>

***p < 0.001; **p < 0.01; *p < 0.05; †p < 0.1; Robust standard errors in parentheses.

Competitive threat from the informal sector is negative and statistically significant. It implies that the higher the perceived threat from the informal sector, the less likely a focal firm will be to invest in HR training. We also find that domestic firm threat does not have a statistically significant coefficient in both the corruption and HR training investment models. We further investigate this point in the post hoc analysis section. Interestingly, the technology capability variable itself has a negative coefficient in the full HR training investment models (Models 2 and 4 in Table 4). This may suggest that technologically capable firms may not need to invest in HR training in general as such investments may be redundant, and may invest in HR training only when they perceive competitive threat from foreign firm rivals.

**Robustness checks and post hoc analysis**

We performed multiple robustness checks and post hoc analyses, and we report here the two notable
First, we reexamined our models by using a relative measure of competitive threats. In our main analysis, we used raw scores on the competitive threat questions as measures of the levels of perceived competitive threat by a focal firm from three competitor groups. We explored whether our results hold even when we incorporate the threat level experienced by a firm from a particular competitor group relative to another reference competitor group. To examine this, we followed Venkatraman’s (1989) approach and estimated two sets of regression residuals: (1) relative level of threat from informal firms vis-à-vis domestic firms, and (2) relative level of threat from foreign firms vis-à-vis domestic firms. The results are reported in Table S1. We found our main results to hold with this alternative threat measure.

Second, we explored whether our results of non-significant coefficient for the variable “threat from domestic competitors” is generalizable. Our results above for both corruption and HR training models consistently provide nonsignificant coefficients for the variable “threat from domestic competitors.” One reason for this could be that domestic firms’ sector is a broad and high-level strategic group. The strategic groups literature indicates that managers categorize competitors using multiple layers in a taxonomy (Porac and Thomas, 1994). Accordingly, a focal firm in our sample may perceive competitive threats heterogeneously only at lower levels of the “domestic firms” taxonomy (e.g., IT services, BPO, animation firms), and this may explain why threats from domestic competitors at the highest level of the taxonomy may not impact a focal firm’s actions. To investigate this point, we conducted an analysis using focal firm’s physical capacity expansion as another competitive action in the resource-space. Results in Table S2 show a systematic pattern for this firm action: a firm’s capacity expansion is influenced by threats from informal and foreign firms, but not by threat from domestic firms. Accordingly, we conclude that our main results about threat from domestic firms are generalizable.

Furthermore, we also checked whether our main results vary depending on a focal firm’s foreign ownership and its international operation using information from the survey, and we obtained results similar to those reported. Moreover, in our main regression models, we used GDP per capita to capture heterogeneity among Indian states. We replaced this variable with Human Development Index, which is another appropriate measure to capture economic levels of states. Data for this variable was obtained from Government of India’s 2008 National Human Development Report of India. Use of this variable also produced results similar to those reported.

**DISCUSSION AND CONCLUDING REMARKS**

Given increasing competitive pressures throughout the world, scholars have begun paying more attention to the mechanisms underlying firm actions in response to competitor threats (D’Aveni, Dagnino, and Smith, 2010). Our analysis of the Indian IT industry reveals that a firm’s engagement in corruption and investment in HR training, as competitive actions in the nonmarket and resource-market spaces, are systematically influenced by managerial perceptions of threats from informal and foreign sector competitors, respectively. We also find that these relationships are contingent on a focal firm’s profile, namely firm diversification and technological capability. We find our results to be robust through multiple robustness checks.

Our study makes four important contributions. First, it contributes to the emerging scholarly literature on firms’ actions in nonmarket and resource-market spaces. Researchers have recently begun developing conceptual models about firms’ competitive actions in nonmarket and resource-market spaces in response to inter-firm rivalry (Capron and Chatain, 2008; Markman et al., 2009). Yet, we know little about why and how competitive threats influence a firm to take such competitive actions in practice. Our study fills this gap by beginning to bridge the competitive rivalry and strategic groups literatures to understand how managerial perceptions of multiple threats from different competitor groups lead to different competitive actions by firms. While scholars in the competitive rivalry literature highlight the importance of managerial perception of threats (e.g., Chen et al., 2007), they typically consider threats at the firm-dyad level. In contrast, strategic group researchers have emphasized that managerial perceptions about competitor groups influence firm actions. Recent conceptual advances suggest that a firm identifies with multiple competitor groups simultaneously (Anand et al., 2013),
implying that firms may take different competitive actions in systematic ways depending on levels of perceived threats from different competitor groups. Our study combines these ideas and provides empirical evidence that competitive threats from informal sector firm and foreign firm groups predispose a focal firm to engage in corruption and invest in HR training in systematic ways. Overall, our study extends, and begins integrating, the two main streams of competitive strategy.

Second, and related to the above, we show that competitive actions in response to threats from different competitor groups are contingent on firms’ resource and market profiles. Competitive rivalry literature has shown that resource similarity and market commonality can lead to increased rivalry among firms (Chang and Xu, 2008; Chen, 1996). Based on these notions and the emerging markets context, we argued that diversification and technological capability moderate the relationship between threat from a particular competitor group and firm actions of corruption and HR training in systematic ways. Our results provide evidence supporting our arguments, thereby further extending the literature on strategic groups and competitive rivalry.

Third, our study also extends the nonmarket strategy literature in two significant ways. One critical distinction of our study from previous studies on nonmarket strategies is that our study examines corruption, which is illegal by its nature, whereas previous studies of nonmarket strategy (e.g., Schuler, 1996) have generally examined legal nonmarket actions. The potential risks from engaging in illegal activities are much higher than engaging in legal nonmarket activities (e.g., lobbying). Thus, as Mishina et al. (2010) posit, a firm will be careful while engaging in illegal activities. We extend the nonmarket strategy literature by developing theoretical arguments about the conditions under which a firm is more likely to engage in illegal activities. Further, prior studies on nonmarket strategy have examined nonmarket actions of domestic firms in developed countries against foreign firms from developing countries (e.g., Schuler, 1996). We extend this literature by examining resource-market actions of domestic firms in developing countries against threats posed by foreign firms from developed countries.

Finally, this is one of the first studies to empirically examine competitive rivalry and competitive actions in emerging markets. This contribution brings to fore relatively unexplored competitive actions, particularly corruption, and the role of relatively unexplored competitive groups, particularly, the informal sector. Moreover, we extend the nascent research area of group-level rivalry in emerging markets that has recently focused on firm performance implication from rivalries between groups (e.g., Chang and Xu, 2008) by theorizing a link between threats from rivals in emerging markets and systematic actions by firms in response.

This study is not without limitations, which also imply intriguing extensions for future studies. First, strategic group configuration theory, one of the foundational theoretical perspectives used for developing our logics, proposes disidentification and ambivalent identification of a firm with one or more strategic groups in addition to its identification relationship with those strategic groups (Anand et al., 2013). For simplifying our theoretical integration, however, we only considered a firm’s identification relationships as contributing to its perceived competitive threats. Further, data for disidentification and ambivalent identification relationships were also not available in the World Bank dataset used for this study. We acknowledge the possibility that the perceived threats would also depend on the firm’s disidentification and ambivalent identification relationships, and believe that this limitation provides an interesting future research opportunity.

Second, previous empirical studies of competitive actions often use the count measure of competitive actions. In contrast, the measure of competitive actions in our study is dichotomous due to the nature of the World Bank data used in this study. The dichotomous measures are theoretically appropriate for examining the likelihood of the two competitive actions considered in our study. However, we expect future studies to employ alternative measures for these or similar competitive actions. Third, while our assumption that most foreign firms in the IT industry in India are from developed countries is fairly reasonable, our dataset does not allow us to break down their national origins. Fourth, survey data used in this study is cross-sectional in nature, and may limit our conclusions about causality. However, our theoretical logic underlying the proposed relationships is rooted in the competitive rivalry and strategic groups theories, which mitigates this concern. Further, our robustness check results are consistent
with our main results, lending further support to the hypothesized causal relationships. Finally, we acknowledge that the corruption measures used in the World Bank survey data have sometimes been criticized for their reliability (Razafindrakoto and Roubaud, 2010). However, given the inherent difficulties in collecting information on corruption activities, we believe this corruption measure and related data are among the most reliable that are available.

In conclusion, this study is an important step toward enhancing our understanding of competitive rivalry in emerging markets by examining how firm actions in both nonmarket and resource-market spaces result from perceived threats emanating from different competitor groups. We hope it will stimulate further conversations among researchers who seek to explore the finer nuances of the linkages and mechanisms that connect strategic groups, competitive rivalry, and competitive actions in nonmarket and resource-market spaces.

ACKNOWLEDGEMENTS

We gratefully acknowledge the support of World Bank by providing us the survey dataset used in this study. We are also grateful to John Prescott for providing insightful comments on an earlier version of this article.

REFERENCES


Non-Market and Resource Market Actions


A. Iriyama, R. Kishore, and D. Talukdar

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Figure S1. Plots of interaction effects of informal firm threat and focal firm diversification; (a) interaction effect, (b) $z$-static.

Figure S2. Plots of interaction effects of foreign firm threat and focal firm technological capability; (a) interaction effect, (b) $z$-static.

Table S1. Regression results for relative measures of competitive threat

Table S2. Regression results for new capacity expansion

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DOI: 10.1002/smj