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Time to give up? The Speed of Abandoning Large-scale Investments in an Emerging Market: The Role of Increased Presence by Competitors

Keld Laursen
Copenhagen Business School
Department of Strategi and Innovation
kl.si@cbs.dk

Ram Mudambi
Temple University
Fox School of Business
ram.mudambi@temple.edu

Larissa Rabbiosi
Copenhagen Business School
Strategy and Innovation
lr.int@cbs.dk

Abstract

Taking the competitive dynamics approach we study the issue of firms' exit in response to the threat of entry or expansion in the presence of sunk costs. We scrutinize this issue by analyzing investment project abandonment. We study when firms abandon ongoing projects in response to investments by rivals that are either domestic or foreign. Due to their access to financial, brand-related, technological and managerial resources, we argue that domestic firms are weaker than are foreign firms when facing increased presence by competitors, and are hence exit faster due to the threat. This implies that domestic firms exit faster when they face threats of increased presence by both domestic and foreign firms, while foreign firms only exit faster in the face of increased presence by other foreign firms. However, due to the liability of foreignness the increased presence by foreign firms is more likely to lead to faster exit for both foreign and domestic firms when it happens as an extension of existing production capacity as compared to de novo entry. Finally, due to labor market dynamics, we posit that investments by foreign rivals within the same geographical cluster matters only for the speed of exit of domestic firms, not for the time to exit of foreign firms. Using survival model on a panel dataset of 3,325 investment projects in India from 1995 to 2015, we find overall support for our ideas.

Time to give up? The Speed of Abandoning Large-scale Investments in an Emerging Market: The Role of Increased Presence by Competitors

The growth of high and medium technology industries in emerging economies has been truly remarkable over the past couple of decades. With this growth, competition between rival actors, in emerging markets, both foreign and domestic, has intensified (Woetzel *et al.*, 2018). However, despite a few important contributions (e.g., Chang and Xu, 2008; Xia and Liu, 2017) our understanding of the dynamics of competition in such environments remains limited. Multinational corporations (MNCs) from advanced economies are increasingly entering emerging economies and competing with local firms. In these economies, foreign and domestic firms compete both within shared and across different geographical locations (Lamin and Ramos, 2016). Our starting point is that competition between foreign and local firms under these conditions involves considerable resource and capability heterogeneity among the competitors.

The central focus of the extant literature on competitive rivalry has arguably been on *offensive* countermoves to initial competitive moves (e.g., Yu and Albert A. Cannella, 2007; Li, 2008). However, our focus is a *defensive* countermove in the form of potential abandonment of on-going large-scale investment projects. Such a countermove may be particularly salient in the context of emerging economies, a context in which the resources needed for offensive countermoves may often be limited. Our theoretical starting point is that heterogeneity in resources and capabilities induces competitive asymmetry, "the notion that a given pair of firms may not pose an equal threat to each other." (Chen, 1996: 102). Against this backdrop, we ask why and how fast foreign and domestic firms may decide to abandon ongoing large-scale investment projects as a response to intensified competition due to same-industry entry or expansion by other foreign and domestic firms. We also ask whether the answer depends on foreign firms'

embeddedness in the focal country and on the competing firms being geographically collocated or not.

Long ago Schumpeter (1942/87: 82-83) pointed out that "The essential point to grasp is that in dealing with capitalism we are dealing with an evolutionary process… [This process] incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism." At the level of the firm, this observation implies that not only is it important from time to time to engage in new business activities, it may also be important to close some down (Eliasson, 1991). Indeed, while entry decisions into new areas of business are of central importance to most businesses, exit decisions from exiting activities, although less studied, are arguably often of equal importance to long term profitability (Elfenbein and Knott, 2015). For this reason, exit decisions from business activities are most often of critical importance to strategic management and this should not be less so in an emerging market context. Exit decisions can take different forms, ranging from products (de Figueiredo and Kyle, 2006) over entire lines of business being dissolved while the assets are sold off (e.g. Mitchell, 1994; Mata and Portugal, 2000) to lines of business being sold off as a whole (e.g. Montgomery, Thomas, and Kamath, 1984; Feldman, 2014). As pointed out above, here we consider the speed of firms' exit decisions regarding on-going major investment projects involving significant sunk costs. One critical — but little researched — factor that can drive exit concerns exposure to competition through rival entry or expansion into the product market (however, see, Baum and Korn, 1996; de Figueiredo and Kyle, 2006; Chang and Xu, 2008).

Following the competitive dynamics approach (e.g., Chen and Miller, 1994; Ferrier, Smith, and Grimm, 1999; Wang and Shaver, 2014; Luoma, Ruutu, King, and Tikkanen, 2017), we take

as our starting point the presence of considerable resource heterogeneity among entrants (being domestic or foreign) and incumbents (being domestic or foreign) (Chen, 1996), and that this heterogeneity will be critical in determining the incumbent's response to the entry or expansion event in terms of how fast to abandon the investment. Entrants or expanding firms may or may not be rich in resources and capabilities in terms of finances, brand-recognition and knowledge, and they may or may not be embedded in the local business context and plugged into local buyer-supplier networks. Such heterogeneity in resources and capabilities induces the competitive asymmetry alluded to above. In this paper, we posit a model of entry/expansion and incumbent exit responses allowing for incumbent-entrant/expansion pairings while placing competitive asymmetry at the center of the analysis. The bulk of the literature has focused on incumbents' attempts to deter entry (e.g., Li, 2008), where success is defined as the entrant abandons its attempt (Wilson, 1992) or on entrants' decision to avoid markets where certain incumbents are present (e.g., Alcácer and Chung, 2007; Rose and Ito, 2008). We explore the novel, complementary scenario of the speed of the incumbent abandoning its investment in response to entry or expansion.

Due to their access to financial, brand-related technological and managerial resources, we argue that domestic firms are weaker than are foreign firms when facing an increased presence by competitors, and are hence faster to exit due to the new threat. This implies that domestic firms are faster to exit when they face threats of increased presence by both domestic and foreign firms, while foreign firms only exit fast in the face of threats by other foreign firms. However, we posit that due to a decreased liability of foreignness, the increased presence by foreign firms will lead to faster exit for both foreign and domestic firms when it happens as an expansion of existing production capacity as compared to new entry. Finally, due to competition for human capital, we argue that investments by foreign rivals within the same geographical cluster matters only for the

time to exit of domestic firms, not for the time to exit for foreign firms. Using a Cox proportional hazards model on a panel dataset of 3,325 investment projects in India from 1995 to 2015, we find support for our arguments.

Theoretical and empirical background

Competitive reactions. According to the competitive dynamics approach, competitive dynamics "…is the study of interfirm rivalry based on specific competitive actions and reactions, their strategic and organizational contexts, and their drivers and consequences" (Chen and Miller, 2012: 137). Within this literature, Chen (1996) makes an important distinction between dyads of competitors' *market commonality* and *resource similarity.* Market commonality is defined as the degree of presence that a competitor manifests in the markets it overlaps with the focal firm while resource similarity can be defined as "…the extent to which a given competitor possesses strategic endowments comparable, in terms of both type and amount, to those of the focal firm." (Chen, 1996: 106-107). In this paper, we assume that, given the entry into the same geographical context (India), there is an important degree of market commonality between the firm increasing its presence and the incumbent. In contrast, at the theoretical level, we focus on resource asymmetries (/similarities) as the central driver of incumbents' competitive reactions pertaining to whether or not to abandon a major on-going investment activity. We focus on three central aspects of resource dissimilarities in terms of foreign or domestic ownership, embeddedness in the local geography and in terms of competition in product or input (labor) markets.

Exit decisions. Exit decisions can take different forms. For instance, products (de Figueiredo and Kyle, 2006) or product innovation projects can be abandoned (Lhuillery and Pfister, 2009; Leoncini, 2016), entire lines of business can be dissolved while the assets are sold off (e.g. Mitchell, 1994; Mata and Portugal, 2000), or they can be divested as a whole (e.g. Montgomery *et*

al., 1984; Feldman, 2014). There is quite a substantial literature on the drivers of this sort of creative destruction. We know that firm's exit decisions from business activities are affected by a number of organizational factors such as age, firm size, type of entry, corporate coherence concerns (e.g., Mitchell, 1994; Bergh, 1995; Mata and Portugal, 2000; Lhuillery and Pfister, 2009), factors that pertain to corporate governance (e.g. Sanders, 2001; Shimizu and Hitt, 2005; Feldman, Amit, and Villalonga, 2016), as well as various kinds of experience, including for instance, performance-related experience, innovation experience, and divestiture experience (e.g., Montgomery and Thomas, 1988; Chang and Singh, 1999; Shimizu and Hitt, 2005; Leoncini, 2016). However, the literature on firm-level exit from business activities has only to a very limited degree dealt with an arguably central determinant of exit, namely exposure to competition through rival entry into the product market.

In this paper, we address the issue of the drivers of the speed with which firms decide to abandon on-going large-scale investment projects while focusing specifically on competition due to same-industry entry or expansion. Within the firm-level creative destruction literature alluded to above very few papers deal with the issue of competition as a driver of business activity exit by incumbent firms. In their analysis of competition in the airline industry, Baum and Korn (1996) show that as market domain overlap increase, raising the intensity of competition, airlines' exit from current routes increased and that firms' exit rates from a market will be lower when incumbents have high multimarket contact in that market. In their study of the Dutch newspaper industry, Van Kranenburg et al. (2002) show that, as competition intensifies over the period under scrutiny, the large firms survive, while the smallest newspapers are driven out of the industry. Using data from the laser printer industry, de Figueiredo and Kyle (2006) show that competition and market structure variables have a substantial impact on speeding product exit.

In their study of the Chinese context, Chang and Xu (2008) show that the increased presence of foreign entrants generally benefited local firms at national markets by increasing survival rates, but negatively affected the survival of local firms in regional markets. They also found that foreign entrants were crowded out not only by their peers, but also by reformed local firms at both the national and regional levels. However, to the best of our knowledge no previous work analyzes exit decisions by (heterogeneous) incumbents as a response to observed (heterogeneous) increased competitive presence. We tackle this issue in this paper.

Hypotheses

A domestic incumbent is likely to perceive the entry or expansion of foreign firms as a serious threat. Relative to local competitors, foreign firms (MNCs) typically possess proprietary resources allowing them to enjoy firm-specific advantages, frequently in the shape of finances, superior technologies, brand names, and managerial skills that they can transfer to their local subsidiaries (Buckley and Casson, 1976; Dunning, 1988). In addition, because of those advantages, foreign firms are very visible, and may often be able to attain privileged treatment from local governments due to their bargaining power (Kim, 1988; Chang and Xu, 2008). As a result, entry or expansion by foreign firms in a host emerging market may "bring shock and disequilibrium to a local industry" (Chang and Xu, 2008: 499). The expectation of serious competition in the national product market may in turn trigger competitive reactions by less economically well-endowed, technological inferior domestic firms enjoying weaker brand recognition. Product market competition from foreign firms would have the effect of driving up the quality of products while still maintaining accessible prices. This would in turn decrease revenue in the longer run. Given the competitive asymmetry in place, we argue that the competitive reaction is likely to be defensive in the form of faster abandonment of ongoing investment activities by domestically owned firms.

However, not only expanding foreign firms may pose a threat to domestically owned incumbents, also expansions by domestic competitors can pose a threat in the product market, as these firms' positions are at least in line with those of the incumbent domestic firms. In other words, as domestic firms are typically weaker in terms of access to resources than foreign firms are, an increased presence of any type of firm potentially poses a threat, whether the increased presence is foreign or domestic, and domestic firms may therefore be faster to abandon ongoing investment activities. In sum, we posit:

> Hypothesis 1: The greater the overall investments in production capacity by same-industry domestic or foreign firms, the faster the abandonment of investments in production capacity by domestic incumbent firms.

Given the disadvantages of domestic firms compared to foreign firms, we claim that investments in increased presence through entry or expansion by such firms should not be a threat to incumbent foreign firms in the national market. Above, we have argued that firms can pose a threat to similar firms (domestic firm vs. domestic firm competition). Accordingly, given foreign firms' access to critical resources, an increase in presence by foreign firms may not only be a threat to domestic firms (as we have also argued above), but may also be a threat to incumbent foreign firms in the national market as well (foreign firm vs. foreign firm competition). In other words, while a firm that is in a weaker position regarding access to resources (domestic firms) is unlikely to pose a competitive threat to a firm in a stronger position (foreign firms), a firm that is in a stronger position regarding resources (foreign firms), can pose a competitive threat to another firm in a strong position (foreign firms). In sum, we posit:

Hypothesis 2: The greater the overall investments in production capacity by same-industry foreign firms, the faster the abandonment of investments in production capacity by foreign incumbent firms.

The notion that domestic firms have better access to relevant market information that are more deeply embedded in the national environment, among other things when compared to foreign firms, and hence foreign firms face costs of doing business abroad, was first developed by Hymer (1976) and later dubbed "the liability of foreignness" by Zaheer (1995). This liability of foreignness has been a fundamental assumption in theories of the MNC (Buckley and Casson, 1976; Dunning, 1977; Caves, 1982). A critical mechanism in these theories have been that to overcome the liability of foreignness to compete successfully against local firms, MNCs need to provide their foreign subsidiaries with some firm-specific advantage — as alluded to above, often in the form of finances, superior technologies, brand names, and managerial skills.

We posit that foreign firms that increase their presence are more threatening to incumbent domestic firms when they are expanding from an established base (because they have become embedded over time and hence suffer less from the liability of foreignness) than when production capacity increases through *de novo* entry. Such embeddedness implies that the firm can develop new specific resources and capabilities that fit the local environment (Andersson, Forsgren, and Holm, 2002). In so doing, the foreign firm may reduce the resource and capability deficits that typically retard operations during initial stages of entry (Silverman, 1999; Taussig and Delios, 2015). As posited by Taussig and Delios (2015: 1852) "These new capabilities are tailored to the host country's economic, political, legal, and cultural environments…or even aligned to more specific idiosyncrasies at the country-industry level". Local experience permits a firm to become embedded within local networks and learn about, and become accustomed to local business norms

(Brannen, 2004; Taussig and Delios, 2015). In turn, a firm's embeddedness in local networks should increase its capability to take advantage of locally available financial resources. Indeed, bank screening of borrowers relies to a degree on employee evaluations and related tacit knowledge, the transfer of which is enabled by proximity and local networks (Stiglitz and Weiss, 1981; Taussig and Delios, 2015).

Our argument is that when firms expanding their presence are part of a foreign firm with firm-specific advantages *and* have business experience in the focal country (i.e., the firm is locally embedded) such expansion is perceived to be much more threatening than *de novo* expansion. Such expansion therefore increases the speed of the domestic incumbent abandoning its investment project. We have argued that domestic incumbents are likely to be weaker than are foreign firms because they have poorer potential access to resources and capabilities. Given this argument, domestic incumbents will be faster in abandoning investments in production capacity when foreign firms expand their production capacity, than when foreign firms enter with new production capacity, given that the latter entails a weaker competitive threat because the foreign firm will suffer from the liability of foreignness to a higher degree in the latter case. In sum, we posit:

> Hypothesis 3: Domestic incumbent firms will abandon investments in production capacity faster when same-industry foreign firms expand their production capacity than when same-industry foreign firms enter with new production capacity.

So far, we have considered effects of exit resulting from increased presence by foreign or domestic firms from the point of view of increased competition in the national product market. However, at the level of the geographical cluster, competitive asymmetries emerge not primarily because of product market competition but mainly due to competition for inputs very often in the form of human capital. Indeed, when firms cluster in the same local labor market, they face a trade-off

between the benefits of cluster location, including access to a large pool of workers, and the cost of labor poaching, i.e., the loss of some key workers to competing firms and a higher wage bill to retain other pertinent workers (Krugman, 1998; Combes and Duranton, 2006). When expansion by competitors occur, the expanding firm will be in need of recruiting labor to set up or enlarge the business activity. In the absence of unemployment for key labor inputs, competition for labor inputs implies higher wages in the labor market for the same quality of labor, and hence that the incumbent risks experiencing higher unit costs and lower profits (Cahuc, Postel-Vinay, and Robin, 2006). This may leave production by the incumbent unprofitable, and it could therefore be more profitable to discontinue the investment in production capacity rather quickly if the incumbent cannot prevent the expansion the longer run.

Given that foreign firms typically have a firm-specific advantage over domestic firms, they may benefit relatively more from location in a cluster, as they are likely to be able to put the abundantly available workers into more productive use as compared to domestic firms. Firms that are more productive typically pay higher wages (see for instance, Card, Cardoso, Heining, and Kline, 2018). In this context, it is a well-established stylized fact that foreign firms generally speaking, pay higher wages than domestic firms do (see e.g., Aitken, Harrison, and Lipsey, 1996; Lipsey and Sjöholm, 2004). This implies that increased presence of foreign firms within a geographical cluster in a given industry will tend to create competition for labor inputs and drive up wages. Incumbent foreign firms will be relatively unaffected by this as they are already paying higher wages, while domestic firms will experience increased costs if they attempt to retain their employees. For this reason, within a geographical cluster, domestic firms are threatened by an increased presence by foreign firms, but incumbent foreign firms should not be threatened by such an increased presence. In sum, we hypothesize:

Hypothesis 4: Domestic incumbent firms will abandon investments in production capacity faster than foreign incumbent firms will when same-industry foreign firms increase their overall investments in production capacity within the geographical cluster of the incumbent.

Method

We use data drawn on the CapEx database maintained by the Centre for Monitoring the Indian Economy (CMIE). Capex systematically records investment projects announced since 1995 that involve some capital expenditure and the setting up of production capacity. It distinguishes a completely new production capacity from the substantial expansion of an existing capacity. Only projects that entail a capital expenditure of Rs.10 million or more are included. CapEx provides data on the announcement date and general characteristic of the project (e.g., location, cost), the identity and ownership classification of the investing firm, industry classification of both the project and the firm, and updated information on the status with respect to implementation of the project. Due to the importance of the ownership variables for our study, two independent researchers checked the ownership classification manually. In the cases where the two researchers agreed that the classification was incorrect, we amended the ownership information.

To test our hypotheses we examine the investment project dynamics during the period 1995-2015 in high-tech sectors. Specifically, we study investment behaviors of incumbents and entrants in the sectors of (i) drugs, medicines and allied products, (ii) electronics, (iii) automobile, (iv) automobile ancillaries, (v) non-electrical machinery, and (vi) electrical machinery other than electronics. A project can be an investment in a new plant or a substantial expansion of an existing capacity. Moreover, we focus on the private sector and exclude projects that have majority ownership by governmental bodies or are financed by individuals.

Our dataset consists of 3,333 investment projects by 1,979 investing firms, for a total of 18,768 observations. We define two samples of projects at risk, the sample *projects by domestic incumbents* and the sample *projects by foreign incumbents*. The former sample consists of 2,531 projects by 1,483 domestic-owned investing firms, for a total of 14,702 observations. The latter consists of 802 projects by 496 foreign-owned investing firms, for a total of 4,066 observations.

Measures

The dependent variable, *time until project abandonment*, is measured as the difference between the year of abandonment and the year of announcement for each focal project. A project can be either a new entry (completely new production capacity) or the expansion of an existing capacity. Each project becomes at risk at the year of announcement. In our setting, when a project first comes under observation it also becomes at risk. Instead, each project exits at year *t* if its status is classified as "abandoned" or has been "shelved" or "announced and stalled" for at least two consecutive years.

To measure our independent variables, at each time *t* and for each focal project at risk we study the cost of the investments announced within the same industry of the focal project. At time *t*, the project cost is the latest available cost as given by the company or as estimated by CMIE. Since project costs are reported in current prices, we deflate the values to obtain our variables in constant prices (1995 as the base year). We express all cost-related variables in Billion USD (we used the 1995-1996 annual average exchange rate of Indian Rupees vis-à-vis the US Dollar).[1] We define the following independent variables. *Same-industry total investments by domestic firms in India* is the sum of costs of all investments (i.e. entry and expansions) announced by domestic-

[1] Source: Table 140: Exchange Rate of the Indian Rupee vis-à-vis the SDR, US Dollar, Pound Sterling, D.M./Euro and Japanese Yen (Financial Year-Annual Average and end-Year Rates)". *Handbook of Statistics on Indian Economy*. Reserve Bank of India. 2019-09-15.

owned firms in the same industry of the focal project at time *t*. *Same-industry total investments by foreign firms in India* is the sum of costs of all investments (i.e. entry and expansions) announced by foreign-owned firms in the same industry of the focal project at time *t*.

Same-industry entry investments by foreign firms in India is the sum of costs of all entry investments announced by foreign-owned firms in the same industry of the focal project at time *t*. *Same-industry expansion investments by foreign firms in India* is the sum of costs of all expansion investments announced by foreign-owned firms in the same industry of the focal project at time *t*. Moreover, we distinguish projects based on their geographical location and define these additional variables. *Same-industry total investments in same geo-cluster by domestic firms* is the sum of costs of all investments (i.e. entry and expansions) announced in the same geographical cluster[2] of the focal project by domestic-owned firms in the same industry at time *t*. *Same-industry entry investments in same geo-cluster by foreign firms* is the sum of costs of all entry investments announced in the same geographical cluster of the focal project by foreign-owned firms in the same industry at time *t*. *Same-industry expansion investments in same geo-cluster by foreign firms* is the sum of costs of all expansion investments announced in the same geographical cluster of the focal project by foreign-owned firms in the same industry at time *t*.

We calculate *Same-industry non co-located total investments by domestic firms* as follows: It is the sum of costs of all investments (i.e. entry and expansions) announced by domestic-owned firms in the same industry of the focal project at time *t*, when the focal project is located outside a geographical cluster. When the focal project is located in a geographical cluster we calculate the variable as the sum of costs of all investments (i.e. entry and expansions) announced outside that geographical cluster by domestic-owned firms in the same industry of the focal project at time *t*.

[2] A focal project can be located in one of the following geographical cluster: Bangalore, Chennai, Delhi, Hyderabad, Kolkata, Mumbai, Nashik, Pune, and Surat.

We compute *Same-industry non co-located entry investments by foreign firms* as the sum of costs of all entry investments announced by foreign-owned firms in the same industry of the focal project at time *t*, when the focal project is located outside a geographical cluster. When the focal project is located in a geographical cluster, we calculate the variable as the sum of costs of all entry investments announced outside that geographical cluster by domestic-owned firms in the same industry of the focal project at time *t*. We compute *Same-industry non co-located expansion investments by foreign firms* as the sum of costs of all expansion investments announced by foreign-owned firms in the same industry of the focal project at time *t*, when the focal project is located outside a geographical cluster. When the focal project is located in a geographical cluster, we construct the variable as the sum of costs of all expansion investments announced outside that geographical cluster by domestic-owned firms in the same industry of the focal project at time *t*.

We define also and add to the model a number of control variables. To better capture the overall characteristics of the within-industry investment dynamics, we control for the total number of announced investments (i.e. entry and expansions) by domestic firms at time *t*, the total number of announced entry investments by foreign firms at time *t*, and the total number of announced expansion investments by foreign firms at time *t*. Moreover, we gauge the concentration of announced overall investments by domestic firms at time *t*, the concentration of announced entry investments by foreign firms at time *t*, and the concentration of announced expansion investments by foreign firms at time *t*. We measure the concentration variables as the Herfindahl Index of the cost of rivals' investments in the same industry of the focal project at time *t*.

There are projects that might be at higher risk of abandonment for reasons that differ from competition. In fact, sometimes projects face a hurdle during the implementation. For instance, there might be land acquisition problems or lack of funds or of clearances to move on with the

implementation. Similarly, some projects are stalled midway in their life-cycle and their monitoring is suspended because of a lack of information. However, stalled projects can be revived if the hurdles they face have been overcome. Since CapEx monitors these periods of difficulties, we define the dummy variable *delayed focal project* that takes the value one in each year in which the implementation of the focal project is delayed or stalled. It can also happen that an investing firm is diversifying by announcing a project in an industry different from its primary sector. In this case, the threat perceived by the incumbent might be lower. We control for this situation by introducing the dummy variable *unrelated focal project* that takes the value of one if the industry of the focal project differs from the primary industry of the investing firm. When projects are geographically dispersed they are more difficult to coordinate and implement. Accordingly, we define the dummy variable *multi-location* that equals one if the focal project involves locations in more than one district.

The survival of a project may also depend on the characteristics of its location or the characteristics of the partners involved in the project. To take the location characteristic into account, we define the dummy variable *focal project in a geographical cluster* and the variable *number of same-industry investments in focal project's geographical cluster*. Regarding the characteristics of possible partners involved in the project, we use the information provided by CapEx on the associates (e.g., civil contractors, machinery suppliers, turnkey contractors, etc.) involved in the implementation of the project and define the dummy variable *foreign associate* to be equal to one, when the focal project has at least one foreign associate involved. Finally, we control for the cost (at constant price) of the focal project.

Results

Of the 3,333 total investment projects included in the analysis, 262 (7.9%) were abandoned over the period of this study. These 262 abandoned projects include 53 (6.6%) investments by foreign firms and 209 (8.3%) investments by domestic firms. Tables 1 and 2 report the descriptive statistics and correlation matrix for the samples of projects by domestic incumbents and project by foreign incumbents, respectively.

We run a Cox proportional hazards model in which the abandonment rate of ongoing projects depends on the investment costs by the different types of entrants. That is, we assume that different types of threats (domestic entry, foreign entry, foreign expansions, etc.) do not affect the shape of the overall hazard function, but they do affect the relative risk of abandonment. We specify the time-varying covariates as a linear function of the current time. To account for inter-project correlation because the same firm in some cases undertakes several investment projects, we cluster the standard errors by incumbent investing firms.

Table 3 shows the results of the hypothesis testing. In the Cox model, positive signs of coefficients imply shorter survival times; negative signs longer survival times. In other words, a variable with positive estimate coefficient is a risk factor that increases the speed of project abandonment. Overall, the results show that the effects of domestic and foreign investments on project abandonment differ among projects of domestic incumbents and projects of foreign incumbents and depend on whether projects are co-located in geographical cluster. Specifically, in Model 1 the coefficients of *same-industry total investments by domestic firms in India* and *same-industry total investments by foreign firms in India* are positive and statistically significant. That is, domestic incumbent firms abandon their investments faster when the overall investments in production capacity by same-industry domestic or foreign firms increase. Recalling that the

formula [exp(estimated coefficient) – 1]×100 denotes percentage change in survival probability by one unit change of a covariate in question, we find that one unit increase in the same-industry total investment costs by domestic firms decreases the survival probability of domestic incumbents' projects by 1.5%.

The decrease in domestic incumbents' project survival probability is of 1.2% if the same-industry total investment costs by foreign firms increases of one unit. These results yield for Hypothesis 1. In Model 2, only the coefficient of the variable *same-industry total investments by foreign firms in India* is positive and significant. Accordingly, the findings corroborate Hypotheses 2. Based on the estimated coefficient, the speed with which foreign incumbents abandon their own investment projects increases of about 3% with one unit increase of same-industry investments made by other foreign-owned firms. The results of Model 3 show that domestic incumbents abandon their investments faster when facing same-industry expansion investments than entry investments by foreign firms. The coefficients of *same-industry entry investments by foreign firms in India* and *same-industry expansion investments by foreign firms in India* are both positive and significant. However, the latter is statistically greater than the former (chi2(1) = 9.82 and p-value = 0.002). This evidence is in line with Hypothesis 3.

Considering the magnitude of the effects, a one-unit increase of same-industry entry investments by foreign firms increases the speed with which domestic incumbents abandon their own investment projects by about 1% When the unit change concerns the expansion investments of foreign firms the domestic incumbents' speed of project abandonment increases by about 53%. It is interesting to note that same-industry expansions by foreign firms are about 51 times more threatening than new foreign firms' investments also for foreign incumbents. Finally, in Model 5 the coefficients of *same-industry entry investments in same geo-cluster by foreign firms* and *same-*

industry expansion investments in same geo-cluster by foreign firms are both positive and statistically significant. On the other hand, in Model 6 the coefficients pertaining to the same variables are not statistically significant. These results provide support for Hypothesis 4. That is, domestic incumbent firms abandon their investments faster than foreign firms do when same-industry foreign competitors invest in the same geographical cluster of the incumbents' project.

A formal test of whether the coefficients of *same-industry entry investments in same geo-cluster by foreign firms* and *same-industry expansion investments in same geo-cluster by foreign firms* in Model 5 are significantly higher than the coefficients of the same respective variables in Model 6, can be obtained by applying a T-test after a seemingly unrelated estimation (suest). As the Cox proportional hazard model is semi-parametric (i.e., suest cannot be estimated), we first re-estimate Models 5 and 6 with a discrete time survival analysis using a logistic distribution and consequently apply the T-test after the seemingly unrelated estimation. We find that the difference between the coefficients of *same-industry expansion investments in same geo-cluster by foreign firms* is statistically significant at $p<0.02$ ($chi2(1) = 5.71$) but there is no statistical difference for the coefficients of *same-industry entry investments in same geo-cluster by foreign firms*. In terms of magnitude, while projects of foreign incumbents are not threatened by same-industry and geographically co-located expansion investments by other foreign firms, a one-unit increase of this type of threat increases the speed with which domestic incumbents abandon their own projects by about 182%

Robustness checks

To verify the validity of our results, we performed a number of robustness checks (results available upon request). We tested and confirmed the parallel assumption necessary for estimating Cox proportional hazards models. We investigated also the results of the Cox proportional hazards

model with alternative measures of the threatening investments. Specifically, instead of considering the total costs of the different type of threatening investments we identified the highest cost of the investment announced within each type of threat. Thus, we defined the variables *same-industry major investment by domestic firms* as the highest cost of the investments announced by domestically-owned firms in the same industry of the focal project at time *t*; *same-industry major investment by foreign firms* is measured as the highest cost of the investments announced by foreign firms in the same industry of the focal project at time *t*; *same-industry major entry investment by foreign firms* is measured as the highest cost of the entry investments announced by foreign-owned firms in the same industry of the focal project at time *t*; and *same-industry major expansion investment by foreign firms* is measured as the highest cost of the expansion investments announced by foreign firms in the same industry of the focal project at time *t*.

We followed the same logic to define the variables for the major investments that are geographically co-located and not co-located. The results are robust with respect to the different measure of the independent variables but the threat of investments of same-industry domestic firms on the projects of domestic incumbents becomes weaker. Moreover, we found that the results are mostly unchanged if we consider the investments in new units only (and exclude expansion investments) as projects at risk. We also estimated our models by employing the accelerate failure time (AFT) model which uses weights to control right censored observations (project abandonments that are not observable within the sample period). Based on the signs and statistical significance of the estimated coefficients, the AFT model confirms our main findings.

Conclusion and Discussion

We began this paper by taking the competitive dynamics approach with the aim of studying the issue of the speed of firms' exit in response to the threat of entry and expansion in the presence of

sunk costs in an emerging economy context. We scrutinized this by analyzing investment project abandonment under the threat of competitive entry and expansion. We argued that there is heterogeneity in the speed by which firms react when it comes to decisions regarding maintaining or abandoning significant on-going investment activities in the face of same-industry increased presence by other firms, and that this heterogeneity gives rise to competitive asymmetry. Due to their access to resources, we reasoned that domestic firms are weaker than are foreign firms when facing increased presence by competitors, and are hence exit faster due to a threat. Hence, domestic firms exit faster when they face threats of increased presence by both domestic and foreign firms, while foreign firms only exit faster in the face of increased presence by other foreign firms. Nevertheless, due to the liability of foreignness the increased presence by foreign firms is more likely to lead to faster exit for both foreign and domestic firms when it happens as an extension of existing production capacity as compared to new entry. Finally, we claimed that investments by foreign rivals within the same geographical cluster matters only for the speed of exit of domestic firms, not for the time to exit of foreign firms. We found overall empirical support for these arguments.

This paper makes three central contributions to the literature. First, we contribute to the literature on competitive dynamics (e.g., Chen and Miller, 1994; Ferrier *et al.*, 1999; Wang and Shaver, 2014; Luoma *et al.*, 2017) by having advanced a theory that predicts defensive countermoves to initial competitive moves in the form of potential abandonment of on-going large-scale investment projects as opposed to the prior focus in the literature on potential offensive countermoves. In developing our theory, we held market commonality constant and focused on resource asymmetries. While doing so, we have specified some important boundary conditions by theoretically linking the defensive countermoves to heterogeneity in access to resources through

the ownership of the incumbent firm (domestic versus foreign) and to heterogeneity in access to resources among the firms increasing their presence depending on their ownership, local embeddedness, and possible geographical co-location with the incumbent.

We contribute also to the literature on resource redeployment and "creative destruction" (de Figueiredo and Kyle, 2006; Wu, 2013; Giarratana and Santaló, 2020). We take a novel approach to resource redeployment wherein firms' take current action in response to potential future underperformance, rather than responding to actual underperformance. In a sense, this complements the entry deterrence literature (e.g., Salop, 1979; Dixit, 1980) wherein firms respond to potential competition (in addition to current competition). Closely related, at the macro level of the whole economy, Gunnar Eliasson (1991) pointed out that "killing" underperforming firms thereby releasing the resources "trapped" within them, is more important than ensuring the growth of high performing firms. Eliasson based the reasoning on the observation that underperforming firms are typically older and larger whereas high performing firms are typically younger and smaller. It is possible to interpret our arguments and evidence as extending this reasoning to the project level *within firms*. The reasoning is the same, i.e., ongoing projects typically tie up large resource pools, which firms to an extent can redeploy to fund many nascent projects in the form of real options. The downside risk of such a diversified basket of new projects is likely to be substantially smaller than that of the existing project under threat. Indeed, the literature has demonstrated that minimizing downside risk drives a substantial part of managerial decision-making (Kahneman and Tversky, 1979; Greve, Rudi, and Walvekar, 2019).

Finally, our paper contributes to the academic debates over embeddedness and the liability of foreignness. Embedded foreign firms in emerging markets typically have vertical buyer-supplier as well as horizontal partnership linkages with a range of local firms. This gives such firms "insider

status" within the local markets (Johanson and Vahlne, 2009; Cantwell and Mudambi, 2011). As we have argued and empirically corroborated in this paper, such status implies that the threat posed by an embedded foreign firm emanates from its entire network and not from the foreign firm alone. This finding implies that the liability of foreignness may be of a shorter-term nature and that the liability tends to diminish as a function of local experience.

Our paper has important implications for managerial practice. One central implication pertains to domestic firms; they need to consider exiting fast from large-scale investments, when competitive entry and expansion occurs no matter whether the competing firm increasing it presence is domestic or foreign. Foreign firms need only be concerned in the case of potential rival entry or expansion by other foreign firms. Increased presence by foreign firms as an extension of existing production capacity as compared to de novo entry should be a particular concern for both foreign and domestic firms and they need to consider exiting fast as a result. Finally, investments by foreign rivals within the same geographical cluster matters only as threat to domestic firms and they may need to exit fast not to lose even more from the increased competition.

This research has some limitations. First, we rely on same-industry entry or expansion as our measure of the initial competitive move, even if firms within the same industry may serve different niches that caters for different customers. However, even if this could be an issue we believe that the emerging market context to an extent alleviates the problem. In addition, to the extent that it remains problem, our coefficients should represent conservative estimates. Second, we do not have access to many firm-level variables in our study. In particular, we do not have information about the extent to which the firms in our sample are export oriented. This could be critical as a high export orientation by incumbent or firms expanding their presence implies a lower importance of the local Indian product market with respect to competition. Nevertheless, to the

extent that the export orientation of the pertinent firms is heterogeneous among firms, our paper should give conservative estimates of the hypothesized effects. Despite these limitations, however, we hope that the present paper will be considered a first step toward establishing an exciting research agenda which investigates further defensive countermoves to initial competitive moves in the emerging market context.

References

Aitken B, Harrison A, Lipsey RE. 1996. Wages and Foreign Ownership a Comparative Study of Mexico, Venezuela, and the United States. *Journal of International Economics* **40**(3): 345-371.

Alcácer J, Chung W. 2007. Location Strategies and Knowledge Spillovers *Management Science* **53**(5): 760-776.

Andersson U, Forsgren M, Holm U. 2002. The Strategic Impact of External Networks: Subsidiary Performance and Competence Development in the Multinational Corporation. *Strategic Management Journal* **23**(11): 979-996.

Baum J, A. C., Korn HJ. 1996. Competitive Dynamics of Interfirm Rivalry. *The Academy of Management Journal* **39**(2): 255-291.

Bergh DD. 1995. Size and Relatedness of Units Sold: An Agency Theory and Resource-Based Perspective. *Strategic Management Journal* **16**(3): 221-239.

Brannen MY. 2004. When Mickey Loses Face: Recontextualization, Semantic Fit, and the Semiotics of Foreignness. *The Academy of Management Review* **29**(4): 593-616.

Buckley P, Casson M. 1976. *The Future of the Multinational Enterprise*. Holmes & Meier: New York.

Cahuc P, Postel-Vinay F, Robin J-M. 2006. Wage Bargaining with on-the-Job Search: Theory and evidence. *Econometrica* **74**(2): 323-364.

Cantwell JA, Mudambi R. 2011. Physical Attraction and the Geography of Knowledge Sourcing in Multinational Enterprises. *Global Strategy Journal* **1**(3-4): 206-232.

Card D, Cardoso AR, Heining J, Kline P. 2018. Firms and Labor Market Inequality: Evidence and Some Theory. *Journal of Labor Economics* **36**(S1): S13-S70.

Caves RE. 1982. *Multinational Enterprise and Economic Analysis*. Cambridge University Press: New York.

Chang SJ, Singh H. 1999. The Impact of Modes of Entry and Resource Fit on Modes of Exit by Multibusiness Firms. *Strategic Management Journal* **20**(11): 1019-1035.

Chang SJ, Xu D. 2008. Spillovers and Competition among Foreign and Local Firms in China. *Strategic Management Journal* **29**(5): 495-518.

Chen M-J. 1996. Competitor Analysis and Interfirm Rivalry: Toward a Theoretical Integration. *The Academy of Management Review* **21**(1): 100-134.

Chen M-J, Miller D. 1994. Competitive Attack, Retaliation and Performance: An Expectancy-Valence Framework. *Strategic Management Journal* **15**(2): 85-102.

Chen M-J, Miller D. 2012. Competitive Dynamics: Themes, Trends, and a Prospective Research Platform. *The Academy of Management Annals* **6**(1): 135-210.

Combes P-P, Duranton G. 2006. Labour Pooling, Labour Poaching, and Spatial Clustering. *Regional Science and Urban Economics* **36**(1): 1-28.

de Figueiredo JM, Kyle MK. 2006. Surviving the Gales of Creative Destruction: The Determinants of Product Turnover. *Strategic Management Journal* **27**(3): 241-264.

Dixit A. 1980. The Role of Investment in Entry-Deterrence. *The Economic Journal* **90**(357): 95-106.

Dunning JH. 1977. Trade, Location of Economic Activity and the Mne: A Search for an Eclectic Approach. In B Ohlin, PO Hesselborn, PM Wijkman (Eds.), *The International Allocation of Economic Activity*. New York: Holmes & Meier.

Dunning JH. 1988. The Eclectic Paradigm of International Production: An Update and Possible Extensions. *Journal of International Business Studies* **19**: 1-13.

Elfenbein DW, Knott AM. 2015. Time to Exit: Rational, Behavioral, and Organizational Delays. *Strategic Management Journal* **36**(7): 957-975.

Eliasson G. 1991. Deregulation, Innovative Entry and Structural Diversity as a Source of Stable and Rapid Economic Growth. *Journal of Evolutionary Economics* **1**(1): 49-63.

Feldman ER. 2014. Legacy Divestitures: Motives and Implications. *Organization Science* **25**(3): 815-832.

Feldman ER, Amit R, Villalonga B. 2016. Corporate Divestitures and Family Control. *Strategic Management Journal* **37**(3): 429-446.

Ferrier WJ, Smith KG, Grimm CM. 1999. The Role of Competitive Action in Market Share Erosion and Industry Dethronement: A Study of Industry Leaders and Challengers. *The Academy of Management Journal* **42**(4): 372-388.

Giarratana MS, Santaló J. 2020. Transaction Costs in Resource Redeployment for Multiniche Firms. *Organization Science* **31**(5): 1159-1175.

Greve HR, Rudi N, Walvekar A. 2019. Rational Fouls? Loss Aversion on Organizational and Individual Goals Influence Decision Quality. *Organization Studies*: 10.1177/0170840619878462.

Hymer SH. 1976. *The International Operations of National Firms: A Study of Direct Foreign Investment.* . MIT Press: Cambridge, Massachusets.

Johanson J, Vahlne J-E. 2009. The Uppsala Internationalization Process Model Revisited: From Liability of Foreignness to Liability of Outsidership. *Journal of International Business Studies* **40**(9): 1411-1431.

Kahneman D, Tversky A. 1979. Prospect Theory: An Analysis of Decision under Risk. *Econometrica* **47**(2): 263-291.

Kim WC. 1988. The Effects of Competition and Corporate Political Responsiveness on Multinational Bargaining Power. *Strategic Management Journal* **9**(3): 289-295.

Krugman P. 1998. What's New About the New Economic Geography? *Oxford Review of Economic Policy* **14**(2): 7-17.

Lamin A, Ramos MA. 2016. R&D Investment Dynamics in Agglomerations under Weak Appropriability Regimes: Evidence from Indian R&D Labs. *Strategic Management Journal* **37**(3): 604-621.

Leoncini R. 2016. Learning-by-Failing. An Empirical Exercise on Cis Data. *Research Policy* **45**(2): 376-386.

Lhuillery S, Pfister E. 2009. R&D Cooperation and Failures in Innovation Projects: Empirical Evidence from French Cis Data. *Research Policy* **38**(1): 45-57.

Li J. 2008. Asymmetric Interactions between Foreign and Domestic Banks: Effects on Market Entry. *Strategic Management Journal* **29**(8): 873-893.

Lipsey RE, Sjöholm F. 2004. Foreign Direct Investment, Education and Wages in Indonesian Manufacturing. *Journal of Development Economics* **73**(1): 415-422.

Luoma J, Ruutu S, King AW, Tikkanen H. 2017. Time Delays, Competitive Interdependence, and Firm Performance. *Strategic Management Journal* **38**(3): 506-525.

Mata J, Portugal P. 2000. Closure and Divestiture by Foreign Entrants: The Impact of Entry and Post-Entry Strategies. *Strategic Management Journal* **21**(5): 549-562.

Mitchell W. 1994. The Dynamics of Evolving Markets: The Effects of Business Sales and Age on Dissolutions and Divestitures. *Administrative Science Quarterly* **39**(4): 575-602.

Montgomery CA, Thomas AR. 1988. Divestment: Motives and Gains. *Strategic Management Journal* **9**(1): 93-97.

Montgomery CA, Thomas AR, Kamath R. 1984. Divestiture, Market Valuation, and Strategy. *The Academy of Management Journal* **27**(4): 830-840.

Rose EL, Ito K. 2008. Competitive Interactions: The International Investment Patterns of Japanese Automobile Manufacturers. *Journal of International Business Studies* **39**(5): 864-879.

Salop SC. 1979. Strategic Entry Deterrence. *The American Economic Review* **69**(2): 335-338.

Sanders G. 2001. Behavioral Responses of Ceos to Stock Ownership and Stock Option Pay. *The Academy of Management Journal* **44**(3): 477-492.

Schumpeter JA. 1942/87. *Capitalism, Socialism and Democracy*. Unwin: London.

Shimizu K, Hitt MA. 2005. What Constrains or Facilitates Divestitures of Formerly Acquired Firms? The Effects of Organizational Inertia. *Journal of Management* **31**(1): 50-72.

Silverman BS. 1999. Technological Resources and the Direction of Corporate Diversification: Toward an Integration of the Resource-Based View and Transaction Cost Economics. *Management Science* **45**(8): 1109-1124.

Stiglitz JE, Weiss A. 1981. Credit Rationing in Markets with Imperfect Information. *The American Economic Review* **71**(3): 393-410.

Taussig M, Delios A. 2015. Unbundling the Effects of Institutions on Firm Resources: The Contingent Value of Being Local in Emerging Economy Private Equity. *Strategic Management Journal* **36**(12): 1845-1865.

Van Kranenburg HL, Palm FC, Pfann GA. 2002. Exit and Survival in a Concentrating Industry: The Case of Daily Newspapers in the Netherlands. *Review of Industrial Organization* **21**(3): 283-303.

Wang RD, Shaver JM. 2014. Competition-Driven Repositioning. *Strategic Management Journal* **35**(11): 1585-1604.

Wilson R. 1992. Strategic Models of Entry Deterrence. In R Aumann, S Hart (Eds.), *Handbook of Game Theory with Economic Applications*: 305-329. North-Holland: New York.

Woetzel J, Madgavkar A, Seong J, Manyika J, Sneader K, Tonby O, Cadena A, Gupta R, Leke A, Kim H, Gupta S. 2018. Outperformers: High-Growth Emerging Economies and the Companies That Propel Them., New York.

Wu B. 2013. Opportunity Costs, Industry Dynamics, and Corporate Diversification: Evidence from the Cardiovascular Medical Device Industry, 1976–2004. *Strategic Management Journal* **34**(11): 1265-1287.

Xia T, Liu X. 2017. Foreign Competition, Domestic Competition and Innovation in Chinese Private High-Tech New Ventures. *Journal of International Business Studies* **48**(6): 716-739.

Yu T, Albert A. Cannella J. 2007. Rivalry between Multinational Enterprises: An Event History Approach. *Academy of Management Journal* **50**(3): 665-686.

Zaheer S. 1995. Overcoming the Liability of Foreignness. *The Academy of Management Journal* **38**(2): 341-363.

Table 1: Descriptive statistics and correlation matrix. Sample of projects by domestic incumbents (N=14,702)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
1) Same-industry total investments by domestic firms in India																							
2) Same-industry total investments by foreign firms in India	0.22																						
3) Same-industry entry investments by foreign firms in India	0.23	1.00																					
4) Same-industry expansion investments by foreign firms in India	-0.04	0.15	0.07																				
5) Same-industry total investments in same geo-cluster by domestic firms	0.25	0.02	0.03	-0.02																			
6) Same-industry entry investments in same geo-cluster by foreign firms	0.11	0.32	0.32	0.00	0.13																		
7) Same-industry expansion investments in same geo-cluster by foreign firms	-0.01	0.05	0.03	0.17	0.03	0.02																	
8) Same-industry non co-located total investments by domestic firms	0.95	0.24	0.24	-0.04	0.27	0.17	0.01																
9) Same-industry non co-located entry investments by foreign firms	0.22	0.96	0.96	0.07	0.04	0.37	0.06	0.27															
10) Same-industry non co-located expansion investments by foreign firms	-0.05	0.13	0.06	0.97	-0.02	0.01	0.11	-0.03	0.06														
11) N. of same-industry investments by domestic firms	0.27	-0.01	0.00	-0.17	0.04	0.00	-0.03	0.25	0.01	-0.16													
12) N. of same-industry entry investments by foreign firms	0.49	0.28	0.28	0.05	0.12	0.10	0.02	0.49	0.28	0.06	0.26												
13) N. of same-industry expansion investments by foreign firms	0.07	0.20	0.16	0.51	0.03	0.04	0.12	0.07	0.16	0.50	-0.06	0.32											
14) Same-industry concentration of investments by domestic firms	0.08	-0.03	-0.04	0.18	0.02	-0.01	0.05	0.09	-0.04	0.16	-0.47	-0.09	0.12										
15) Same-industry concentration of entry investments by foreign firms	-0.15	-0.07	-0.06	-0.06	-0.05	-0.03	-0.01	-0.15	-0.06	-0.07	-0.10	-0.54	-0.21	0.12									
16) Same-industry concentration of expansion investments by foreign firms	-0.02	0.00	0.00	0.08	-0.02	-0.01	0.01	-0.01	0.00	0.08	-0.04	-0.08	0.07	0.09	0.01								
17) Delayed focal project	-0.01	0.02	0.02	0.04	-0.01	0.00	0.03	0.00	0.02	0.04	-0.02	0.00	0.01	0.02	-0.01	0.00							
18) Unrelated focal project	-0.01	0.04	0.02	0.30	0.01	0.00	0.03	-0.01	0.01	0.28	-0.13	-0.08	0.11	0.16	0.06	0.03	0.02						
19) Multi-location	0.00	0.01	0.01	0.03	0.02	0.00	0.03	0.00	0.01	0.03	-0.05	0.01	0.03	0.04	-0.01	0.02	0.01	0.00					
20) Focal project in a geo-cluster	0.06	0.05	0.05	-0.01	0.16	0.15	0.16	0.16	0.10	0.02	-0.08	0.07	0.05	0.06	-0.02	0.04	-0.01	-0.01	0.03				
21) Number of same-industry investments in focal project's geo-cluster	0.13	0.06	0.07	-0.02	0.25	0.19	0.19	0.19	0.09	-0.02	0.07	0.21	0.11	-0.01	-0.09	-0.04	-0.02	-0.04	0.02	0.58			
22) Foreign associate	-0.04	-0.01	-0.01	0.04	0.01	-0.01	0.01	-0.04	-0.01	0.03	-0.12	-0.01	0.04	0.08	0.01	0.03	-0.04	0.05	0.08	0.10	0.10		
23) Focal project's cost (at constant price)	0.05	0.08	0.07	0.08	0.06	0.10	0.03	0.06	0.07	0.07	-0.04	0.01	0.03	0.06	0.01	0.02	0.09	0.02	0.04	0.02	0.02	0.07	
Mean	0.91	0.49	0.43	0.05	0.01	0.01	0.001	1.07	0.50	0.06	34.16	7.69	2.09	0.14	0.34	0.42	0.01	0.02	0.02	0.32	0.93	0.14	0.02
Standard deviation	1.66	1.46	1.44	0.11	0.13	0.09	0.01	2.03	1.77	0.12	23.43	5.31	2.11	0.12	0.23	0.37	0.12	0.15	0.13	0.47	2.33	0.35	0.09
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2	0	0	0.02	0.00	0.00	0.00	0	0	0	0	0	0.00
Maximum	8.71	11.06	11.01	1.91	2.76	2.45	0.48	12.99	17.12	1.91	108	25	10	1.00	1.00	1.00	1.00	1	1	1	21	12.76	

Table 2: Descriptive statistics and correlation matrix. Sample of projects by foreign incumbents (N=4,066)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
1) Same-industry total investments by domestic firms in India																							
2) Same-industry total investments by foreign firms in India	0.21																						
3) Same-industry entry investments by foreign firms in India	0.22	0.99																					
4) Same-industry expansion investments by foreign firms in India	-0.06	0.14	0.05																				
5) Same-industry total investments in same geo-cluster by domestic firms	0.24	0.01	0.01	0.01																			
6) Same-industry entry investments in same geo-cluster by foreign firms	0.11	0.37	0.38	0.00	0.06																		
7) Same-industry expansion investments in same geo-cluster by foreign firms	-0.01	0.06	0.02	0.39	0.05	0.01																	
8) Same-industry non co-located total investments by domestic firms	0.96	0.23	0.24	-0.06	0.22	0.16	0.01																
9) Same-industry non co-located entry investments by foreign firms	0.21	0.97	0.97	0.06	0.02	0.40	0.04	0.26															
10) Same-industry non co-located expansion investments by foreign firms	-0.07	0.11	0.04	0.91	0.01	0.01	0.10	-0.06	0.05														
11) N. of same-industry investments by domestic firms	0.34	0.06	0.07	-0.16	0.08	0.02	-0.06	0.32	0.08	-0.15													
12) N. of same-industry entry investments by foreign firms	0.49	0.27	0.27	0.00	0.08	0.12	-0.04	0.49	0.27	0.01	0.40												
13) N. of same-industry expansion investments by foreign firms	0.03	0.18	0.14	0.51	0.01	0.05	0.11	0.03	0.14	0.50	0.06	0.34											
14) Same-industry concentration of investments by domestic firms	0.05	-0.07	-0.08	0.16	0.02	-0.01	0.07	0.05	-0.08	0.14	-0.45	-0.20	0.03										
15) Same-industry concentration of entry investments by foreign firms	-0.17	-0.06	-0.06	-0.01	-0.01	-0.03	0.04	-0.16	-0.06	-0.03	-0.18	-0.52	-0.22	0.21									
16) Same-industry concentration of expansion investments by foreign firms	-0.07	-0.02	-0.02	0.05	-0.02	-0.02	0.01	-0.05	-0.02	0.05	-0.10	-0.14	-0.04	0.06	0.00								
17) Delayed focal project	-0.01	-0.01	-0.01	0.02	-0.01	-0.01	-0.01	-0.01	0.00	0.02	0.00	-0.01	-0.01	0.00	-0.02	0.02							
18) Unrelated focal project	-0.03	0.03	0.00	0.30	0.00	0.01	0.21	-0.02	0.00	0.27	-0.14	-0.13	0.11	0.17	0.11	0.04	-0.01						
19) Multi-location	-0.05	-0.02	-0.03	0.04	-0.01	-0.01	0.02	-0.05	-0.03	0.04	-0.05	-0.04	0.02	0.02	0.01	0.00	0.01	0.00					
20) Focal project in a geo-cluster	0.05	0.04	0.04	-0.01	0.14	0.14	0.11	0.15	0.09	0.03	-0.03	0.02	-0.01	0.03	0.02	0.01	0.00	0.03	0.00				
21) Number of same-industry investments in focal project's geo-cluster	0.12	0.04	0.04	-0.02	0.21	0.16	0.11	0.17	0.05	-0.02	0.19	0.23	0.13	-0.06	-0.10	-0.11	-0.03	-0.01	0.00	0.50			
22) Foreign associate	-0.04	-0.01	-0.02	0.06	-0.03	-0.02	0.00	-0.04	-0.02	0.04	-0.07	-0.06	0.00	0.07	0.05	0.01	-0.03	0.03	0.07	-0.06	-0.05		
23) Focal project's cost (at constant price)	-0.02	0.01	0.00	0.15	0.01	0.02	0.05	-0.02	0.00	0.13	-0.09	-0.06	0.05	0.11	0.04	0.03	0.04	0.02	0.02	-0.07	-0.05	0.02	
Mean	0.92	0.57	0.50	0.07	0.02	0.02	0.01	1.22	0.65	0.08	27.60	8.05	2.53	0.16	0.33	0.44	0.01	0.02	0.02	0.56	1.61	0.25	0.03
Standard deviation	1.75	1.53	1.52	0.13	0.13	0.11	0.04	2.34	2.07	0.15	19.79	5.41	2.24	0.14	0.22	0.35	0.09	0.15	0.14	0.50	2.87	0.43	0.12
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2	0	0	0.02	0.00	0.00	0.00	0	0	0	0	0	0.00
Maximum	8.71	11.06	11.01	1.91	2.76	2.45	1.91	12.99	17.12	1.91	108	25	10	0.96	1.00	1.00	1.00	1	1	1	21	1	5.68

Table 3: Cox proportional hazards models on time until abandonment of investments in production capacity

VARIABLES	Model 1 *Domestic incumbent* β s.e. P>|z|	Model 2 *Foreign incumbent* β s.e. P>|z|	Model 3 *Domestic incumbent* β s.e. P>|z|	Model 4 *Foreign incumbent* β s.e. P>|z|	Model 5 *Domestic incumbent* β s.e. P>|z|	Model 6 *Foreign incumbent* β s.e. P>|z|
Same-industry total investments by domestic firms in India	0.02(0.01) 0.08	-0.03(0.03) 0.34	0.01(0.01) 0.09	-0.03(0.03) 0.32		
Same-industry total investments by foreign firms in India	0.01(0.01) 0.05	0.03(0.02) 0.08				
Same-industry entry investments by foreign firms in India			0.01(0.01) 0.08	0.04(0.02) 0.04		
Same-industry expansion investments by foreign firms in India			0.43(0.13) 0.00	1.07(0.31) 0.00		
Same-industry total investments in same geo-cluster by domestic firms					-0.04 (0.08) 0.66	-25.53(16.80) 0.13
Same-industry entry investments in same geo-cluster by foreign firms					0.21 (0.08) 0.01	0.02 (0.10) 0.84
Same-industry expansion investments in same geo-cluster by foreign firms					1.04 (0.39) 0.01	0.54 (0.96) 0.57
Same-industry non co-located total investments by domestic firms [a]					0.01 (0.01) 0.05	-0.02 (0.03) 0.40
Same-industry non co-located entry investments by foreign firms [a]					-0.00 (0.01) 0.89	0.03 (0.02) 0.06
Same-industry non co-located expansion investments by foreign firms [a]					0.39 (0.12) 0.00	0.92 (0.29) 0.00
Number of same-industry investments by domestic firms	-0.00(0.00) 0.14	-0.00(0.00) 0.81	-0.00(0.00) 0.16	-0.00(0.00) 0.73	-0.00 (0.00) 0.15	-0.00 (0.00) 0.95
Number of same-industry entry investments by foreign firms	-0.00(0.00) 0.94	-0.00(0.01) 0.91	0.00(0.00) 0.70	0.00(0.01) 0.95	0.00 (0.00) 0.60	-0.00 (0.01) 0.83
Number of same-industry expansion investments by foreign firms	0.00(0.01) 0.90	-0.03(0.03) 0.31	-0.01(0.01) 0.18	-0.06(0.03) 0.03	-0.02 (0.01) 0.16	-0.06 (0.03) 0.04
Same-industry concentration of investments by domestic firms	0.22(0.15) 0.15	-0.17(0.41) 0.69	0.21(0.15) 0.18	-0.28(0.45) 0.54	0.19 (0.16) 0.22	-0.31 (0.44) 0.48
Same-industry concentration of entry investments by foreign firms	-0.08(0.13) 0.57	-0.40(0.23) 0.08	-0.09(0.14) 0.49	-0.45(0.24) 0.06	-0.08 (0.14) 0.55	-0.41 (0.23) 0.08
Same-industry concentration of expansion investments by foreign firms	-0.11(0.06) 0.05	-0.24(0.11) 0.03	-0.12(0.06) 0.04	-0.27(0.12) 0.02	-0.12 (0.06) 0.04	-0.26 (0.12) 0.03
Delayed focal project	0.07(0.10) 0.50	0.25(0.16) 0.12	0.05(0.10) 0.60	0.20(0.16) 0.22	0.05 (0.10) 0.63	0.21 (0.17) 0.23
Unrelated focal project	0.43(0.40) 0.27	-33.92(0.54) 0.00	0.20(0.41) 0.62	-41.89(0.57) 0.00	0.25 (0.40) 0.53	-44.71 (0.00) .
Multi-location	-0.21(0.63) 0.74	-34.16(0.35) 0.00	-0.23(0.62) 0.72	-41.75(0.37) 0.00	-0.21 (0.62) 0.74	-44.68 (0.00) .
Focal project in a geo-cluster	-0.06(0.19) 0.77	-0.43(0.34) 0.20	-0.05(0.19) 0.80	-0.43(0.34) 0.20	-0.13 (0.19) 0.51	-0.39 (0.33) 0.24
Number of same-industry investments in focal project's geo-cluster	-0.03(0.04) 0.42	-0.08(0.09) 0.36	-0.03(0.04) 0.44	-0.08(0.09) 0.39	-0.03 (0.04) 0.38	0.06 (0.10) 0.53
Foreign associate	-1.00(0.37) 0.01	-0.64(0.43) 0.14	-1.00(0.37) 0.01	-0.74(0.45) 0.10	-0.96 (0.37) 0.01	-0.76 (0.44) 0.08
Focal project's cost (at constant price)	1.23(0.29) 0.00	0.73(0.05) 0.00	1.21(0.30) 0.00	0.73(0.05) 0.00	1.18 (0.31) 0.00	0.74 (0.05) 0.00
Observations	14,702	4,066	14,702	4,066	14,702	4,066

Coefficients (rather than hazard ratios) are reported. Robust standard errors in parentheses.

[a] For focal projects *not located* in a geographical cluster, the variable is measured based on same-industry competitors for the specific type of investment wherever located in India. For focal projects *located* in a geographical cluster, the variable is measured based on same-industry competitors for the specific type of investment located outside the geographical cluster of the focal project.