Organizational geography, experiential learning and subsidiary exit: Japanese foreign expansions in China, 1979–2001

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Abstract

We examine how experiential learning and vicarious learning, as tied to a subsidiary’s organizational geography, influence the exit rates of Japanese subsidiaries located in China. We find that exit rates were lower for subsidiaries that were established geographically proximate to the prior expansions of industry peers from Japan. Exit rates were also lower for subsidiaries established by firms with experience in similar product markets in China. Exit rates were greater, however, when a parent firm had substantial experience outside the product market of the current expansion. Importantly, the influence of a subsidiary’s geographic proximity to its peers on its exit rate is contingent on whether its parent firm had prior experience inside or outside the product market of the new expansion.

Keywords: Foreign subsidiaries, organizational geography, vicarious learning, experiential learning

JEL classifications: F23, M16, R12

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1. Introduction

Research on organizations has begun to explore the strategic and learning implications of economic geography (Morgan, 2004). This research follows extant work that has developed the premise that the spatial distribution of firms in a region is a consequence of the location choices implemented by each firm. The literature in economic geography and agglomeration economics highlights the point that spatial proximity can yield benefits such as knowledge and innovation spillovers (Audretsch and Feldman, 1996).

Conversely, this literature has also argued that geographic distance exerts a bounding effect on the extent of such spillovers between organizations (Keller, 2002). Benefits from co-location have been found for foreign firms expanding in a host country, who were drawn to sites where positive spillovers in technology could be gained (Chung and Alcacer, 2002; Poon et al., 2006), as they invested under a motive to internalize the technology of local U.S. firms (Anand and Delios, 2002). Such vicarious learning occurs through the observation of the experiences of other organizations that are co-located with the focal firm in a defined geographic region (Baum et al., 2000).
Although spatial proximity tends to enhance vicarious learning, firms can also engage in a process of experiential learning by retrieving relevant knowledge derived from past experience to adapt to new environments (Levitt and March 1988). Recent studies in strategic management suggest that learning can be most effective when prior experience is domain-specific, namely relevant to a particular product market or geographic market (Barkema et al., 1996; Delios and Beamish, 2001). Meanwhile, research on knowledge spillovers suggests that firms are differentially exposed to the benefits of learning, as dependent on geographic, industry and social influences (Keller, 2002; Chang and Park, 2005).

In this study, we extend these two literatures on economic geography and experiential learning in foreign expansions by examining how vicarious learning and experiential learning influence the exit rates of a multinational firm’s foreign subsidiaries. Multinational firms typically face a knowledge disadvantage as compared to local firms (Hymer, 1976). Such a ‘liability of foreignness’ leads to a high exit risk among foreign subsidiaries of multinational firms (Zaheer, 1995; Mudambi and Zahra, 2007). In order to overcome this knowledge disadvantage, a multinational firm can either learn from others or rely on its own past experience (Delios and Beamish, 2001; Chung and Alcacer, 2002).

The impetus for this integration of literatures comes from research that has begun to establish how firm heterogeneity helps define conditions under which firms might benefit or suffer from being proximate to other firms (Chung and Kalnins, 2001; Chang and Xu, 2008). With rare exceptions (Shaver et al., 1997), little effort has been made to integrate these two streams of research on learning in foreign expansions. By developing arguments about the costs and benefits of organizational geography—that is, the distribution of organizations in geographic space—as associated with vicarious learning and experiential learning, we consider how the two learning processes influence each other. This form of examination permits us to bridge core ideas in economic geography with key ideas in the organizations literature.

2. Background and hypotheses

2.1. Organizational geography and subsidiary exit

Extant research suggests that spatial proximity among organizations can yield benefits such as various forms of knowledge spillovers (Audretsch and Feldman, 1996). Positive spillovers in technology could be gained from co-location (Chung and Alcacer, 2002; Poon et al., 2006), when foreign firms have invested in the USA to internalize the local technology (Anand and Delios, 2002). Although such spillovers can be realized, geographic distance exerts a bounding effect on the extent of knowledge and innovation spillovers between organizations (Keller, 2002; Morgan, 2004). Spatial proximity tends to enhance learning from other firms, but firms are differentially exposed to the extent of spillover benefits of agglomeration (Canina et al., 2005; Chang and Xu, 2008). Co-locating with certain groups of firms may enable a firm to achieve better learning than co-location with other groups of firms.

When firms face a knowledge disadvantage vis-à-vis local competitors in a new geographic market, a common organizational response is for these firms to imitate and vicariously learn from other firms (Zaheer, 1995). Furthermore, research has shown that there is an asymmetry in learning between foreign and local firms in a host country.
(Meyer and Sinani, 2009), as extending from the common premise that foreign firms have superior technology or management skills. Local firms benefit more from foreign firms as foreign firms can offer better managerial or technological experiences and knowledge (Sinani and Meyer, 2004). Thus a viable strategy for foreign firms is to follow and vicariously learn from their peers in foreign markets through co-location (Henisz and Delios, 2001; Gimeno, et al., 2005).

The benefits of vicarious learning can be best achieved when firms learn from specific reference groups, such as firms of a similar size (Baum and Mezias, 1992; Chung and Kalnins, 2001) or status (Haunschild and Miner, 1997), or firms set in similar geographic domains (Kogut and Singh, 1988). Not all firms serve as a reference group, however, with the choice of reference group dependent in part on the expansion-related challenges faced by a firm (Henisz and Delios, 2001).

At least two dimensions merit attention for the identification of foreign firms’ reference groups. First, the literature of cultural learning has identified country of origin as an important dimension that binds groups of firms entering a foreign country (Kogut and Singh, 1988; Chang and Park, 2005). Depending on their country of origin, firms might interpret the same social events or come up with different solutions for the same problems when their country origins differ (Earley and Ang, 2003). For example, Japanese firms tend to learn more from other Japanese firms than from firms from other countries, because their shared cultures and experiences in the home country provide a common grounding for vicarious learning about the technical and managerial challenges encountered in the host country (Henisz and Delios, 2001).

The second important dimension is industry expertise. Agglomeration economies lead firms to locate a new subsidiary where similar types of industrial activity exist (Head and Mayer, 2004). A foreign firm can learn more from firms in the same industry because their technical expertise is relevant to its own operations, and because they have applied such technical expertise in the host country context. The activities of firms outside an industry are not expected to be as influential as those inside an industry because of the limited attention managers give to activities beyond their competitive domains (Bouquet and Birkinshaw, 2008). As a consequence, knowledge spillovers are strongest among firms that operate within the same industry in a host country (Driffield and Munday, 2000).

Thus, foreign firms learn most effectively from the reference group that comprises firms that are from the same home country and operate in the same industry, with the vicarious learning being more effective the greater the geographic proximity.

Hypothesis 1: Geographic proximity to industry peers from the same home country has a negative effect on a foreign subsidiary’s exit rate.

2.2. Parent experience and subsidiary exit

An organization learns by interpreting and retrieving relevant knowledge derived from its past experiences in a specific domain (Levitt and March, 1988). Experience can translate into organizational learning that offsets the new resource and capability demands imposed on a firm as it expands into new markets (Mitchell, 1994). Although prior experience can also lead to inertia (Dobrev et al., 2004), it has its greatest benefit
for an expansion when it is in a domain related to, or relevant to, the current expansion (Barkema et al., 1996).

Extant research has identified that managers in a firm acquire information about a new market more effectively when previous experience provides a familiar backdrop against which a firm’s expansion into a new market can be related (Dierickx and Cool, 1989; Pennings et al., 1994). Learning in new markets can be staged more successfully when a firm moves incrementally into increasingly unfamiliar new territories (Barkema, et al., 1997). Expansions into market settings that are distant from a firm’s past experience base provide little opportunity for a firm to apply knowledge learned from its prior experience (Barkema et al., 1996). In situations in which there has been learning about the characteristics of the markets in which prior expansions were made, this experience should provide a benefit to a firm’s current expansion (Ingram and Baum, 1997). This benefit extends from the experience’s contribution to the development of new knowledge that can have a positive influence on a firm’s performance (Pennings et al., 1994; Barkema et al., 1996).

For a multinational, learning from past experience accumulated in the same geographic market is important (Luo and Peng, 1999; Delios and Beamish, 2001). Country-specific experience provides knowledge on how to deal with macro-level issues such as political uncertainty, cultural differences, and institutional constraints (Rosenzweig and Singh, 1991; Delios and Henisz, 2003). However, such experience is only valuable to the extent that it can help a firm to gain a competitive advantage in the firm’s own product market. Thus, the experience that is relevant to a multinational firm’s foreign expansion is its host-country experience gained in its focal industry. Neither host country experience acquired outside a firm’s product domain, nor industry experience acquired outside a firm’s geographic market domain, foster learning that leads to a complete understanding of the external environment.

Hypothesis 2: A parent firm’s prior experience in a focal industry in the host country has a negative effect on a foreign subsidiary’s exit rate.

When a firm is expanding from one market to another, however, prior experience and obsolete routines can inhibit the firm’s attempt to adapt to the new market, and heighten its exit rates (Ingram and Baum, 1997; Baum and Ingram, 1998), in what has been called a competency trap (Levinthal and March, 1993), or superstitious learning (Levitt and March, 1988).

This inertia emerges when an organization develops routines and competencies that improve performance in one market domain but trap a firm from experimenting with alternatives in other domains (Hannan and Freeman, 1984), or it can emerge from a change in market conditions that render learned routines obsolete (Barkema et al., 1996). First, a lack of relatedness between past product domains and the current domain can render prior experience of little relevance to the current expansion (Luo, 2002). Second, prior experience in unrelated settings may lead to myopia in a firm (Levinthal and March, 1993) as the organization focuses on the exploitation of existing routines that are not relevant to its new domain (Hannan and Freeman, 1984; Levitt and March, 1988).

Accordingly, past experience that is not relevant to a current expansion can be of little use and lead to neutral results, or, at worst, be detrimental and lead to negative results. The difference depends on whether the organization is able to discriminate
between its current and its past events. When an organization is overwhelmed by its past experience, discrimination becomes difficult as the organization is trapped in its old routines and old ways of thinking (Ingram and Baum 1997; Haleblian and Finkelstein, 1999). Thus the organization is likely to extend inappropriate generalizations of past experience to current events, which causes failure.

In the context of foreign entry, a firm often enters multiple product domains, in its expansion process in a host country (Delios et al., 2008). Under such a circumstance, the firm’s past experience is country-specific, but it is not relevant to the industry in which a new expansion is being made, and may become a liability for the firm if inappropriate generalizations are made from such experience. Thus, when the host country for the expansion remains constant, we expect that experience gained outside the industry in which an entry is made, will have at best a neutral, but at worst, a positive influence on the exit rate of the entry.

Hypothesis 3: A parent firm’s prior experience outside a focal industry in the host country has no effect, or a positive effect, on a foreign subsidiary’s exit rate.

2.3. Organizational geography, parent experience and subsidiary exit

The net influence of co-location depends on the comparative magnitude of the costs and benefits of co-location. Firms are differentially exposed to the magnitude of the benefits of agglomeration (Shaver and Flyer, 2000); as they face a differential need to draw the benefits that come from co-location (Chung and Alcacer, 2002). Firms with strong capabilities and advanced technologies provide the spillovers that are sought by weak firms, which tend to be the primary beneficiaries of spillovers and thus seek to locate in areas populated by strong firms (Chung and Kalnins, 2001).

Correspondingly, in an international expansion the magnitude of benefits from organizational geography-based learning depends on a firm’s level of its prior experience inside and outside the domain of expansion. The benefits of co-location can be higher for a firm with little experience in a domain, than one with substantial experience in a domain. By co-locating with others in the industry, an inexperienced firm can make up for its lack of knowledge in the host country’s industry by learning from its peers. Although co-location may also bring costs, such as increased input price and competition in certain industries (Miller and Eden, 2006); the learning effect can often exceed the possible cost and competition effect. Such a case of benefits exceeding costs is most likely to occur for a new entrant to a domain. Meanwhile, an experienced firm in a domain is likely to have developed the routines for success. Because it has established routines, vicarious learning will be less beneficial due to its redundancy to a firm’s existing routine and capability base. As such the benefits of vicarious learning are limited for an experienced firm, but the costs of being proximate to potential competitors remain. Consequently, the net benefit of proximity will be greater for inexperienced firms than for experienced firms.

Hypothesis 4a: Geographic proximity to industry peers from the same home country has a stronger negative effect on a foreign subsidiary’s exit rate, when the parent firm has less prior experience in a focal industry in the host country.
A parallel scenario to Hypothesis 4a concerns the accumulation of experience in the host country but not in the product market in which an expansion is being made. In Hypothesis 3, we argued that such non-domain-specific experience not only is unhelpful, but also may become counter-effective to a firm’s foreign expansion, as experience can lead to inertness and inhibit adaptation to the new market (Ingram and Baum, 1997); as well as lead to myopia in a firm’s operations in its new market (Levinthal and March, 1993).

We argue that to reduce the negative influence of such irrelevant experience, it is important for a subsidiary to co-locate with its industry peers from the same country, so that it can maximize the benefit of vicarious learning. By closely observing its reference group, the subsidiary may gather knowledge that is relevant to its current domain of expansion, and thus overcome any possible myopia. Geographic proximity to industry peers provides a means for comparison; the firm can benchmark its past, irrelevant experience against the practices of other firms in the host country and extract relevant knowledge from such a comparison. Without the help of such benchmarking, the firm will not be able to evaluate its past experience critically, and may be easily influenced by irrelevant knowledge when expanding in a new context. Therefore, we expect that the relative benefits of co-location will be greater for firms with experience outside its domain of expansion, as compared to firms without such experience.

Hypothesis 4b: Geographic proximity to industry peers from the same home country has a stronger negative effect on a foreign subsidiary’s exit rate, when the parent firm has more prior experience outside a focal industry in the host country.

3. Research design

3.1. Setting and data

We examined the foreign expansions made by Japanese multinational firms into China. Since the adoption of an ‘Open Door’ policy at the end of 1978, China has attracted an increasing amount of inward foreign direct investment (FDI). By 2003, China had become the world’s largest recipient of FDI.

Firms from the same home country have tended to agglomerate in specific geographic locations in China. For instance, Singaporean firms are highly concentrated in the Suzhou Industrial Park area; Korean firms have clustered in Beijing, Tianjin, Qingdao, Liaoning and Heilongjiang; firms from Hong Kong have opened factories in Guangdong Province; and Taiwanese businesses tend to locate in Shanghai and Suzhou.

Our sample is a complete history of Japanese entries and exits made in China in the 1979–2001 period. This context is a suitable one for this study because it avoids problems of left-censoring which would be encountered if studying FDI in most other country settings, as there was virtually no inward FDI in China during the four decades prior to 1979.

Using Japanese investment in China provides us with rich information on the geographic and industrial distribution of Japanese investment in China, with almost all provinces and more than 180 cities having been sites for Japanese FDI (see Figures 1 and 2 for the distribution of Japanese subsidiaries in China in 1990 and 1997). Investments have been made in all SIC two-digit manufacturing industries, as well as in numerous service sector industries.
We obtained data on the foreign activities of Japanese firms by referring to each annual edition of the Japanese language directory called *Kaigai Shinshutsu Kigyou Souran* (Japanese Overseas Investments), as published by Toyo Keizai, from 1979 to 2001. This publication is based on an annual census of Japanese foreign entries. It reputedly captures at least 99% of listed companies’ foreign entries (Henisz and Delios, 2001). According to the data we compiled for this study, 3416 foreign entries were made in the 1979–2001 period, 24.3% of which (831 subsidiaries) had exited by 2001.

3.2. Measures

3.2.1. Dependent variable.

Subsidiary exit. We defined subsidiary exit as the delisting of a subsidiary previously listed in Japanese Overseas Investments. A delisting corresponds with an exit as Japanese Overseas Investments has complete information on the foreign entry activities of each Japanese parent firm listed in the directory. We determined the duration to exit by comparing the exit year to the year in which a subsidiary was founded.

3.2.2. Independent variables.

A subsidiary’s relative proximity to other Japanese subsidiaries. This proximity variable tests Hypothesis 1. Using the distance information across the 181 cities in China in which Japanese subsidiaries were located, we calculated the relative distance of a focal subsidiary to other Japanese subsidiaries. To define location, we used the latitude and longitude of the weather station in a subsidiary’s city. We measured distances between locations using spherical geometry to consider the distance on curved surfaces (Sorenson and Audia, 2000), as in the following equation which calculates the distance between the focal subsidiary $i$ and other subsidiary $j$ by category $k$:

$$D_{ij,k} = R \arccos\left(\sin(lat_i) \sin(lat_j) + \cos(lat_i) \cos(lat_j) \cos(|lon_i - lon_j|)\right),$$

Latitude (lat) and longitude (lon) are measured in radians. $R$ denotes a constant based on the radius of the sphere. The radius allows us to convert the calculation into linear units of measure. We use $R = 6371$ kilometres to convert the calculation to kilometers on the Earth’s surface.

We divided Japanese subsidiaries into two groups: the same firm’s subsidiaries and other Japanese firms’ subsidiaries. Then we calculated two variables: (i) one variable that measures the proximity of subsidiary $i$ to subsidiaries $j$ that belong to the same firm (*proximity to own firm’s subsidiaries*); and (ii) one variable that measures the proximity of subsidiary $i$ to subsidiaries $j$ that belong to other Japanese firms (*proximity to other firms’ subsidiaries*). We measured these proximity variables using the focal subsidiary’s two-digit industry classification, as follows.

$$P_{ij,k} = \sum_j \frac{x_j}{(1 + d_{ij,k})},$$

where $P_{ij,k}$ is the proximity of the focal subsidiary $i$ to other subsidiaries $j$ that belong to other firms by subsidiary industry $k$. A vector of ones are assigned to $x$, so if $d_{ij,k} = 0$ for all subsidiaries, $P_{ij,k}$ is equivalent to a traditional density measure, the number of subsidiaries (Sorenson and Audia, 2000).
Operational experience. We computed several time-varying, annual experience measures. China experience—in industry is the variable we used to test Hypothesis 2. It is defined as a firm’s operational experience (the natural log of the sum of subsidiary years that a firm has accumulated by a given year in the specified industry and geographic domain) within China, in the same SIC two-digit industry of the subsidiary. We used China experience—other industries to test Hypothesis 3, defined as a firm’s operational experience in China in industries other than the SIC two-digit industry into which an expansion was being made.

Interaction terms. We used an interaction term between a subsidiary’s proximity to other firms’ subsidiaries and China experience—in industry to test Hypothesis 4a and an interaction term between a subsidiary’s proximity to other firms’ subsidiaries and China experience—other industries to test Hypothesis 4b.

3.2.3. Control variables

Macro-variables. We coded a city to identify if it had an economic zone with a special policy designation in a given year. The indicator variable, economic specialized zone, was derived based on data from Zhou et al. (2002).

We included annual time-varying counts, lagged by one year, of the number of subsidiaries all Japanese firms had in China (number of all subsidiaries in China), the number of subsidiaries all Japanese firms had in China by a subsidiary’s industry (number of subsidiaries in industry in China), the number of subsidiaries and exits of all Japanese firms in the city in China (number of entries in city, number of exits in city), and the natural log of the population (in 10,000s) of the city being entered (population in city). We tracked the number of entrants (number of entries in province) and exits (number of exits in province) made in the province in China in which a subsidiary operated.

Organizational characteristics. We include the number of subsidiaries that the focal firm had in China (number of focal firm’s subsidiaries in China) and identified if a subsidiary was a joint venture (1 = joint venture). We measured subsidiary size using the log of the number of employees in the subsidiary. We measured a subsidiary’s parent firm’s performance as its return on assets. Parent firm size was the number of employees (log) in the parent firm.

Experience and organizational geography controls. We measured a firm’s industry experience in the related cultural setting of Taiwan, Hong Kong, and Macau (Taiwan/Hong Kong/Macau experience—in industry), and the extent of a firm’s industry experience in countries outside of China, Taiwan, Hong Kong, and Macau (other international experience—in industry).

We developed two control variables to measure the organizational geography with respect to Chinese firms (proximity to Chinese firms) and non-Japanese subsidiaries (proximity to non-Japanese subsidiaries). We followed the same coding procedure and variable definition as for the proximity to other firms’ subsidiaries measure, in which we identified all Chinese firms or foreign, non-Japanese subsidiaries that existed in the same two-digit SIC industry. We next identified the cities in which the Chinese firms or non-Japanese subsidiaries were located. We then calculated these two proximity variables using the same computational procedure, as defined by the equation for the computation of proximity to other firms’ subsidiaries.
To construct these two measures, we obtained information from the Annual Industrial Survey Database of the Chinese National Bureau of Statistics (NBS) during 1998–2001. NBS annually collects financial information on Chinese firms and foreign firms in all manufacturing sectors in China. To be included in the database, a firm or a subsidiary had to have annual sales of at least RMB 5 million in the year prior to the survey. By law, all firms in China have to cooperate in the survey and submit the required data. As we had four years of data, we relied on information on a non-Japanese subsidiary or a Chinese firm’s year of founding to construct data for years prior to 1998.

We controlled for a parent firm’s degree of geographic diversification (Lu and Beamish, 2004) in China, by applying the Hirshman–Herfindahl index to the distribution of a Japanese firm’s subsidiaries among provinces in China. We assigned this parent firm level index, which we called geographic diversification, to its subsidiary i by subsidiary industry k. The index is calculated based on this equation:

\[
GD_{it,k} = 1 - \sum_{p=1}^{28} \left( \frac{NS_{fpt,k}}{NS_{ft,k}} \right)^2
\]

where GD is subsidiary i’s geographic diversification index that its parent firm f has in subsidiary industry k. NS_{fpt} is the number of subsidiaries that firm f has in province p, where there are 28 provinces that have received investment, at time t, and NS_{ft} is the total number of firm f’s subsidiaries at time t. Greater values mark a greater level of geographic diversification.

For the proximity to a firm’s own subsidiaries variable, we used the same coding procedure and variable definition as for the proximity to other firms’ subsidiaries measure, with the only difference being that we measure the proximity of the focal subsidiary i to the subsidiaries j that belong to the same firm by subsidiary industry k.

We included annual fixed effects to capture variation in macro-economic conditions in Japan and China that might influence subsidiary exit rates, but are otherwise not captured by our covariates. We included fixed effects for the province and industry of entry, to account for any other potentially unspecified influences on exit.

3.3. Model

We used an exponential transition rate model to examine the change from a state of entry in China to the state of exit. This technique models the transition rate from an origin state (entry) to a destination state (exit) as a function of the prescribed covariates. Its form is:

\[
r_{jk}(t|\omega_{n-1}) = \lim_{\Delta t \to 0} \frac{P_{jk}(t, t + \Delta t|\omega_{n-1})}{\Delta t}
\]

where \( r \) denotes the instantaneous transition or hazard from state \( j \) to \( k \), \( P_{jk} \) is the transition probability, and \( \omega_{n-1} \) represents the prior history of organization \( i \).

To estimate this model, we took the base sample of 3416 expansions by Japanese firms into China and expanded it into 24,865 multiple spells that included each year in which a subsidiary operated. Developing multiple spells permits us to include time-varying covariates. In each spell, a subsidiary was at risk of exiting. We treated each spell as right-censored unless an exit occurred (Baum and Korn, 1996).
4. Results

4.1. Hypothesis tests

Table 1 shows descriptive statistics and correlations for all variables included in the analysis.

Table 2 presents maximum likelihood estimates of all models for subsidiary exit. In Model 1, we include all the control variables. In Models 2, 3 and 4, we add respectively the variables to test Hypothesis 1, then Hypotheses 2 and 3, and finally Hypotheses 4a and 4b.

Hypothesis 1 states our prediction that subsidiary exit rates will be lower, the less a subsidiary’s distance from subsidiaries of firms in the same industry and of the same country origin. In Model 2, we add proximity to other firms’ subsidiaries to the base specification in order to test Hypothesis 1. The negative and significant coefficient on this variable provides support for Hypothesis 1, showing that exit rates decreased as a subsidiary was more proximate to its industry peers from the same country.

In Model 3, we added China experience—in industry and China experience—other industries to respectively test Hypotheses 2 and 3. Hypothesis 2 predicted that a firm’s experience in the market domain for expansion is negatively related to subsidiary exit rates. The negative and significant sign on the variable China experience—in industry shows that as a firm’s experience in China in the industry of an expansion increases, subsidiary exit rates decline, supporting Hypothesis 2. Hypothesis 3 predicted that exit rates in a subsidiary would be neutral or greater, when a firm had more prior experience that was not related to its current context. The coefficients on the China experience—other industries variable had a positive sign and were significant, supporting Hypothesis 3.

Hypotheses 4a and 4b detail our predictions about the moderating influences of a firm’s experience on the relationship between geographic proximity and subsidiary exit. We test Hypothesis 4a using the proximity to other firms’ subsidiaries and China experience—in industry interaction term. We also test Hypothesis 4b using the China experience—other industries and proximity to other firms’ subsidiaries interaction term. The results in Model 4 support both Hypotheses 4a and 4b.

To better understand the substantive nature of these moderation effects, we plotted the results in Figures 3 and 4, based on the coefficient estimates in Model 4. These figures show standardized exit rates for subsidiaries by the proximity of a subsidiary to its industry peers. In the figures, we compare exit rates by low experience entries (one standard deviation less than the mean level of experience) and high experience entries (one standard deviation greater than the mean level of experience).

In Figure 3, we see that subsidiary exit rates for low experience firms are uniformly greater than that for high experience firms, across all levels of proximity to industry peers, which is a result consistent with Hypothesis 2. Notably, the slope of the plot for low experience entries is greater than that for high experience entries. Firms with little experience gain comparatively more by locating close to competitors, than firms with more experience, consistent with Hypothesis 4a.

In Figure 4, exit rates are greater for firms that have a high level of experience outside a firm’s focal industry in a manner consistent with Hypothesis 3. This effect sharpened for subsidiaries located distant from other subsidiaries, but notably, firms with a high level of experience outside the focal industry, experienced a stronger decline in exit rates, when locating close to the subsidiaries of other Japanese firms. This result implies
Table 1. Descriptive statistics and inter-item correlations

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<td>0.05</td>
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Mean: 0.78  2159  131  194  6.55  5.36  372  9.50  4.93  0.77  2.27  2.50  4.64  1.30  243  103.61  40.57  4.45  0.15  1.88  0.38  1.80  1.56  0.22  1.32  0.70  1.79

Standard deviation: 0.41  952  110  241  11.9  1.41  37.5  12.8  8.60  0.42  2.46  1.68  1.39  1.54  2.20  162.80  70.88  1.56  0.22  1.32  0.70  1.79
Table 2. Exponential event history estimation on the exit rate of Japanese Subsidiaries in China, 1979–2001

<table>
<thead>
<tr>
<th>Variables</th>
<th>Hypothesized effect</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
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<td>0.0015</td>
<td>0.0058***</td>
<td>0.0015</td>
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<td>Number of all subsidiaries in industry in China</td>
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<td>0.0012</td>
<td>0.0023</td>
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<td>0.0027***</td>
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<td>0.0089</td>
<td>-0.0030</td>
<td>0.0089</td>
<td>-0.0051</td>
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<td>-0.5196***</td>
<td>0.0323</td>
<td>-0.4272***</td>
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<td>Number of entries in province</td>
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<td>0.0030</td>
<td>-0.0035</td>
<td>0.0030</td>
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<td>Number of exits in province</td>
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<td>0.0072</td>
<td>-0.0153*</td>
<td>0.0072</td>
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<td>0.0961</td>
<td>0.2112*</td>
<td>0.0961</td>
<td>0.0718</td>
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<td>0.0285</td>
<td>-0.2378***</td>
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<td>-0.2215***</td>
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<tr>
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<td>0.0458</td>
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<td>China experience–in industry × Proximity to other firms’ subsidiaries</td>
<td>H4a (–)</td>
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<td>China exp.–other industries × Proximity to other firms’ subsidiaries</td>
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<td>1784***</td>
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<td>Incremental chi-square</td>
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Note: Annual, industry and province of entry fixed effects included in all models, but not shown.

***P < 0.01; **P < 0.05; *P < 0.10.
Figure 1. Distribution of Japanese Subsidiaries in China in 1990.

Figure 2. Distribution of Japanese Subsidiaries in China in 1997.
Figure 3. Standardized exit rates of Japanese subsidiaries in China: by experience in subsidiary's industry in China. Note: Exit rates standardized by exit rate for case of a subsidiary that has mean levels of all experience, and is located at a mean distance from all other subsidiaries, as determined from coefficient estimates found in Model 4 of Table 2.

Figure 4. Standardized exit rates of Japanese subsidiaries in China: by experience outside subsidiary's industry in China. Note: Exit rates standardized by exit rate for case of a subsidiary that has mean levels of all experience, and is located at a mean distance from all other subsidiaries, as determined from coefficient estimates found in Model 4 of Table 2.
that the positive vicarious learning benefits from proximity are most pronounced for firms with high levels of non-relevant experience, supporting Hypothesis 4b.

4.2. Robustness checks
As a test of the robustness of our results, we recomputed our proximity measures as density measures for entries made in the city and province in which a subsidiary was situated, or in other provinces. We also computed a second set of proximity measures which were defined at the level of province in which a subsidiary was situated, or defined as the distance from subsidiaries in all other provinces. We found a similar interpretation held with these alternative distance and density measures. As our next robustness check, we ran a Cox specification, in which there is no functional form defined for the time dependence of exit, and a Weibull specification. The results were qualitatively the same.

5. Discussion
5.1. Contributions
In this article, we explored the issue of how organizational geography and prior experience jointly affected subsidiary exit rates. We observed that a firm’s past experience had an important moderating influence on the effect of co-location with other firms. In general, co-location, or investing in proximity to other firms’ subsidiaries, reduced exit rates. This effect was most pronounced for firms with low levels of relevant experience. The subsidiaries of low experience firms had lower exit rates from locating proximate to other firms than experienced firms. This suggests that organizational geography-based vicarious learning supplements rather than complements experiential learning in a foreign expansion.

We found evidence of the reverse side of this process, as firms with high levels of experience outside the focal industry in a host country tended to have higher exit rates than those with low levels of such experience. When such firms were located proximate to industry peers from the same home country, however, exit rates declined sharply, as compared to expansions located distant from other firms. This divergence in exit rates suggests that experience can have an adverse effect on a subsidiary, when it is gained outside the focal industry in a host country. Importantly, this adverse effect can be mitigated by learning from other firms.

Our study extends research on inter-organizational environments by prominently featuring the role of geography, as related to the efficacy of a firm’s strategic choices of location, and the expected organizational outcomes of those choices. Importantly, we find that not all firms gain the same net benefits when co-locating in geographic space. Firms relatively inexperienced and uncertain about an investment environment benefit the most from co-location. This result reinforces the idea that firm heterogeneity exerts a substantive moderating influence on the effectiveness of the strategies an organization implements in its expansions.

Although we found that domain-specific experience moderated the influence of geographic proximity, the overall performance effect of proximity was a positive one. Organizations do co-locate in geographic space with their peers and the general outcome of doing so is to reduce the failure rate of their expansions. Furthermore, our
results for Hypothesis 4b indicate that a firm with a high level of experience garnered in other domains could benefit from locating close to the subsidiaries of its peers, to engage in a process of vicarious learning. Such learning from others may be necessary to correct the kind of inappropriate generalizations that a firm tends to make when applying knowledge gained in one area to another (Haleblian and Finkelstein, 1999).

5.2. Limitations
This study has several limitations. First, like many other studies on learning and knowledge spillovers, we have not directly measured these concepts. We assume subsidiary survival/exit reflects the net result of geographical proximity to other firms, without providing more fine-tuned measures of learning and knowledge output. Although researchers have observed the empirical fact of co-location among industry peers from the same home country (Chang and Park, 2005), they have not been able to collect interview data that unequivocally reveal the motivation of such co-location.

Second, our empirical modelling utilized data that covered the population of firms in China from two databases, but the NBS data was only available from 1998, meaning we had to use firm founding years to construct annual observations for the years prior to 1998. Third, as we employed an event history model, we used a matrix of control variables and fixed effects to account for unobserved heterogeneity, but we were unable to cluster error terms to better account for unmeasured, correlated events by firm.

5.3. Extensions
The empirical focus of this study was international expansion. However, we believe that the results of this study have general implications for organizational dynamics in other industrial and geographic settings, such as the high-technology industry in Silicon Valley, the Hollywood movie industry, the Italian jewellery industry, and the Swiss pharmaceutical industry, to name a few. These industries are ones in which the diversity of a firm’s own experiences and geographic proximity are likely candidates to influence the success of a firm’s geographic expansion strategies. Future work can continue to take location as a central organizational theme, to examine how the scopes of organizational geography and experiential learning in other settings, in addition to our consideration of these issues in the context of an emerging market (China), influence the success of a firm’s foreign expansions.

Next, previous literature has identified that positive spillovers exist when firms co-locate with other firms. As our findings showed, however, such positive spillovers are not guaranteed for all firms. Research has shown that foreign firms often have superior technology or management skills, and local firms benefit from positive spillovers from foreign firms (Sinani and Meyer, 2004). Our findings suggest a need for future research to look at asymmetric outcomes in vicarious learning, as contingent on the organizational geography of a firm’s subsidiaries, among local and foreign firms.

Finally, the practice of co-location can be a consequence of a firm’s imitation of other firms’ prior moves (Baum et al., 2000). We have not distinguished vicarious learning from imitation as institutional mimicry (Gimeno et al., 2005). Mimetic location decisions tend to be made when a firm lacks prior experience (Henisz and Delios, 2001). Yet, we believe that even when co-location was originally motivated by mimetic conformity, geography-based vicarious learning will likely be an outcome of this
process, as firms can choose to imitate the structure and behaviour that maximizes their economic benefits. In fact, our contention that a reference group from the same cultural and institutional background is the primary source of knowledge spillovers implies a close association between mimetic and vicarious learning processes. Pure mimetic conformity to a firm’s industry peers from its own home country does not guarantee lower exit rates; vicarious learning, through which the useful experience and knowledge of these peers are acquired and absorbed, will reduce chances of exit. Extant research on organizations has concentrated on identifying the antecedents to imitation; yet we have revealed the consequences of organizational imitation and vicarious learning, as tied to a firm’s organizational geography, which are important themes that future research can continue to develop.

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