



Experience, imitation, and the sequence of foreign entry: wholly owned and joint-venture manufacturing by South Korean firms and business groups in China, 1987–1995

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Abstract

The evolution of foreign entry in the form of joint ventures and wholly owned manufacturing operations is examined as a staged process shaped by experience and imitation dynamics at the firm, group, and industry levels of analysis. The expansion of South Korean firms into China between 1987 and 1995 lends support to the staged view of foreign entry. Over time, technology-intensive firms are more likely to abandon joint-venture entry modes, owing to contractual hazards. Firms in the same business group are found to imitate each other's choice of joint ventures and wholly owned plants. Firms in the same industry mimic each other's choice of wholly owned plants, though not of joint ventures.

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Introduction

This paper offers the first conceptual and empirical analysis of interorganizational effects on foreign entry in the form of joint ventures and wholly owned manufacturing operations, over time and at three different levels of analysis: firm, business group, and industry. The internalization approach to foreign investment (Buckley and Casson, [1976] 1991) points out that ownership of offshore subsidiaries is a strategic variable that the firm uses to optimize its overall approach to foreign expansion. When firms go abroad they must decide whether their capabilities and knowledge of the host country environment enable them to set up and manage their operations by themselves – that is, without the collaboration of a local partner. Under certain circumstances, joint ventures with a partner in the host country may help the firm deal with the peculiarities of the local market, access restricted resources, and even protect itself against political risk. Foreign entry, however, is not a one-time decision, because firms enter multiple foreign countries at different points in time, and they may establish several plants in a given foreign country.

The analysis in this paper approaches decisions over foreign subsidiary ownership as a staged process, exploring the effects of

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experience and imitation at the firm, business group, and industry levels of analysis. Using complete data on the manufacturing entries by listed South Korean firms into China between 1987 and 1995 allows one to ignore acquisitions of domestic firms, as they are not generally allowed by Chinese authorities, and to focus instead on the impact that experience and imitation effects at the firm, business group, and industry levels have on the decision to establish wholly owned and joint-venture plants. In addition, controlling for variations in both home and host countries facilitates a cleaner test of strategic and organizational variables (Hennart, 1991). The main argument is that firms approach foreign entry as a staged process, taking into account their characteristics, their own prior experience, the experiences of other firms with which they are connected, and the emerging norm in their home-country industry. Firms escalate their commitment to a given foreign market over time, shifting from joint venture to whole ownership as they accumulate relevant experience.

Entry mode and the staged model of foreign expansion

Entry mode decisions by firms seeking to establish a manufacturing plant in a foreign country can be seen as part of a staged process whereby organizational variables linked to imitation and experience add to the explanatory power of economic factors such as transaction costs, oligopolistic industry structures, wages, and exchange rates (Caves, 1996; Buckley and Casson, [1976] 1991). The staged model of foreign expansion builds on a central assumption in the field of international business, namely that the knowledge required for a firm to operate in a foreign environment is different from that accumulated in its home country (Aharoni, 1966; Johanson and Vahlne, 1977; Vernon, 1979; Dunning, 1993; Kogut and Zander, 1993). Staged models of foreign expansion argue that companies explore foreign opportunities sequentially, accumulating knowledge in an incremental way as they build their capabilities over time. Firms escalate their commitment to a foreign location as they accumulate relevant operational knowledge in it. Moreover, research has shown that a firm's foreign experience enhances its performance in terms of survival and market share (Mitchell *et al.*, 1992; Shaver *et al.*, 1997). This view of foreign expansion is tantamount to arguing that firms take into

account past experience when making decisions as to future foreign expansion (Eriksson *et al.*, 1997).

Staged expansion theory suggests that the firm prefers to use modes of first entry that allow it to maximize knowledge acquisition. Specifically, joint ventures are preferred to wholly owned operations when considering first entry because they enable the firm to benefit from the knowledge possessed by the local partner (Kogut, 1988; Hennart, 1991; Hennart and Park, 1993). Thus joint ventures are frequently seen as a second-best solution to foreign entry, a mode that is useful when the firm lacks familiarity with the local context or perceives host country political or sociocultural risks to be unusually high. After acquiring local knowledge through joint ventures, the firm may be in a better position to open subsequent plants on a whole-ownership basis. In general, the staged model suggests that joint ventures help the firm shift to wholly owned operations as it accumulates experience over time. Controlling for the usual contractual costs and risks associated with joint venturing – dissipation of intangible assets, and goal conflict between the partners (Hennart, 1991; Henisz and Williamson, 1999) – the potential benefits of joint ventures are expected to decrease as the company acquires experience in the foreign location. Thus the staged model suggests that firms learn not only from repeated use of the same entry mode (e.g. Anand and Khanna, 2000b) but also across modes of entry.

Although previous empirical research from a staged perspective has found a robust effect of first entry on the likelihood of subsequent entries (Kogut and Kulatilaka, 1993; Chang, 1995; Kogut and Chang, 1996; Guillén, 2002), the effect of previous entry mode decisions on subsequent entry mode has not been empirically assessed using event history analysis of repeated entries by the same firms over some period of time. Moreover, research in this area has produced contradictory results. Some studies have found that firms with more foreign experience prefer wholly owned entry modes (Davidson, 1980; Gatignon and Anderson, 1988; Franko, 1989; Agarwal and Ramaswami, 1992), whereas others have found the opposite effect (Davidson and McFetridge, 1985; Hedlund and Kverneland, 1985). We believe that part of the problem may have to do with not observing over time the evolution of entry mode decisions both among firms that invest abroad in a given year and among others that decide not to.



This paper extends the basic staged model to incorporate the effects of experience and imitation at three levels of analysis: the firm, the business group, and the industry. A large body of research in organizational theory argues that firms incorporate into their decision-making not only their past experiences, but also those of others in their immediate environment (Abrahamson and Rosenkopf, 1993; Miner and Haunschild, 1995). In a similar vein, the international business field has argued for an even longer time that, under certain circumstances, firms take each other's experiences into account when making foreign entry decisions (Knickerbocker, 1973; Hymer, [1960] 1976; Caves, 1996). We build on these insights to formulate predictions as to the effects of past experience and imitation on entry mode. We discuss these effects at each of three levels of analysis.

The firm level

Previous research has argued and found that technological or brand assets are perhaps the most important firm characteristic affecting the entry mode decisions (Kogut, 1988; Kogut and Singh, 1988; Hennart, 1991; Dunning, 1993; Hennart and Park, 1993). Some research has pointed out that joint ventures can be arranged in ways that protect the firm's intangible assets (Yan and Gray, 1994), and conceptual models emphasize that shared ownership exposes the firm to 'contractual hazards' (Caves, 1996). Joint ventures are supposed to help the firm overcome its lack of knowledge about the local market or the host country's political setting, but they may expose it to contractual risks associated with the goals of the local partner, which may be different from, or even incompatible with, those of the entering firm.

Contractual and political hazards are not simply additive; rather, they interact in a complex way because the multinational firm expands internationally on the basis of intangible assets that provide it with a competitive advantage, but which are difficult to protect contractually, especially if political hazards are high. Henisz and Williamson (1999, 272) note that

the impact of variation in property rights regimes either across countries or over time on the relative costs of governance of partnership and [whole] ownership will depend crucially on the level of contractual hazards posed by the individual transaction.

When political hazards are high – for example, property rights are not well protected – the

probability that a cross-border transaction by a multinational firm 'will be organized under partnership increases for transactions with low contractual hazards...while it decreases for transactions with high contractual hazards' (1999, 273). The empirical evidence indicates that firms with high levels of technological or marketing intangible assets – frequently measured by R&D or advertising expenditures – prefer to wholly own their foreign operations rather than partner with a local firm (see Caves, 1996, for a review of the empirical literature). Sole ownership enables the firm to fully appropriate the rents accruing from intangible assets, and reduces the risk of dissipation of the asset.

The effect of R&D or advertising intensity on entry mode decisions is well understood theoretically and empirically, but the evolution of entry modes over time in response to the contractual risks associated with joint ventures is not. If joint ventures are especially prone to the risk of dissipation of intangible assets, it is germane to ask whether the experience of a shared-ownership mode of entry by a firm with high levels of such assets makes it less likely in the future to enter again via joint venture and more likely to pursue the wholly owned mode (Agarwal and Ramaswami, 1992; Eriksson *et al.*, 1997).

The R&D-intensive firm is more likely to experience contractual friction and possible dissipation of the technological asset if it enters a foreign country using a shared-control mode. As a result, involving a local partner as a means to learn about the host country environment is more costly, and the firm will be more likely to shift to whole ownership the more valuable its technological assets. Firms may learn over time how to use joint ventures more effectively and to avoid intangible dissipation, but, if given the choice between joint ventures and wholly owned operations, a firm with both a high level of intangibles and experience with joint ventures is expected to prefer in subsequent entries not to share control with a local partner, holding everything else constant. Thus we formulate the following two complementary hypotheses:

Hypothesis 1a: Previous joint-venture entry by the firm interacts negatively with its level of intangible assets to reduce the rate of subsequent joint-venture entry.

Hypothesis 1b: Previous joint-venture entry by the firm interacts positively with its level of intangible assets to increase the rate of subsequent wholly owned entry.

Business group effects

In many countries firms exist in the context of interorganizational relationships, which may affect the acquisition and diffusion of knowledge about foreign locations (Chang, 1995; Guillén, 2002). Firms take into account not only their own previous experiences as to entry mode choice but also the experiences of others in their immediate environment. Their position in relevant social structures will affect what is learned from experience and how it is interpreted (Levitt and March, 1988; Cohen and Levinthal, 1990). More specifically, experiential learning at the level of clusters and/or fields of organizations is likely to affect a firm's behavior above and beyond the firm's own immediate actions (Miner and Haunschild, 1995). This paper considers two kinds of interorganizational relationship believed to affect the process of foreign expansion of a firm and its choice of entry mode: the business group as an interorganizational social structure, and the organizational field as an institutionalized arena in which firms mutually recognize each other's actions (Scott, 1995). We argue that imitation occurs both at the level of the business group and at the level of the industry as firms share their experiences and learn from each other.

Firms belonging to a cluster or group are tied to each other for exchange, ownership or control reasons (Gerlach, 1992; Granovetter, 1995; Guillén, 2000; Khanna and Palepu, 2000). They find themselves in a position to share information and experience, and they tend to justify the adoption of similar practices or strategies (DiMaggio and Powell, 1983; Haunschild and Miner, 1997). Thus early entrants can convey information to later entrants as to what is the best entry mode. The access that membership in clusters or groups provides to the experience of other firms with a presence in a foreign country shapes all sorts of decisions, including the choice of entry mode. Previous studies have shown that organizations sharing a director on their boards, holding a stake in each other's equity or depending on the same sources for critical resources tend to adopt similar practices (Davis, 1991; Burns and Wholey, 1993; Haunschild, 1993; Westphal *et al.*, 1997). Although cross-sectional studies of foreign investment – regardless of the mode of entry – have not found a 'group' effect (e.g. Hennart and Park, 1994), others using a longitudinal database have (Chang, 1995; Martin *et al.*, 1998; Guillén, 2002). In the specific case of the South Korean *chaebol*, there is

evidence to indicate that information and experiences flow within groups from one company to another (Guillén, 2001, 76–82).

Previous research on foreign entry, however, has not explored whether there are group effects on entry mode decisions. Yet firms in the same business group are likely to share experiences concerning the choice between joint venturing and whole ownership. Previous joint-venture entries by other firms in the same group are expected to accelerate the rate of both subsequent joint venture and subsequent wholly owned entries. Group experience with joint ventures increases future joint venturing across the group because knowledge as to how to set up a new venture may be shared. According to the staged model, experience with joint ventures also increases the chances of whole ownership as firms realize that their accumulated knowledge enables them to do without a local partner. Thus we predict:

Hypothesis 2a: Previous joint-venture entry by another firm in the same business group subsequently increases the rate of joint-venture entry for all firms in the business group.

Hypothesis 2b: Previous joint-venture entry by another firm in the same business group subsequently increases the rate of wholly owned entry for all firms in the business group.

Group experience with whole ownership also increases the chances of using the same entry mode in the future as firms within the group share information and experiences. By contrast, if the staged model of foreign entry applies, group experience with whole ownership *reduces* the chances that joint ventures will be used in the future because group firms will realize they have the requisite knowledge to operate in a foreign country without a local partner that may expose them to unwanted risks. Thus we formulate:

Hypothesis 3a: Previous wholly owned entry by another firm in the same business group subsequently reduces the rate of joint-venture entry for all firms in the business group.

Hypothesis 3b: Previous wholly owned entry by another firm in the same business group subsequently increases the rate of wholly owned entry for all firms in the business group.

Imitation within organizational fields

Besides interorganizational clusters or groups, organizational fields are a second type of social structure that may affect the circulation of readily observable



experience from one firm to another, thus encouraging imitative behavior. Organizational fields are spheres of activity within which actors mutually recognize each other's presence and actions (DiMaggio and Powell, 1983). The industry has been frequently proposed as a relevant organizational field (Fligstein, 1985; Haveman, 1993; Scott, 1995, 56; Ingram and Baum, 1997). Firms in the same industry benchmark their internal processes and performance against competitors. The state and the financial community need to assess the performance of various firms, and they tend to compare them within industries. Industries provide participants with opportunities for learning about others' experiences, enabling the firm to access new information and resources (Ingram and Baum, 1997). Industries are 'pools of information about the characteristics and behaviors of firms'. Organizations in an industry engage in 'collective sense-making' (Porac and Rosa, 1996, 370–372), and tend to 'characterize environments similarly' (Huff, 1982, 127).

Firms have been found to imitate each others' patterns of foreign expansion, especially in industries with relatively few competitors (Caves, 1996, 83–97; Hennart and Park, 1994; Hymer, [1960] 1976), or when rising labor costs or currency appreciation in the home country forces them to look for alternative foreign locations so as to remain competitive. Oligopolistic competition, in particular, has been a common situation in which imitation takes place. Under moderate degrees of industry concentration (that is, in a loosely knit oligopoly) firms engage in competitive imitation. In a perfectly competitive market firms cannot strategize, whereas in a tight oligopoly they prefer to engage in collusion. By contrast, firms in a loosely knit oligopoly are predicted to match the foreign moves of their home-country competitors so as to prevent them from exploiting a foreign market or source of supply that may enhance their competitive position on a worldwide basis (Knickerbocker, 1973; Hymer, [1960] 1976; Hennart and Park, 1994; Caves, 1996, 83–97). Other researchers have documented the fact that both licensing contracts and joint ventures tend to cluster in certain industries, especially chemicals, electronics, and computers (Anand and Khanna, 2000a).

Imitation in an organizational field or industry, however, may not only take place for competitive reasons (DiMaggio and Powell, 1983). Neoinstitutional theory makes predictions about imitative

behavior regardless of the level of industry concentration or the impact of adverse economic changes. Controlling for industry-level economic variables (including the number of competitors, labor intensity, capital intensity, and technological intensity), the greater the proportion of firms in the same home-country industry or organizational field that use the same foreign entry mode, the more likely it is that other firms in the same field will behave similarly. Neoinstitutional theory indicates that following the norm in the industry not only reduces the uncertainty about what might be the best entry mode, but also enhances its legitimacy because a practice that is taken for granted is seen as appropriate by the firm's stakeholders (Abrahamson and Rosenkopf, 1993; Scott, 1995; Haunschild and Miner, 1997). Accordingly, one would expect firms to conform to the emerging norm within their industry when choosing a mode of entry. The more firms in an industry enter using a specific entry mode, the more the entry mode will become legitimate and taken for granted. Thus we predict:

Hypothesis 4a: The rate of joint-venture entry increases as more firms in the same home-country industry have established joint ventures.

Hypothesis 4b: The rate of wholly owned entry increases as more firms in the same home-country industry have established wholly owned operations.

Research setting, data, and method

Previous research has possibly incurred in sample selection biases by limiting its empirical observation of wholly owned and joint-venture entries to firms that have indeed entered a particular foreign country (Kogut, 1988; Kogut and Singh, 1988; Hennart, 1991; Hennart and Park, 1993; Pan, 1996). Moreover, previous empirical studies have not looked at the evolution of entry mode decisions over time – that is, taking into account whether firms invest or not in a given year using one or the other entry mode for a specific operation (for one exception see Delios and Henisz, 2002). By contrast, the empirical design used in this paper takes a different approach by observing a given set of firms over time, and recording whether they enter a foreign market in a particular period of time, and, if they do, distinguishing between modes of entry. Thus this paper contributes to the literature the first longitudinal analysis of the evolution of foreign entry that distinguishes between joint ventures and wholly owned operations.

Research setting

The international expansion of South Korean companies provides an excellent setting for studying foreign entries longitudinally. Rather than the expansion of Korean firms worldwide, this paper controls for host country by looking at entries into China. Three features make this host country especially attractive for a comparison of two investment entry modes, namely joint ventures and wholly owned operations. First, prior to the late 1980s the international manufacturing experience of Korean firms was negligible, making it possible to avoid left-censoring problems altogether. Second, acquisitions are generally not an option for foreign companies entering China; the only realistic choice is between whole and partial ownership. This facilitates a clear-cut test of the effects of experience and imitation on the evolution of ownership mode. And third, South Korean firms did not export to China prior to establishing plants there, a feature that makes it unnecessary to consider exporting as an alternative mode of servicing the Chinese market. Thus the fact that the sample only includes greenfield operations that are not substitutes for pre-existing exports, while reducing the variability in the dependent variable, allows for a more explicit and precise test of the reasons for the degree of control chosen by the entering firm.

The People's Republic has become the most important foreign manufacturing location for Korean companies, and one of the largest recipients of foreign investment in general. Although China's 'open door policy' toward foreign investors dates back to 1979 (Pearson, 1991; Landi, 1996; Zhang and Van den Bulcke, 1996), listed Korean firms started to set up facilities in China in 1987 (Sanford, 1990, 8–15; Lee, 1996). The potential of the Chinese market had been apparent since the early 1980s, but Korean firms fully realized the strategic importance of China as a manufacturing site after long-repressed wages in Korea more than doubled between 1987 and 1990. As Wells (1983, 76–78) noted, many companies based in developing countries establish plants in other less developed economies in response to wage hikes at home.

Nowadays, South Korea ranks as the sixth largest foreign investor in China. Although China and Korea are neighboring countries, and there is a sizable Korean-Chinese population in Northern China, surveys of South Korean managers have shown them to be overwhelmed by the complexities of dealing with the Chinese government at

various levels as well as with a foreign labor force and a new set of suppliers (An Chong Sok, 1993; Lee, 1996, 158). In spite of the autonomy granted to provincial and local governments to attract foreign investors, the Chinese central government still sets the main parameters within which all foreign companies operate, especially in the areas of supply linkages to centrally planned enterprises, access to the domestic market, export requirements, import licenses, and foreign exchange management. Fragmentation of governmental authority by province and municipality makes the environment very complex. Subsidiaries belonging to the same group or firm have attempted to coordinate their cash and input flows in order to meet regulations (Pearson, 1991; Landi, 1996). Under these circumstances, cumulative experience plays an important role in becoming more managerially effective. Although China has been gradually expanding the authorized locations for foreign investment to virtually the entire country, most Korean firms operating in China are located in or around Beijing, Tianjin, Qingdao, Liaoning, and Heilongjiang – that is, along the Northern coastal area and in Manchuria (An Chong Sok, 1993; Landi, 1996).

Data: sample and variables

The empirical study covers 506 South Korean manufacturing firms, and trading companies with manufacturing activities, listed on the Seoul stock exchange as AT the end of 1995. Thus US Standard Industrial Classification (SIC) codes 20–39 and 50 are represented in the sample. Only a cross-industry sample allows one to test hypotheses related to the effects of diversified business groups and organizational fields. Data on Korean foreign manufacturing plants were obtained from the Bank of Korea, which is in charge of authorizing, registering, and processing all foreign investments by Korean firms. By the end of 1995, 117 of the 506 listed firms had established a total of 202 manufacturing plants in China, of which 119 were joint ventures with a Chinese partner and 83 were wholly owned plants. Only plants with 100% Korean ownership were coded as 'wholly owned.' Lowering this threshold to 95% or more Korean ownership did not change the results because only three additional plants were coded as wholly owned. Korean companies have struck a balance between the two entry modes similar to the one recorded for other foreign firms in China (Pan, 1996; Zhang and Van den Bulcke, 1996, 390).¹

Most Korean plants in China have been set up primarily for export, given that the Chinese government generally encourages foreign-invested firms to sell at least 80% of their output in foreign markets. Among the products manufactured are textiles, clothing, footwear, foodstuffs, chemicals, cosmetics, cement, flat glass, metal containers, mechanical components, electrical appliances, vehicle parts, excavators, and pianos. The month and year in which the Bank of Korea authorized the investment was considered to be the time at which the establishment of the plant was made. In some cases, firms applied for and obtained authorization but did not actually establish a plant. Such occurrences were deleted from the data set. The Bank of Korea correctly treated additions to, or expansions of, a pre-existing plant as 'enlargements' rather than new entries.

The dependent variable is the rate of establishment of new, separate manufacturing plants, modeled as a repeated hazard with two possible, mutually exclusive events: establishing a joint-venture plant or establishing a wholly owned plant. Each spell or duration between events constitutes an observation in the data set for analysis. In the case of firms with plants in China, the first observation starts at the beginning of January 1987 or at the firm's founding date, whichever came last. Given that no plants were established in China by listed Korean firms prior to 1987, there is no left-censoring problem. The last observation for each investing firm was right-censored so as to reflect the spell between the last entry and the end of the study – that is, just after the end of December 1995.

Background firm variables and information on interorganizational relationships were obtained from various annual and semi-annual company directories (KPC, 1985a, b; Business Korea, 1986; Asia-Pacific Infoserv Inc., 1994–1996, 1991–1996), and corroborated during on-site and telephone interviews. A total of 180 firms in the sample of 506 listed firms were identified as being affiliated to one of 54 business groups or *chaebol*, with a minimum of two listed firms and a maximum of nine firms (Hyundai group).

Independent variables were allowed to vary over time. Variables counting previous entries by the same firm or by another firm in the same group were calculated separately for wholly owned and joint-venture plants. The counters of previous wholly owned and joint-venture entries by the same firm were updated after each event.² The

dummies indicating whether a firm in the same business group had previously established a wholly owned plant or a joint-venture plant were coded as 0 until the first event occurred, and as 1 thereafter for all of the firms affiliated with the group. In the case of a firm that was the first in its business group to establish a wholly owned or a joint-venture plant in China, the corresponding group dummy variable was not coded as 1 until a second firm in the same group set up a plant. This coding technique avoids double counting of establishments by the firm and by other firms in the same group.

Separate measures of the institutional norm in the firm's home-country organizational field (industry) were constructed. First, the proportion of firms in each of 19 industries that had established a wholly owned plant in China was calculated as at the end of each calendar year, ranging between 0 and 33.33%. Second, a similar proportion was calculated for joint-venture entries, which ranged between 0 and 50%.

A number of economic controls were added following previous research on foreign investment. First, firm-level variables generally associated with wholly owned entry were included in the analysis: size (Oliver, 1991; Caves, 1996) and technological assets (Kogut and Singh, 1988; Hennart, 1991; Dunning, 1993; Hennart and Park, 1993). Firm size was measured by the log of real sales, lagged one year. Technological sophistication was measured by the ratio of cumulative R&D expenses to sales. This variable was available only for 1995.³ Second, it was deemed necessary to hold constant for the labor intensity for each industry, calculated as the year-on-year variation in the ratio of total employee remuneration over total value added, divided by the ratio for food and beverages so as to ensure comparability across years.⁴ This variable was updated annually using government statistics, and lagged 1 year (NSOROK, 1987–1996; NSO, 1989–1995). Finally, the relative attractiveness of various industries in China was controlled for by an industry-specific annual growth rate, which was lagged 1 year and updated annually (SSBPRC, 1986–1999).

The regressions also include a period dummy to account for the different regulatory climate before and after the Tiananmen events of 1989. As shown in Figure 1, the level of foreign direct investment in China from all home countries combined increased markedly after 1990. In addition, wholly owned operations became much more common after 1990, and the use of joint ventures declined in propor-

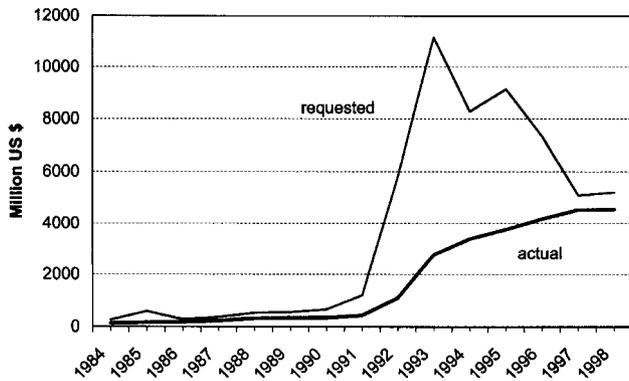


Figure 1 Foreign direct investment in China, 1984–1998. Source: SSBPRC (1986–1999).

tional terms after 1993 (Table 1; Landi, 1996; Zhang and Van den Bulcke, 1996). Finally, a set of industry dummies was included so as to control for the fact that some industries are more prone to the use of joint ventures than others (Anand and Khanna, 2000a).⁵

The sample of 506 listed firms contained 31 ‘trading companies’ that are dedicated not only to import–export activities, but also to manufacturing. For example, by the end of 1995, LG International, the trading company of the LG group, had established eight manufacturing plants in China to make machines, metal products, and assembled goods. The information pertaining to the 34 manufacturing plants established by 14 of the 31 trading companies was taken into account when calculating imitation effects at the group level, but was excluded from the regressions because the company-level background information could not be broken down between manufacturing and trading activities. Regression results including the 31 trading companies did not differ substantially from those reported below. Missing data on some of the independent variables for 11 firms and the exclusion of all 31 trading companies reduced the final sample for analysis to 464 firms, of which 86

had established a total of 170 manufacturing operations in China by the end of 1995, including 103 joint ventures and 67 wholly owned plants. The final sample includes 107 plants established as first entries, and 63 as subsequent entries by the same firm. A total of 34 firms established more than one plant.⁶ The data set generated 4400 spells after durations were split when an event occurred, and at the end of each calendar year so as to accommodate the time-varying explanatory variables. Table 2 shows the sample descriptive statistics and the correlations between pairs of explanatory variables, which are generally very low.

Method

The effect of explanatory and control variables (or covariates) on the rate of establishment of plants was estimated using a partial likelihood hazard specification or Cox model allowing for right-censored observations and implemented with the TDA computer program (Kalbfleisch and Prentice, 1980; Röhwer, 1994). Hazard rates of entry are represented by log-linear functions of the covariates of interest. For each firm, the model calculates the hazards of wholly owned and joint-venture entries separately as the likelihood that the observed mode of entry will take place conditional upon the hazards for the other firms in the risk set at time t :

$$L_{JVi}(t) = \frac{h_0(t) \exp[A_{(i)}(t)\beta_{JV}]}{h_0(t) \sum_{j \in R_t} \exp[A_{(j)}(t)\beta_{JV}]},$$

$$L_{WOi}(t) = \frac{h_0(t) \exp[A_{(i)}(t)\beta_{WO}]}{h_0(t) \sum_{j \in R_t} \exp[A_{(j)}(t)\beta_{WO}]},$$

where $L_{JVi}(t)$ and $L_{WOi}(t)$ are, respectively, the likelihoods of joint-venture and wholly owned entry at time t for firm i ; $h_0(t)$ is the baseline rate; $A_{(j)}(t)$ is a matrix of time-varying covariates; j is an index for firms in the risk set R_t at time t ; $\beta_{JV}(t)$ is the associated vector of coefficients to be estimated

Table 1 Foreign direct investment in China by entry mode, 1979–1998

Entry mode	1979–1982	1983–1985	1986–1988	1989–1991	1992	1998
Equity joint ventures	2.8	29.5	46.7	44.5	49.6	33.2
Contractual	55.0	49.2	30.8	17.4	22.6	22.4
Wholly owned	7.4	1.7	7.0	30.2	26.7	41.7
Joint oil exploration	20.1	12.2	1.0	1.9	0.1	n.a.
Other	14.6	7.3	14.5	6.0	1.0	n.a.
Total (%)	100	100	100	100	100	100

Source: SSBPRC (1986–1999).

Table 2 Sample descriptive statistics and correlations ($n = 4400$ spells)

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12
1. Log real sales (million won)	4.303	1.296												
2. R&D stock over sales, adjusted for age	0.004	0.036	0.01											
3. Member of a business group	0.363	0.481	0.50	0.07										
4. Previous joint-venture firm entry	0.056	0.009	0.22	0.05	0.08									
5. Previous wholly owned firm entry	0.039	0.194	0.07	0.04	0.02	0.17								
6. R&D \times previous JV firm entry	0.087	0.618	0.17	0.27	0.07	0.45	0.13							
7. Previous joint-venture group entry	0.067	0.250	0.37	0.10	0.35	0.20	0.11	0.16						
8. Previous wholly owned group entry	0.040	0.197	0.27	0.08	0.27	0.18	0.12	0.19	0.53					
9. JV industry imitation (%)	3.211	5.636	0.08	0.07	-0.02	0.33	0.23	0.23	0.15	0.14				
10. WO industry imitation (%)	2.448	5.945	0.06	0.06	0.01	0.22	0.41	0.13	0.18	0.18	0.54			
11. China industry growth	1.119	0.127	0.06	-0.01	0.03	0.08	0.08	0.07	0.08	0.08	0.15	0.21		
12. Korean industry labor intensity	1.242	0.384	-0.00	0.00	-0.06	0.10	0.13	0.05	0.06	0.06	0.23	0.25	0.07	
13. Post-Tiananmen period, 1990–95 (= 1)	0.326	0.469	-0.02	-0.01	-0.01	-0.09	-0.08	-0.05	-0.04	-0.06	-0.21	-0.20	-0.28	0.04

Correlations equal to or greater than 0.03 are significant at the $p < 0.05$ level.

for joint-venture entry; and $\beta_{WO}(t)$ is the associated vector of coefficients for wholly owned entry.

This statistical method makes three conventional assumptions. First, the covariates exert a log-linear effect on the hazard function. Second, the baseline hazard rates and the log-linear function of the covariates are supposed to be proportional. Third, the baseline hazard rate is considered to be the same for all firms in the risk set. The latter two assumptions allow us to leave the baseline hazard unspecified. In order to estimate the coefficients in the model, one maximizes the ‘partial’ likelihood function obtained by multiplying all of the conditional probabilities for each time spell ending in a plant establishment. Right-censored spells enter the risk set at each time period but do not contribute to the numerator of the likelihood function. This procedure yields consistent and asymptotically normally distributed parameter estimates, with the t -statistics being asymptotically close to the full maximum likelihood estimates (Cox and Oakes, 1984; Tuma and Hannan, 1984).

Results

Table 3 reports the parameter estimates, t -values, and goodness-of-fit statistics for three model specifications. The effects of each variable on the

likelihood of joint-venture and wholly owned entry are captured separately by two different parameter estimates. A positive estimate means that the variable increases the likelihood of the mode of entry being considered relative to the baseline of no entry. Model A includes the firm and industry level control variables. Previous joint-venture entry increases the likelihood of both joint ventures and wholly owned plants, whereas previous wholly owned entry increases the likelihood of subsequent wholly owned plants only.

Models B and C add the hypothesized effects. Model B includes the experiential variables at the firm and business group levels, and Model C includes the full model with the industry-level imitation effects. Hypothesis 1a predicted that the firm’s R&D intensity would interact negatively with previous joint-venture entry to reduce the chances of subsequent joint ventures. We find strong support for this prediction. Hypothesis 1b predicted a positive interaction between R&D intensity and previous joint-venture entry to increase the chances of subsequent wholly owned plants. Unfortunately, we find no support for this prediction.

The results regarding the effects of group-level experience are mixed. We find evidence suggesting

Table 3 Proportional hazard of joint-venture (JV) and wholly owned (WO) entry of South Korean manufacturing firms in China, 1987–1995

Variable	Expected effects		Model A		Model B		Model C	
	JV	WO	Joint venture	Wholly owned	Joint venture	Wholly owned	Joint venture	Wholly owned
<i>Firm characteristics</i>								
Log sales	+	+	0.58*** (6.86)	0.18* (1.68)	0.53*** (5.83)	0.16 (1.36)	0.55*** (5.93)	0.15 (1.23)
R&D	–	+	–0.52 (–0.43)	–0.32 (–0.23)	0.83 (0.72)	–0.53 (–0.33)	1.06 (1.01)	–0.08 (–0.05)
Member of a business group	?	?	0.01 (0.03)	–0.17 (–0.52)	–0.25 (–0.86)	–0.27 (–0.76)	–0.25 (–0.87)	–0.17 (–0.49)
Previous JV firm entry	+	+	1.44*** (5.81)	1.20*** (3.60)	1.67*** (6.08)	1.12*** (2.85)	1.72*** (5.78)	0.93** (2.32)
Previous WO firm entry	–	+	0.15 (0.45)	0.88*** (2.65)	0.12 (0.34)	0.85** (2.52)	–0.09 (–0.23)	0.52 (1.50)
<i>Firm-level experience effect</i>								
R&D × previous JV firm entry	H1a: –	H1b: +			–4.62** (–2.01)	–0.64 (–0.22)	–5.12** (–2.17)	–0.10 (–0.04)
<i>Group effects</i>								
Previous JV group entry	H2a: +	H2b: +			0.85** (2.52)	–0.49 (–0.95)	0.82** (2.43)	–0.64 (–1.20)
Previous WO group entry	H3a: –	H3b: +			0.18 (0.51)	1.09** (2.03)	0.11 (0.33)	0.98* (1.77)
<i>Industry imitation effect</i>								
JV industry imitation	H4a: +	?					–0.01 (–0.74)	0.01 (0.21)
WO industry imitation	?	H4b: +					0.04** (1.98)	0.05** (2.37)
<i>Control variables</i>								
China industry growth	+	+	2.64*** (3.86)	0.33 (0.29)	2.57*** (3.78)	0.39 (0.35)	2.49*** (3.52)	0.06 (0.05)
Korean industry labor intensity	+	+	1.57*** (4.05)	2.23*** (3.74)	1.45*** (3.62)	2.20*** (3.67)	1.46*** (3.51)	2.09*** (3.29)
Post-Tiananmen period	–	+	–0.50 (–1.60)	–0.19 (–0.61)	–0.39 (–1.38)	–0.15 (–0.47)	–0.30 (–0.99)	0.23 (0.65)
Industry dummies			Yes	Yes	Yes	Yes	Yes	Yes
Partial log-likelihood			–1241.92	–1232.93	–1226.74	–1226.74	–1226.74	–1226.74
Number of spells			4400	4400	4400	4400	4400	4400
Number of firms			464	464	464	464	464	464
Number of events			103	67	103	67	103	67

t-statistics shown in parentheses beneath parameter estimates. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

that previous joint venture by another firm in the same business group increases the chances of subsequent joint venturing by firms in the same business group (hypothesis 2a). We failed to find support for the prediction following the staged model that group-level joint-venture experience would increase the chances of subsequent wholly

owned plants as a result of increased knowledge about the foreign location (hypothesis 2b). We found no evidence either that group-level experience regarding previous wholly owned entries reduces entry via joint ventures (hypothesis 3a), but we did find support for the prediction that group-level experience with wholly owned entries

increases the likelihood of subsequently establishing wholly owned plants (hypothesis 3b). This pattern of results suggests that there might be a latent business group effect in the choice of entry mode over time. The reason for this is that we found support for a group-level experience effect on the same entry mode: that is, group-level experience with joint ventures affects the likelihood of entry via joint venture, and group-level experience with wholly owned operations affects the likelihood of wholly owned entry. In results not shown here, we entered business group fixed effects. The results were similar to those reported here, although the significance levels dropped somewhat owing to the reduction in the degrees of freedom. The business group fixed effects were not significant as a set.

Results concerning imitation following the norm in the industry are also mixed. We found no support for the prediction that an increasing proportion of firms in the industry with joint ventures would increase subsequent joint ventures by any firm in the industry (hypothesis 4a). The proportion of firms in the industry with wholly owned operations, by contrast, significantly increases the chance of further entry using this mode (hypothesis 4b), an effect that is not due to industry-specific characteristics because industry fixed effects are controlled for.

The point estimates in model C indicate that the effects of the variables are large in magnitude. For instance, a firm belonging to a business group in which another firm has entered via joint venture is 2.27 times more likely to subsequently enter via joint venture ($\exp[0.82] = 2.27$). A firm that has entered via joint venture in the past is approximately 20% more likely to avoid that entry mode in the future than a second firm that differs from the first only in that it spends one standard deviation of R&D over sales less (hypothesis 1a). A one standard deviation increase in the industry proportion of firms with a wholly owned plant yields an increase of almost 35% in the probability of a subsequent wholly owned entry by a firm in the same industry (hypothesis 4b).

Comparing the full model C with the baseline model A yields a significant improvement in explanatory power ($p < 0.001$). (Goodness-of-fit equals -2 times the difference in partial log-likelihood, or 30.36, which follows a χ^2 distribution with 10 degrees of freedom.) Thus the evidence in this sample indicates that the baseline model with economic control variables provides only a partial

account of the process by which firms choose entry modes over time. Experience and imitation variables at the firm, business group, and industry levels significantly add to our understanding of foreign entry with whole and partial ownership of the plants.

Robustness checks indicate that the results reported above do not change in response to different model specifications or samples. First, given that wholly owned operations were not generally allowed in the transportation equipment industry until late in the period under study, firms in this industry were excluded from the sample. The patterns of significant results reported above did not change. Second, the inclusion of business group fixed effects did not change the results reported above, except that levels of significance suffered somewhat owing to reduced degrees of freedom. (The group fixed effects were not significant as a set.) And third, a period dummy for the years 1993–1995 failed to be significant, and did not change the results, except that previous wholly owned group entry (hypothesis 3b) and wholly owned industry imitation (hypothesis 4b) failed to reach full significance.

Discussion and conclusion

This paper offers the first conceptual and empirical analysis of experience and imitation effects on foreign entry mode at the firm, business group, and industry levels. Although not always statistically significant for both joint ventures and wholly owned entries, the empirical results provide support for the view that firms take into account past experiences as they engage in foreign expansion over time. Unlike previous studies, the empirical approach used in this paper eliminates possible sample selection biases by observing a sample of investing and non-investing firms over time, a problem that has afflicted many empirical studies (see the critique in Shaver, 1998). Another key advantage of this paper's empirical design is that the choice of host country (China) makes it possible to keep the decision over the ownership level of the subsidiary plant separate from the choice between acquiring an existing plant and creating a new one. Moreover, exporting from the home country can also be ruled out as an alternative mode of servicing the target market.

By adopting a longitudinal design, this paper improves our understanding of the effects of intangible assets on foreign entry. In particular,

firms that have entered via joint venture at least once in the past are less likely to use that entry mode subsequently the higher their level of intangible assets. The reason has to do with the contractual hazards associated with joint ventures (Henisz and Williamson, 1999). Thus the paper shows how the internalization model developed by Buckley and Casson ([1976] (1991)) can be enriched by a staged approach to foreign investment.

The results on learning at the business group level shed light on interorganizational dynamics. It seems that little group-level learning takes place across entry modes. Thus previous experience at the group level with joint ventures affects the rate of subsequent joint venture entry, but not of wholly owned entry, whereas previous group experience with wholly owned operations increases subsequent entry using the same mode. The theoretical point to underline is that, whereas the staged model seems to apply at the firm level in the sense that firms learn how to build up their capabilities in a foreign location as they accumulate experience over time, shifting from joint ventures to wholly owned operations, when it comes to learning from other firms in the same business group the effects seem to be confined to the use of the same mode of entry.

The staged approach to foreign entry mode pursued in this paper offers several opportunities for future empirical research. First, an allowance could be made for the depreciation of experience or knowledge over time. Testing this effect would require a longer observation period than the one used in this paper. Second, experience sharing across firms in the host country, as opposed to in the home country, could be assessed. This line of research would be most fruitfully pursued with samples of foreign subsidiaries collected in smaller countries than China or in self-contained industrial districts within larger countries. And third, more detailed information about the processes of planning and negotiation could advance our understanding as to how firms evaluate different strategies of entry, discarding certain options and pursuing others as they expand into a foreign country. The results reported in this paper should be understood in the context of an empirical study that, in spite of its advantages, is not entirely generalizable to other research settings. Thus it would be important for future research to see whether the firm, group and industry level effects reported in this paper hold under other circumstances.

Firms learn from their own experiences, and from those of other firms in their same business group or home-country industry. A staged approach to foreign entry suggests that the decision to enter a foreign country and to use different kinds of entry mode changes over time as experience accumulates at the level of the firm, the business group, and the industry. The effects of such stocks of experience are not only significant but also relatively large in magnitude. Thus taking interorganizational effects as well as economic and technical variables into account makes it possible to arrive at a more complete picture of the evolution of foreign entry by joint venture and by whole ownership.

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Notes

¹By the end of 1995 only three Korean firms had established subsidiaries in China for trading purposes exclusively. These investments were ignored in the empirical analysis.

²Similar results were obtained using either a counter of the number of entries by the same firm or a dummy variable coded as 0 before the first entry and as 1 thereafter. The two variables are very highly correlated with each other, a situation similar to that found in other studies (Chang, 1995; Kogut and Chang, 1996).

³In South Korea, the so-called 'R&D efficiency expenses' are generally reported by firms: they include the year-on-year rate of change, R&D depreciation, development expenses, and ordinary R&D expenses. This measure approximates the value of the cumulative stock of R&D expenses. Thus it captures the firm's R&D effort over the years, as opposed to during a single year. This measure was normalized by the firm's age. Given that this definition departs from the usual one in the USA or Europe, regression analyses were also conducted without this variable. Similar results were obtained.

⁴Interview, International Business Division of the Ministry of Trade, Industry and Energy, Seoul, 30 May 1997.



⁵Dummy variables were created for nine different industries: food processing (omitted), textiles and apparel; chemicals, petroleum and rubber; stone, clay and glass; metals; machinery; electrical equipment; transportation equipment; and other manufacturing. The use of more finely grained time period or industry dummies resulted in a lack of convergence of the regression models.

⁶The breakdown of first plants between joint ventures and wholly owned plants was similar to the overall pattern. The firms with the largest numbers of plants were Sangyong Cement (eight), LG Electronics (seven), and Daewoo Electronics and Samsung Electronics (six each). Excluding these firms from the sample one at a time did not change the results reported below.

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