

# The degree of control of multinational enterprises over foreign subsidiaries: An empirical investigation of Korean firms

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Facing the period of internationalization, Korean firms need to decide whether they fully or partially control foreign subsidiaries. In order to explore major influential factors on these decisions, this paper analyzes the behaviors of manufacturing firms listed on the Korea Stock Exchange. According to the empirical analyses, first, Korean firms are likely to choose full ownership when they possess substantial international experiences, operate relatively large projects, and invest in developed countries. Second, R&D and advertising intensities of parent firms, product diversification of subsidiaries, and cultural distance between home and host countries are found to be not influential on Korean firms' decisions. Third, compared to others, chaebol-affiliated large corporations investing in China are more forced to form joint ventures with local state enterprises. All in all, Korean firms seem to rely on their international experiences more than technological or marketing expertise. And, those investing in developed countries prefer full ownership not to protect or exploit their intangible assets but to support their subsidiaries facing intense competition with advanced local firms. Lastly, small and medium companies operating large projects relative to parent's size, are not willing to form international joint ventures because they are less experienced in operating with foreign partners.

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## 1. Introduction

The ownership strategies of the multinational enterprise (MNE) have been one of frontier issues for academics in the area of international business. The main reason for this research appears to be that the ownership patterns of the MNE are closely related to the degree of controlling its subsidiaries, and thus affect its economic performance. For

instance, Beamish and Banks (1987) suggested that joint ventures are more efficient than wholly owned subsidiaries for the MNEs investing in less developed countries. Woodcock et al. (1994) empirically demonstrated that new ventures have higher performance than joint ventures, and joint ventures do so than acquisitions. Examining the performance of MNEs in China, Pan and Chi (1999) showed that equity joint ventures have a higher profit level than wholly-owned subsidiaries.

A considerable amount of past literature undertook dichotomous analyses to investigate a firm's decisions between different modes of control or entry. Some studies tried to examine how MNEs choose between partially-owned and wholly-owned subsidiaries, or between equity and contractual modes. Other studies were focused on the decision-makings within equity mode selections such as greenfield investment and acquisition. Using the same dichotomous analysis, this paper aims to explain how Korean MNEs choose between full ownership and partial ownership to control their foreign subsidiaries. This paper is expected to make an academic contribution mainly because it is one of the few empirical studies examining the ownership policies of MNEs from the Asian newly industrializing countries (especially from Korea).

This paper will be organized into five sections. After this introduction, the second section explores related theoretical frameworks. And the subsequent section will be devoted to the suggestion of research hypotheses and quantitative methodology. The fourth section demonstrates major empirical findings and derives their managerial implications. And the final section summarizes the findings of this research and points out issues for future research.

## II. Theoretical Backgrounds

A considerable number of academics have provided theoretical frameworks to explain what factors are critically influential when the MNE determines the degree of control over its overseas subsidiaries. The transaction cost theory is regarded as one of the most popular explanations (Buckley and Casson, 1976; Teece, 1986; Hennart, 1988). Deriving its basic tenet from the internalization theory of Coase (1937), the theory posits that a firm performs transactions within its organization when the costs of using the internal market are lower than those of using the external market. Following this logic, MNEs are likely to enhance the degree of control when they need to reduce the pecuniary or non-pecuniary costs of trading their products, resources, and capabilities in the external market.

In particular, Hennart (1991a) emphasized that MNEs can undertake two different types of foreign direct investments (FDIs) to avoid transaction costs. Firstly, horizontal FDIs can take place in order to overcome the inefficiency of the market for intermediary goods; i.e., input markets for raw materials, components, and knowledge. In particular, tacit knowledge, including proprietary technology and marketing know-how, seems to be one of the most important intermediary goods that need to be transferred across the

national border to survive the stiff competition in knowledge-intensive industries. As tacit knowledge cannot be effectively transferred in codified forms, it should be transferred through intimate human contacts (Killing, 1980). It is gradually accumulated from past experiences and embedded in individual employees or the organization as a whole. Further, tacit knowledge has a nature of public goods since it is transferable between organizations at marginal or zero costs. It is still controversial whether the tacitness of knowledge facilitates its nature of public goods: Kogut (1988) asserted that it could be more costly to transmit tacit knowledge from one firm to another than explicit knowledge. MNEs have no incentives to disclose their knowledge to the third party unless it is protected by the strong legal system. For these reasons, MNEs are encouraged to transfer knowledge to highly controlled subsidiaries when it is difficult to codify into patents (Caves et al., 1982). Market- or country-specific knowledge is also tacit since it should be acquired by operating in a particular industry and country. Johanson and Vahlne (1977) expressed that, as market-specific knowledge is not for sale, firms need to acquire this knowledge by operating in a particular country. As these types of knowledge are not patentable and difficult to codify, they also incur high costs when traded in the external market. Reputation, including

corporate and brand images, is another intangible asset which is usually transferred through direct investment. A firm is likely to have its foreign affiliates produce goods of its own brand in circumstances where its reputation assets are not properly protected. In addition, the MNE needs to control foreign operations tightly to fully appropriate economic rents from its brand assets. Otherwise, free riders might make profits by using the brand without bearing the costs of developing it, or deteriorate the brand image by producing inferior goods (Gatignon and Anderson, 1988). Secondly, in contrast with horizontal ones, vertical FDIs usually take place to circumvent the difficulties arising from small-numbers bargaining or information asymmetry. When goods and services are specific to a given transaction, only a small number of firms can engage in that type of transaction. In this circumstance, a firm has very limited options to trade goods, and thus its trade partners are likely to show opportunistic behaviors. Further, the problem of information asymmetry may exacerbate this situation when contractors are not sufficiently knowledgeable with the traded goods and services. Contractors who have less knowledge on the value of goods are prone to a high risk of opportunistic behaviors of their trade partners. Further, it is not efficient for one firm to communicate information to another firm when they are less integrated (Arrow, 1975).

Therefore, MNEs may attempt to integrate foreign input suppliers or distributors when they expect the situation of small numbers bargaining or information asymmetry.

Nonetheless, MNEs do not prefer more control over their overseas affiliates in some circumstances. When they lack proper knowledge or experience, they wish to get access to complementary capabilities of local firms (Beamish and Banks, 1987; Hennart, 1991b). In particular, MNEs prefer equity joint ventures when strategic assets of the local firm are harmonious with their capabilities (Gomes-Casseres, 1989). This view is also in line with the transaction cost theory. If it were costless to buy the capabilities of other firms through arm's length transactions or replicate them within the firm's organization, MNEs would not undertake joint ventures to approach the complementary assets of local partners. In particular, firms diversifying into different product lines should acquire knowledge to market new products and, given the difficulty of buying such knowledge, they should form equity joint ventures with local firms possessing it. Joint venture-ship is also a desirable option when a firm with less operational experiences in a certain country may wish to obtain country-specific knowledge from local firms. Especially when the socio-cultural distance is considerable between home and host countries, MNEs may use joint ventures to bridge the cultural gap.

Some academics suggested alternative theoretical explanations that seem to be not substitutes for but complementary to the transaction cost theory. Above all, the organizational learning theory emphasizes the capability building process of firms rather than their behaviors of minimizing costs. According to this theory, joint venture-ship is a convenient vehicle to transfer organizationally embedded knowledge that cannot be easily traded in the external market (Kogut, 1988; Madhok, 1997). For instance, experiential knowledge and complex routines specific to the organization are difficult to replicate within the firm or to obtain through market contracts; they are different from skills specific to individuals that can be obtained through the labor market. Therefore, although sharing equity stake might be more costly than other control modes, a firm tries to learn this organizational know-how from a joint venture partner. That is, joint ventures are a vehicle by which tacit organizational knowledge is transferred across the boundary of firms. In contrast, a firm prefers wholly-owned subsidiaries when a firm needs to fully exploit the existing stock of capabilities. As it is hard to license organizationally embedded knowledge to the third party, a firm opts to utilize it through the tight control of foreign subsidiaries. According to the view of Kogut and Zander (1993), a firm is a repository of knowledge

and also an efficient means to transfer idiosyncratic knowledge across the national border. Knowledge should be accumulated incrementally over time because it is often experiential in nature. As this type of knowledge is difficult to codify or teach, it is more easily transferred through the internal organization of a firm, namely between the MNE and its wholly-owned subsidiary. Moreover, context-specific knowledge generates sufficient rents when it is used by the firm that developed it. The value of knowledge would be eroded when firms with different histories engage in its use: MNEs need to fully control their subsidiaries to reduce this type of value erosion. That is, a firm tends to increase the equity share of its subsidiaries when it wants to fully utilize a sufficient stock of its capabilities, but decrease the equity share when it needs to strengthen its insufficient capabilities through collaboration with local firms (Tallman, 1991). The issue is not so much the failure of a market under the assumption of opportunism but rather the failure of a market due to inherent differences of firms in developing and exploiting their proprietary capabilities. In spite of the scarcity of literature on Korean firms, Tallman and Shenkar (1990) studied the ownership patterns of Korean firms. According to their study, Korean firms possess a weak motive to protect their proprietary knowledge. They tend to approach

advanced technologies through joint ventures with local firms in industrial countries rather than to replicate them through internal R&D activities. This finding seems to be quite in line with the organizational learning theory.

The strategic behavior approach suggests that firms form joint ventures to improve their competitive positions against rivals (Kogut, 1988). They use joint ventures to introduce new products earlier than rivals, to undertake preemptive patenting, or to achieve collusive agreements to deter the entry of potential rivals. As a similar view, Hladik (1988) argued that, through joint ventures for collaborative R&D, MNEs can get earlier access to the target market than rivals, reduce the number of competitors splitting the market, and develop common technical standards earlier than competitors.

Some other researchers employ the evolutionary approach of internationalization to explain the governance structure of MNEs. As FDI is an incremental and cumulative process, firms tend to increase the level of involvement as they become more experienced in international operation (Johanson and Vahlne, 1977; Davidson, 1980; Chang, 1995). It is also reasonable to assume that MNEs increase the degree of control over subsidiaries in a particular country where they have previous operational experiences. Experiential knowledge helps them more capable of coping with the uncertainty of foreign operation and

controlling foreign subsidiaries. Therefore, MNEs are likely to choose partial ownership at the early stage, especially in unfamiliar markets to obtain country-specific experience and knowledge. But they prefer full ownership at the mature stage to exploit the already acquired knowledge. Later they would try to create new competitive advantages by combining the experiences and knowledge acquired from different countries. This approach puts more emphasis on how MNEs gradually increase their equity share rather than why they need to do so.

### III. Research Hypotheses

Based on the theoretical frameworks mentioned above, this study suggests the following hypotheses, being subject to empirical tests.

H1: Korean firms are likely to prefer full ownership of foreign subsidiaries when they possess strong proprietary technology.

MNEs use proprietary knowledge to innovate their products or production process. As the transaction cost theory implies, proprietary knowledge is difficult to codify, evaluate, and transmit. Therefore, MNEs have a strong

incentive to fully appropriate rents on their proprietary knowledge by tightly controlling the value-adding activities of foreign subsidiaries. Further, once they share proprietary knowledge with local partners, it is hard to protect it from potential rivals. The R&D activity is the most important source of proprietary knowledge for the MNE and contributes to innovation when it is systematically developed through organizational routines (Cantwell, 1994). For this reason, it is sensible that, in order to develop or exploit innovative abilities, MNEs with strong R&D capabilities tend to adopt a strategy of higher control over foreign subsidiaries (Fagre and Wells, 1982; Hennart, 1982; Anderson and Gatignon, 1986; Kogut and Chang, 1991). Some scholars also provided empirical evidence that transaction-specific capabilities and assets lead to higher control modes (Gatignon and Anderson, 1988; Kim and Hwang, 1992; Erramilli and Rao, 1993). It is generally surmised that the R&D intensity of Korean MNEs is positively associated with the degree of their control over foreign subsidiaries. Guillén (2003) showed that technology-intensive Korean firms in China have a tendency to choose wholly owned plants over joint ventures.

*H2: Korean firms are likely to prefer full ownership of foreign subsidiaries when their brand assets are valuable.*

Brand assets usually indicate positive

corporate and product images, which can be measured by advertising intensity. Firms differentiating their products through advertising have strong incentives to achieve full ownership. A company's reputation has a nature of public goods if it is shared with joint venture partners; the partners may take advantage of the reputation without bearing marketing costs. As another reason for this hypothetical argument, entry modes offering higher degree of control are more efficient for products customized to local consumers. A firm needs to cooperate closely with its overseas subsidiaries to tailor its products to end users in the host country. According to Anderson and Gatignon (1986), a firm engaged in highly customized products needs to cooperate closely with its foreign affiliates to adjust the product to the tastes of local users, and thus tends to adopt a strategy of higher control. Some empirical findings suggest that the higher the parent's expenditures on advertising relative to sales, the higher the probability that the firm will choose full ownership (Fagre and Wells, 1982; Gatignon and Anderson, 1988; Gomes-Casseres 1990). Several scholars also provided the empirical evidence that firms developing differentiated products are likely to choose higher degree of control (Coughlan, 1985; Anderson and Coughlan, 1987; Agarwal and Ramaswami, 1992; Caves, 1996). But MNEs may face difficulties in transferring marketing

skills when they invest in a country with high cultural dissimilarity (Graham, 1988; Hennart, 1991b). In our study, it is presumed that Korean MNEs with high advertising intensity prefer to maintain complete control over their foreign subsidiaries.

*H3: Korean firms are likely to prefer full ownership of foreign subsidiaries when they are affiliated with business groups.*

This hypothesis is suggested to examine whether the control degrees of Korean MNEs are positively associated with their affiliation with business groups. The outward FDIs of Korea have been driven by laterally diversified business groups (chaebols). These groups are major players in establishing and operating Korean manufacturing plants in foreign markets. As firms affiliated with the same chaebol are essentially managed as a single firm, they are able to share physical and financial resources, risk of foreign operation, and information on the local market (Choi and Cowing, 1999). Firms affiliated with chaebol are expected to tightly control foreign subsidiaries because they need to cooperate with other affiliates belonging to the same chaebol in order to achieve group-wide goals. According to the similar view of Fagre and Wells (1982), in a situation where a large portion of a subsidiary's output is transferred to another affiliate of the same parent corporation, the parent controls the subsidiaries to a significant degree.

H4: Korean firms are likely to prefer full ownership of foreign subsidiaries when they are more experienced in foreign markets.

Internationalization is an incremental process of expanding value-adding activities to unfamiliar foreign markets (Johanson and Vahlne, 1977). A firm cannot obtain experiential knowledge on the local market simply by hiring local employees but should accumulate it through individual or organizational experiences in a particular host country over time. Experiential knowledge is a kind of intangible resource; the better the knowledge about a market, the more valuable is the resource, and the stronger is the commitment to the market. While MNEs gradually accumulate experiences on international operation, they begin to gain more abilities to understand the risks and know-hows of foreign manufacturing in a particular country. This enables them to manage, monitor and evaluate the operations of foreign subsidiaries. Several scholars maintained that international experiences of firms are positively associated with their degrees of control over foreign subsidiaries (Anderson and Gatignon, 1986; Gomes-Casseres, 1990; Erramilli, 1991; Hennart, 1991b; Agarwal and Ramaswami, 1992). In contrast, MNEs need to acquire local knowledge by partnering with local firms when they are less experienced in a host

country (Barkema et al., 1996).

H5: Korean firms are likely to prefer partial ownership of foreign subsidiaries when the sizes of their subsidiaries are large relative to those of parent companies

The ownership structure of MNEs may be influenced by the size of their subsidiaries. When foreign subsidiaries are large, MNEs should commit more managerial and financial resources to control them. In other words, when a parent company has a relatively small size compared to its subsidiary, it may lack a sufficient level of resources to fully control the offshore project. Thus it may prefer to undertake a joint venture with a local firm that can compensate for the lack of its resources. That is, the larger plant a firm operates in a given foreign country, the less it is likely to use an integrated governance structure (Gatignon and Anderson, 1988). And, assuming their risk-averse attitudes, international managers are expected to reduce degree of control when their offshore projects are large (Demsetz and Lehn, 1985). In our study, it is hypothesized that the relative sizes of Korean subsidiaries are negatively associated with the control degrees of their parents.

H6: Korean firms are likely to prefer

partial ownership of foreign subsidiaries when their subsidiaries are engaged in diversification of products.

When both of parent and subsidiary are engaged in producing the same or similar products, the parent company is more willing to transfer product-specific knowledge to its subsidiary. In this situation, the parent has a higher propensity to select full ownership rather than partial one. In contrast, when a firm's subsidiary produce different goods from those at home, it is likely to form a joint venture to obtain the expertise of a local firm (Hennart, 1991b). Mutinelli and Piscitello (1998) suggested that widely diversified international firms show a propensity to set up collaborative ventures to approach complementary assets, reduce bureaucratic inefficiency, and deter opportunism of partners. In this context, it is assumed that Korean firms with a high degree of product diversity choose joint ventures over sole ones.

H7: Korean firms are likely to prefer partial ownership of foreign subsidiaries when they invest in a country with a high socio-cultural distance.

Lack of knowledge due to different language and culture is an important obstacle to decision-makings regarding the development of international operations. The psychic di-

stance between the home and host countries can be a considerable obstacle to the internationalization of firms. Inexperienced firms tend to fear the unknown environment, consequently overestimating the risks of foreign production. At the initial stage, they tend to select neighboring and culturally similar countries (Davidson, 1980). With cumulative experiences, firms are able to assess the risks and profits deriving from foreign production more accurately. Gatignon and Anderson (1988) mentioned that a high socio-cultural distance is associated with partial ownership rather than full ownership. According to Kogut and Singh (1988a), foreign firms in the United States tend to choose joint ventures rather than acquisitions when the cultural distance is high between the home and host countries. Hennart and Larimo (1998), suggesting the national character theory, argued that cultural distance exerts a powerful influence on the ownership structure of foreign subsidiaries. It is conjectured that Korean firms prefer joint ventures in a host country with a high cultural distance.

H8a: Korean firms with high proprietary technology are more likely to prefer full ownership of foreign subsidiaries when they invest in developed countries.

H8b: Korean firms with high brand assets are more likely to prefer full ownership

of foreign subsidiaries when they invest in developed countries.

H8c: Korean firms affiliated with chaebols are more likely to prefer full ownership of foreign subsidiaries when they invest in developed countries.

These hypotheses are based on the premise that the influences of R&D intensity, advertising intensity and cooperation between affiliated firms will be accelerated when Korean firms operate subsidiaries in developed countries such as the USA and the EU. In general, MNEs wish to achieve maximal rents on their intangible assets such as technology and marketing capabilities in foreign markets. This goal is easier to achieve when they are able to approach high-income consumers in developed countries who are willing to pay more for their valuable products. Thus they need to control their subsidiaries more closely to achieve this goal. In addition, Korean firms need to cooperate with other firms belonging to the same chaebol in developed markets where they usually face the stiff competition of well-established MNEs with global network. Intense competition in those countries will make it more necessary to commonly share essential resources and capabilities among affiliated firms. Particularly, early entrants in a particular country can provide local knowledge and network to followers in that country.

Overall, Hypotheses 1, 2 and 5 are based on the transaction costs theory, and Hypothesis 6 can be related to the organizational learning theory. And Hypothesis 3 is based on the strategic behavior approach whereas Hypotheses 4 and 7 may be related to the evolutionary approach of internationalization. Further, Hypotheses 1, 2, 3, and 4 are concerned with the characteristics of parent firms, Hypotheses 5 and 6 with those of subsidiaries, and Hypothesis 7 with those of host countries.

#### IV. Research Methodology

This study employs a binomial logit model which is considered to be appropriate for the empirical test of the above hypotheses. The major reason for the use of this methodology is that the dependent variable consists of categorical data representing two different degrees of control. The multinomial logit model is not employed because the primary concern of this study is to investigate Korean firms' decisions between partial and full ownership rather than between minority, balanced, majority and full ownership. Gattignon and Anderson(1988) concluded that multinomial analysis produces less robust results than binomial one, and Klein et. al. (1990) mentioned the difficulties of classifying

across four different options. The basic equation for the binomial logit model can be expressed as follows (Agresti, 2002).

$$P(Y = 1) = 1 / [1 + \exp(-\sum_{i=1}^k \beta_i X_i)] \quad (1)$$

, where  $P(Y=1)$  is the probability that the dependent variable equals to one,  $X_i$  represent the  $i$ th explanatory variable under investigation, and  $\beta_i$  is the  $i$ th parameter to be estimated by the maximum likelihood method.

In our analysis, the dependent variable is coded as a value of zero when the firm owns 5% -94% of the equity of its subsidiary, and a value of one for 95% or more. When a parent company possesses the equity share of less than 5 percents, the firm is considered to have no control over its subsidiary and excluded from our analysis. And when a parent company possesses the equity share of 95%-100%, it is considered to have full control over its subsidiary (Hennart, 1991b). The dependent variable is related not to whether Korean firms selected full or partial ownership at the time of investment but to whether they operate fully or partially owned subsidiaries in 2001. Thus, data for explanatory variables are also based on the same year. The operational measures of explanatory variables need to be determined by considering the literature and data avail-

ability. The proprietary technology (RND) of each parent firm is measured by R&D expenditures as a percentage of total sales. The brand assets (ADV) can be proxied by the ratio of media advertising expenditures to sales. A dummy variable is used to represent the affiliation with business groups (CHB), which equals one if a parent company belongs to the thirty largest chaebols in Korea, and zero if otherwise. The thirty largest chaebols will be determined by referring to the definition of the Fair Trade Commission of Korea in 2001. The experience of each parent company can be measured from two different perspectives (Yu, 1990). General international experience (EXPG), being gained from operating in the international business environment without referring to any specific country, is computed as the number of all the subsidiaries in foreign markets operated by each parent company. This method of measurement has been adopted due to the lack of data. The multinational experience of a firm can be alternatively measured by the ratio of exports to sales or the number of host countries where a parent company has invested (Caves and Mehra, 1986; Gatignon and Anderson, 1988; Yu, 1990). And country-specific experience (EXPS) is represented by the number of years of each subsidiary's operation in a host country. When a parent company operates more than one subsidiary

in a particular country, the numbers of operational years of its subsidiaries in that country will be summed. The relative size of a subsidiary (SIZE) will be measured by the cumulative value of investments in that subsidiary divided by the total assets of its parent.<sup>1)</sup> And another dummy variable is employed to reflect the degree of diversification (DIV), which is equivalent to a value of one if the main products are the same as those of its parent firm and zero if otherwise (Delios and Beamish, 1999). The socio-cultural distance (CUL) between each host country and Korea will be measured by the indices introduced by Hofstede (2001), and these indices are converted into a composite index for each host country by using the calculation method of Kogut and Singh (1988a).<sup>2)</sup> The income level of a host country will be represented by a dummy variable (DEVEL), which has a value of one for a country with more than US\$ 20,000 of per capital GDP, and zero for other countries.<sup>3)</sup> Lastly, interaction terms will be included in the model to test the Hypotheses of H8a-H8c. These terms will be computed as the products of

DEVEL and each of RND, ADV and CHB and denoted as RND\*DEVEL, ADV\*DEVEL and CHB\*DEVEL respectively. And the variables of RND, ADV, EXPG, EXPS, SIZE, and CUL will be denoted as LRND, LADV, LEXPG, LEXPS, LSIZE, and LCUL respectively after they take the form of natural logarithm. Besides, the regulative policy of host countries has been introduced as a control variable. Facing the regulations of host countries, some Korean firms were forced to form joint ventures with local firms regardless of their preferences. A dummy variable (REGUL) representing the regulative ownership policy of a host country, will have a value of one for highly regulative countries such as China, India and Malaysia, and zero for other countries.<sup>4)</sup>

## V. Empirical Results

The full sample for our study consists of manufacturing firms that were listed on the Korea Stock Exchange at the end of 2001.

1) This value is based on the amounts that each parent firm reported to the Korean government. There may be some differences between actual and reported investments when subsidiaries use financial resources borrowed from local banks. However, no data is available on the local financing of subsidiaries.

2) According to our calculation, the cultural distance of Thailand and Korea is the lowest at 0.21, and that of the UK and Korea is the highest at 3.73.

3) Following this definition, developed economies include the USA, the EU countries (except Portugal), Hong Kong, and Singapore.

4) According to IMD (2002), these three countries tightly regulate the ownership of foreign investors. When REGUL has a value of one for more than three countries, it causes a problem of collinearity with the variable of DEVEL.

The author could get access to very detailed data of this year on these firms that had been compiled by the Korea Listed Companies Association (KLCA). Therefore all the observations for parent firms are based on the year of 2001 when KLCA compiled the data, and data for subsidiaries and host countries are also collected on the basis of the same year. The author removed observations on the firms from the sample that had established foreign manufacturing facilities before 1995. As the reason, firms' decisions to establish subsidiaries in very early years seem to be less related to the characteristics of parents in 2001.<sup>5)</sup>

As shown in Table 1 in the Appendix, our sample geographically covers 494 subsidiaries: 105 in Western and 389 in Asian countries.<sup>6)</sup> In this sample, partially and fully owned subsidiaries account for 52.8 percent and 47.2 percent respectively. The host regions have been deliberately selected because they are the major recipients of Korean FDIs. Our unit of analysis is each couple of parent-subsidiary: namely, when a parent company operates more than one subsidiary in the concerned market, each subsidiary will be regarded as a separate observation. Before

the empirical test, multi-collinearity among explanatory variables has been examined. Table 2 in the Appendix presents Pearson correlations and descriptive statistics of the explanatory variables. It can be said that serious collinearity is not detected since most of the absolute values of correlation among explanatory variables remain below 0.7.<sup>7)</sup>

〈Table I〉 demonstrates the results of maximum likelihood estimation using the SAS program (Allison, 1999). A positive coefficient indicates that the explanatory variable tends to increase the probability that Korean firms choose full ownership over partial one, whereas a negative coefficient does the opposite case. Model A includes all the explanatory variables that have been suggested in the above hypotheses. The figure for log likelihood ratio shows 51.9 ( $p=0.0001$ ), supporting the significant relationship between the dependent variable and covariates. Five variables are found to be significant: CHB, LEXPG, LEXPS, and LSIZE. LEXPG show a positive sign following our expectation while the signs of LEXPS, CHB and LSIZE are against it. In addition, it is quite unexpected that none of the interaction terms is significant. That is, the influences of

5) As one of the reviewers pointed out, it would be more accurate to collect parent-related data at the time when each parent established its subsidiaries. But this method was not possible because of the unavailability of necessary data.

6) The initial sample included 518 observations, but 24 cases were excluded from our study to avoid extreme values.

7) Two values of correlation are found to exceed 0.7 before taking the natural logarithm. But, only one value is so after taking the logarithm.

〈Table 1〉 Results of Maximum Likelihood Estimation

	Model A	Model B	Model C	Model D
Intercept	0.02	-0.05	0.63	-1.02
LRND	0.01	0.01	0.08	0.06
LADV	-0.03	-0.05	-0.02	-0.10
CHB	-1.02****	-0.86****	-1.21***	-0.47
LEXPB	0.45****	0.47****	0.43**	0.53***
LEXPS	-0.28**	-0.29***	-0.33*	-0.17
LSIZE	0.14***	0.14***	0.16*	0.15*
DIV	-0.23	-0.27	0.08	-0.58
LCUL	0.05	0.05		-0.08
DEVEL	0.61	0.72*		1.12***
REGUL	0.07	0.07		
RND*DEVEL	-0.05			
ADV*DEVEL	-0.07			
CHB*DEVEL	0.51			
No. of host countries	16	16	1 (China)	15 (except China)
No. of subsidiaries (% of full ownership)	494 (47.2)	494 (47.2)	254 (42.9)	240 (51.7)
Log Likelihood $\chi^2$	51.9****	49.7****	28.0****	28.0****
Percent concordant	68.8	68.6	69.9	69.9

Note: (1) The asterisks of \*, \*\*, \*\*\* and \*\*\*\* indicate the significance levels of 0.1, 0.05, 0.01, and 0.001 respectively.

R&D intensity, advertising intensity, and affiliation with chaebol are not significantly strengthened or weakened when Korean firms operate in developed countries.

Model B excludes the interaction terms con-

sidering their insignificance in the previous model.<sup>8)</sup> In this model, DEVEL gains significance at the level of 0.10. And, LEXPS show significance at the level of 0.01, and CHB and LEXPG at the highest level of

8) The positive difference of twice log likelihoods of Model A and B is 2.2, which is insignificant at the 0.05 level based on the chi-square test. This indicates that any of the interaction terms is not influential.

0.001. The following interpretations can be derived from these findings of the model. First, the coefficients of LEXPG and DEVEL demonstrate the expected positive signs. The significance of LEXPG implies that Korean firms have less necessity of approaching knowledge of local firms as they become more experienced in international operation, and thus prefer to achieve full ownership. Further, international experiences seem to enhance their ability of monitoring and controlling subsidiaries more effectively. This argument is consistent with the evolutionary approach of internationalization that has been mentioned earlier (Johanson and Vahlne, 1977). The positive significance of DEVEL indicates that Korean firms investing in developed countries are more likely to prefer wholly owned subsidiaries. There could be two explanations. One is that they wish to monopolize rents on their outstanding technology and marketing skills: they should share profits in case of joint ventures. The other is that they try to survive intense competition in developed countries such as the USA and the EU by transferring necessary resources and capabilities to subsidiaries through the fully controlled internal market. Joint-ventureship may deter the internal transfer of parents' abilities because of the opportunistic behavior of partners. In our study, the interaction terms relating to technology and marketing abilities are insignificant and thus the latter

explanation is strongly supported. Facing competitive pressures from well established MNEs in advanced markets, Korean subsidiaries in developed markets need to rely on the resources and capabilities of their parents more heavily than those in developing markets. Through full ownership, the internal market between parent and subsidiary can be efficiently used to transfer essential resources and capabilities. This argument is not in line with the opinion of Buckley and Casson (1976) that the incentive for creating internal markets may decline when the number of competitors increases and thus the opportunity for monopolistic pricing falls. Second, CHB, LEXPS and LSIZE are also statistically significant in Model B, but show unexpected signs. The negative sign of CHB implies that Korean firms affiliated with chaebols prefer to undertake partial ownership rather than full one. From the negative sign of LEXPS, we can say that Korean firms with substantial experiences in a particular country tend to choose joint ventures when they invest in that country again. And the positive sign of LSIZE indicates that Korean firms wish to retain full control over overseas projects when the amounts of cumulative investment in those projects are large relative to parent sizes. Obviously these results are not congruent with our suggestions in the Hypotheses. In order to investigate these unexpected results,

we need to separately analyze the ownership policy of Korean investors in China which account for about the half of total observations.

Model C analyzes the ownership decisions of Korean investors in China, and Model D examines those in other countries.<sup>9)</sup> CHB is highly and negatively significant in Model C, but insignificant in Model D. This means that the significance of CHB has been caused by the group of Korean investors in China. Most of the Korean important manufacturing projects in China were undertaken by listed large corporations, which are mostly affiliated with chaebols.<sup>10)</sup> Chaebol-affiliated large firms have been regulated by the Chinese government more severely than independent small and medium ones. They have more technological and marketing know-hows that may be beneficial to local partners, and they tend to employ more local workers and purchase more components from local suppliers. The statistics in our sample reveal that large Korean firms undertook 66.7% of their subsidiaries as joint ventures while small and medium firms did 53.9% and 51.5%

respectively.<sup>11)</sup> The socialist government in China aims to absorb technology, marketing capability and management skills of large Korean firms by urging them to form joint ventures with local state enterprises. Formation of joint ventures does not always generate negative effects: partners in China can help Korean firms access local networks since personal or corporate relationships (Guanxi) are highly important in that country. And, early entrants in China can help following firms form successful joint ventures. Guillén (2003) provided empirical evidence that Korean firms in China tend to learn how to form international joint ventures from other firms belonging to the same business group. LEXPS is also significant in Model C, but is not so in Model D, which means that its significance is based on the group of investors in China. Historically, Korean firms began to set up manufacturing facilities in China in 1988. In general, large Korean firms invested in China earlier than small and medium ones, anticipating her economic potential in the near future. Their

9) The variables of LCUL, REGUL and DEVEL are excluded in Model C to analyze a single host country. REGUL is also excluded in Model D since the observations for this variable heavily rely on the investment cases in China.

10) In the sample of Model C, on average, chaebol-affiliated firms have 8,208 employees at home, operated subsidiaries in China for 5.4 years, and invested US\$ 11.9 million in those subsidiaries. However, the corresponding figures of non-chaebol affiliated firms are 695 employees, 4.5 years, and US\$ 4.3 million respectively. This means that chaebol-affiliated firms are large, have more experiences, and operate important projects in China.

11) In this paper, small, medium and large firms are defined to have less than 500, 500 to 1500, more than 1500 employees at home respectively. The author used this definition to disaggregate the sample into three nearly equivalent groups.

early entries in China were possible as they possess more resources and experiences to bear a high political risk of the socialist regime. Thus they have a longer history of doing business in China than small and medium ones. But they are more exposed to the ownership restrictions of local governments since they are mostly involved in large and important projects. Accordingly, the negative sign of LEXPS indicates that large Korean firms with longer experiences in China are forced to form joint ventures. This explanation is also related to the positive sign of LSIZE in Model C. The variable of LSIZE represents the sizes of subsidiaries relative to those of parents. In our sample, it shows high figures in small and medium firms.<sup>12)</sup> In other words, when observed as a proportion of parent assets, small and medium firms tend to operate relatively large-scaled plants. It is probable that small and medium Korean firms are less willing to form international equity joint ventures since they are less experienced in managing offshore projects with foreign partners. Further, LSIZE is also shown to be significant in other models. This implies that small and medium firms are likely to achieve higher levels of autonomy to manage sole ventures in most host countries.

Model D demonstrates the significance of

LEXPG, LSIZE, and DEVEL, as shown in the previous models. In particular, the high significance of LEXPG and DEVEL support our hypotheses. As already mentioned, Korean firms are more likely to choose full ownership when they are more experienced in international operation or when they invest in developed countries. However, it is worth noting that CHB and LEXPS lost significance in this model, which means the negligent influences of chaebol affiliation and country-specific experiences.

## VI. Conclusions

It is necessary to summarize the above empirical findings to draw implications on our issues. First, the variables of LEXPG and LSIZE are significant in all the models. That is, Korean firms with substantial experiences in foreign operation are likely to choose full ownership. Particularly, they seem to rely on general experiences rather than on country-specific ones since they are emerging MNEs and have not accumulated sufficient experiences to be familiar with each host country. And Korean firms prefer to set up wholly owned subsidiaries when these subsidiaries are

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12) For instance, in the sample of Model C, small parent firms show an average figure of 3.5% in their cumulative investment in subsidiaries divided by their total assets. The corresponding figures for medium and large firms are 1.2% and 0.6% respectively.

large compared to parent sizes. As a reason, small and medium firms, operating large projects relative to parent assets, are less experienced in international joint ventures. The significance of DEVEL in two models implies that Korean firms investing in advanced countries are likely to possess full ownership over their foreign subsidiaries. They need to support their subsidiaries more intensively in the competitive environment of the USA and the EU. Second, although CHB and LEXPS show statistical significance, their unexpected signs are based on the decisions of investors in China. Large chaebol-affiliated corporations are mostly early entrants in China, being highly prone to the regulation of local governments. Third, the variables of LRND, LADV, DIV, LCUL and REGUL failed to show statistical significance in any model. Korean firms' preferences for ownership are not seriously influenced by technology and marketing ability of parent, product diversity of subsidiary, and cultural distance between home and host countries. In addition, except the cases in China, the restrictive policy of host governments does not seem to be a considerable obstacle in controlling foreign subsidiaries. All in all, technology and marketing capability of parents do not impose considerable influences on Korean firms' preferences for ownership. It appears that Korean firms do not use higher mode of control to protect proprietary

technology and brand assets or to appropriate maximal rents by solely exploiting them. This is not in line with some of past studies that examined the decisions of MNEs from advanced countries (Gatignon and Anderson, 1988; Gomes-Casseres, 1990). But, it is consistent with the opinion of Tallman and Shenkar (1990) that technology and marketing abilities are less influential in Korean firms' decisions. That is, Korean firms seem to determine the control levels of their foreign subsidiaries not by considering their technology and marketing abilities but by relying on their general experiences in international markets. Even when they invest in developed countries, they tend to achieve higher modes of control not to exploit their intangible assets but to support their subsidiaries more intensively.

By using the compiled data on listed companies, this paper has undertaken an empirical study to analyze the ownership patterns of Korean manufacturers. It has found several influential factors relating to the decisions of Korean firms although some results do not follow our anticipation. But it neglects how these factors can change across different industries. This limitation is mainly due to the unavailability of a large number of reliable data in each industry and thus should be properly addressed in forthcoming research.

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Appendix

<Table 1> Profile of Dependent Variable

	USA	EU	ASEAN	Hong Kong	India	China	Total
Full ownership	47	15	38	20	4	109	233
Partial ownership	36	7	50	9	14	145	261
No. of observations	83	22	88	29	18	254	494

<Table 2> Correlations and Basic Statistics of Explanatory Variables

Corr.													
RND	1.00	0.28	0.07	0.11	0.09	-0.08	-0.17	0.10	-0.09	0.12	0.64	0.23	0.17
ADV		1.00	-0.04	-0.01	0.11	-0.01	-0.13	0.09	-0.09	0.08	0.21	0.61	0.02
CHB			1.00	0.63	0.41	-0.47	0.22	0.03	-0.02	0.01	0.10	-0.03	0.41
LEXP				1.00	0.60	-0.38	0.28	-0.09	0.01	-0.03	0.09	-0.02	0.19
LEXP*					1.00	-0.14	0.25	0.03	-0.01	-0.22	0.09	-0.01	-0.04
LSIZE						1.00	-0.22	0.03	0.19	0.01	-0.09	-0.01	-0.20
DIV							1.00	0.01	0.01	-0.08	-0.11	-0.03	-0.04
LCUL								1.00	0.06	0.40	0.22	0.17	0.24
REGUL									1.00	-0.71	-0.29	-0.30	-0.43
DEVEL										1.00	0.41	0.43	0.61
RND* DEVEL											1.00	0.43	0.40
ADV* DEVEL												1.00	0.22
CHB* DEVEL													1.00
	RND	ADV	CHB	LEXP	LEXP*	LSIZE	DIV	LCUL	REGUL	DEVEL	RND* DEVEL	ADV* DEVEL	CHB* DEVEL
Minimum	0.01	0.01	0.00	0.00	0.00	-8.58	0.00	-1.58	0.00	0.00	0.00	0.00	0.00
Maximum	7.78	11.61	1.00	4.43	4.98	3.68	1.00	1.32	1.00	1.00	7.78	10.12	1.00
Sum	273.6	433.5	223.0	959.4	1219	-530.0	110.0	288.9	282.0	135.0	105.1	148.3	61.0
Mean	0.55	0.88	0.45	1.94	2.47	-1.07	0.22	0.58	0.57	0.27	0.21	0.30	0.12
S.D.	1.18	1.64	0.50	1.19	1.14	2.00	0.42	0.53	0.50	0.45	0.84	1.15	0.33

Note: Corr. and S.D. stand for correlations and standard deviations respectively.

## 한국 상장 제조기업의 해외자회사 소유구조에 관한 연구

홍성훈\*

### 요 약

한국 기업들이 해외자회사를 설립하는 경우에 완전소유와 합작투자 중에서 하나를 선택하는 의사결정을 하게 된다. 본 연구에서는 이러한 의사결정에 주요한 영향을 미치는 요인들이 무엇인가를 탐구하기 위하여, 한국증권거래소에 상장되어 있는 제조업체들을 실증적으로 분석하였다. 분석 결과에 의하면, 첫째 한국 기업들은 해외 영업의 경험이 많을수록, 자회사의 상대적 규모가 클수록, 선진국에 투자할수록 합작보다는 완전 소유 자회사를 선호한다. 둘째, 모기업의 연구개발과 광고 수준, 자회사의 사업 다각화, 투자국과 피투자국 사이의 문화적 거리 등은 영향력이 없는 것으로 나타났다. 셋째, 중국에 투자한 재벌 소속의 기업들은 현지 정부의 규제로 인하여 합작을 선택하는 성향이 상대적으로 높다. 결국 한국 기업들은 서구 기업들과는 달리 기술이나 마케팅 능력보다는 국제적 경험에 의거하여 자회사에 대한 통제 수준을 결정하는 경향이 있다. 그리고 선진국에 투자하는 기업들은, 독점적 경쟁우위의 보호나 활용보다는 경쟁이 치열한 시장에서 자회사를 지원하기 위하여 통제수준을 높이는 경향을 보인다. 또한 자회사의 상대적 규모가 높은 중소기업들은 국제적 경험이 부족하므로 합작을 기피하는 것으로 판단된다.

주제어: 해외직접투자, 합작투자, 완전소유, 한국상장기업

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